DP ACQUISITION AS STRUCTURE UNRAVELLING
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STRUCTURE UNRAVELLING

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1 INTRODUCTION

1. Motivation of the Study

A characteristic difference between adult and child speech is that children omit function words. Children start to produce lexical categories like nouns, verbs and adjectives, but functional elements like agreement markers, pronouns or determiners are still absent in early stages of first language acquisition. This has been observed cross-linguistically (cf. (1)). For instance, children omit auxiliary verbs. This is shown by example (1)a, where the English child Anne omits the auxiliary is and by the German example in (1)c, where the child Kerstin omits the auxiliary ist (the age of the children is indicated as year:month:day). Furthermore, pronouns can also be omitted in early child language. For instance in (1)b, the French child Daniel omits the personal pronoun je (‘I’). Another functional element typically omitted in child language is the determiner, as illustrated by all the examples in (1): Anne omits the definite determiner the, Daniel omits the definite determiner le (‘the.MASC’), and Kerstin omits the indefinite determiner ein (‘a.NEUT’). In all these cases the determiner is obligatory in adult language. The present study focuses on this phenomenon: The non-adult like omission of determiners in child language.

(1) a. box gone [= the box is gone] English, Anne (1;11.04)  
   ‘The box is gone’

b. mets savon bain [=je mets du savon dans le bain] French, Daniel (1;09.21)  
   put soap bathtub  
   ‘I am putting some soap into the bathtub’

c. da auch Buch [= da ist auch ein Buch] German, Kerstin (2;0.10)  
   there also book  
   ‘There is a book, too’

Within the generative study of language acquisition researchers agree that there is a strong component of innate knowledge about grammar, referred to as Universal Grammar (UG). The child cannot consciously access this knowledge; rather, UG consists of abstract principles that guide language acquisition and limit the number of hypotheses the child develops based on the language input. While there is
Consensus with respect to the presence of innate knowledge, it has been controversial how much of the abstract knowledge of UG is available to the child at the onset of acquisition. Two opposing positions can be roughly distinguished in the generative literature: the reduced competence position and the full competence position. According to the reduced competence position, the child’s underlying representation of linguistic structure is different from the adult’s grammar. The child gains only stepwise access to properties of UG, either by maturation (Radford 1990) or by acquisition of lexical elements in combinations with X’-principles (Clahsen, Eisenbeiß and Vainikka 1994). The opposite viewpoint is referred to as full competence. According to this hypothesis, the child has access to all abstract principles of UG from the onset of acquisition and hence the child’s grammar does not principally differ from adult grammar (Poeppel and Wexler 1993).

The discussion between these two points of view has repercussions for the study of the omission of functional elements as described in (1). The absence of functional material in early child speech has been interpreted as evidence that at this stage of acquisition, functional projections (FP) that host functional elements like agreement markers or determiners are absent in the child’s early grammar. Instead, the child’s grammar only contains lexical categories like verbs, nouns and adjectives. Let us illustrate this discussion by zooming in on determiner acquisition. Most generative researchers agree with Abney (1987) that the underlying structural representation of a phrase including a determiner, like e.g., [the big box]_{DP}, looks like the structure in (2). The lexical projection of the noun (noun phrase, NP) is headed by a functional layer including the projection of the functional D-head.

\[ \text{(2)} \]

\[ \begin{array}{c}
\text{Spec} \\
\text{D'} \\
\text{D} \\
\text{the} \\
\text{Spec} \\
\text{little} \\
\text{box} \\
\text{Complement} \\
\end{array} \]

Several linguists subscribing to the reduced competence position have accounted for determiner omission in children’s speech (cf.(1)) by arguing that the functional D-layer is not available at the onset of acquisition (Clahsen et al. 1994, Müller 1994, ...
Granfeldt 2000a, Hulk 2004). In contrast, proponents of the full competence hypothesis argue that the child has access to the functional layer in (2) at the onset of acquisition (Borer and Rohrbacher 2002).

Both points of view face particular challenges: Approaches arguing that the child does not yet have access to certain functional projections have to account for the observation that the bare nouns in child speech behave exactly like full DPs in adult speech with respect to semantic properties and syntactic distribution (cf. chapter 2 for a detailed discussion of this point). This similarity is unexpected under the assumption that adult and child grammar differ. On the other hand, models based on the assumption that the child has access to functional projections have to explain the non-adult-like output of the children. The present thesis is designed to span a bridge between these opposing viewpoints. The following question will be the focus of this study: How can we account for the absence of the determiner in child speech while at the same time maintaining coherence between child and adult grammar?

In this thesis, I will develop a theory of the acquisition of the determiner phrase (DP) that allows us to reconcile the idea that the child has access to UG properties with the observation that child speech differs from adult language. I refer to this approach as structure unravelling. Based on first language acquisition data from French and Dutch, I will illustrate the advantages of this theory.

The remainder of this introductory chapter is organised as follows: Section 2 explains the methodological approach and gives an outline of the thesis. In section 3, I will deal with some practical issues concerning the child data investigated in this study. This information will be of use at several points in this thesis and is provided here so that the reader can easily retrieve the general information about the children if necessary.

2. Methodology and Outline of the Thesis

The procedure of the present study is as follows: I first make an inventory of the empirical facts and the theoretical conditions concerning DP acquisition. Based on this I formulate the requirements of a DP acquisition theory. Subsequently I develop a theoretical analysis of the phenomenon. This analysis not only captures the child data but is also based on evidence from other domains, i.e. adult language. This new theory leads to a number of predictions, which will be tested empirically. Hence, the procedure can be characterised as deductive.

Notice that the present study is primarily concerned with the acquisition of DP-syntax. However, the acquisition of DP-internal morphology will occasionally
be included into the discussion. In the remainder of this section I describe in more
detail how the methodological procedure is applied in the present thesis.

In chapter 2, I first make an inventory of the empirical facts that are known
about the acquisition of the determiner based on results from previous studies in the
acquisition literature. One interest of the present study concerns the underlying
representation of D properties in the children’s grammar at the onset of acquisition.
Therefore, results of perception studies with very young children (11 months) who
have not yet started to produce the determiner are included into this overview. These
perception experiments help in order to get as complete a picture of the acquisition
process as possible, but notice that the primary interest of the present thesis concerns
the properties of the determiner in the production of the child. Experiments eliciting
production are not feasible in very young children; therefore, the studies
investigating the early production of the determiner rely on longitudinal recordings
of spontaneous speech data. These studies illustrate the stages of determiner
acquisition observed cross-linguistically. Based on this inventory I will formulate
six empirical requirements of a DP acquisition model.

Before developing a new theory for DP acquisition, it is also necessary to
have a closer look at the theoretical conditions. Above I have sketched two opposing
views with respect to the presence of functional projections in first language
acquisition: Some researchers argue that functional projections are operational from
the onset of acquisition while others claim that these are absent in early child
grammar. I will illustrate and discuss both points of view. Based on this discussion,
four theoretical requirements for a model of DP acquisition are derived.

In chapter 3, I go into more detail about the theoretical assumptions
underlying the new theory I will propose. In the present thesis I adhere to the
standard assumptions of the generative framework initiated by Noam Chomsky (cf.
Chomsky 1957, 1965, 1980a, 1980b for some key references) with the exception of
one aspect: I adopt the position that phonological units are not inserted into terminal
nodes at the syntax but are mapped onto syntactic representations (Sproat 1985
among others, Halle and Marantz 1994, Jackendoff 1997). A consequence of this
assumption is that there is not necessarily a one-to-one relationship between
phonological elements and terminal syntactic nodes. As I will illustrate, this idea
makes it possible to understand syntactic co-occurrence restrictions in adult
language (Radford 1988, Weerman and Evers-Vermeul 2002). In a next step, I show
how this assumption can account for the determiner omission in child language and
introduce my new proposal for DP acquisition: The structure unravelling theory. I
will then demonstrate that this theory is in line with the 10 requirements formulated
in the previous chapter.
The structure unravelling theory leads to a number of predictions for first language acquisition. In chapter 4, these predictions are investigated in more detail based on French and Dutch first language acquisition data. These predictions concern a) differences between individual items, b) cross-linguistic differences, c) the shape of the developmental curve of determiner production, d) co-occurrence restrictions in the acquisition of proper names and e) co-occurrence restrictions in the acquisition of pronouns. In order to investigate these predictions, a quantificational analysis of the data was made. This included a count of all nouns, proper names and pronouns produced by the children. For each of these instances, the presence or absence of the determiner was indicated (cf. section 3.5 below for considerations made with respect to what kind of utterances were excluded/included into the count). Chapter 5 concludes the thesis.

3. Practical Issues Concerning the Data

In this section I provide some general information about the data. The focus of the present study is the omission of the determiner in the speech of young children as illustrated by the examples in (1). As pointed out above, at this age it is not feasible to conduct experiments eliciting production. Therefore, the data investigated in the present study is naturalistic data, consisting of spontaneous speech from parent-child interaction. There were three different sources for the child data: I used the data of two French and two Dutch children from the CHILDES Internet database (MacWhinney and Snow 1990, MacWhinney 2001). In addition, the data collected by Patsy Lightbown (1977) of two French children were included into the study. Furthermore, I used the data of two French-Dutch bilingual children from the corpus of bilingual children at the University of Amsterdam collected under the supervision of Aafke Hulk and Elisabeth van der Linden. The data found in these sources had been collected as follows: In all these cases, the dialogues between children and caretakers were recorded during several sessions over a longer time. This period roughly covers the age from one year and nine months to the age of three years. The longitudinal character of the data allows us to investigate the development of the determiner over the course of time, which gives more insight into the nature of the acquisition process. The audiotapes were transcribed such that digital access to the data is possible.

I thank Patsy Lightbown for the data.
The languages focussed on in the present thesis are French and Dutch. Section 3.1 describes the properties of these languages in more detail. An overview of the child corpora that are used in this study can be found in sections 3.2 to 3.4. Section 3.5 contains additional information about the method of the quantification of the data.

3.1 Adult System

In this thesis, I will investigate determiner acquisition in French and Dutch. This language choice is motivated by the fact that the contrast between a Romance and a Germanic language offers interesting possibilities. A first contrast between French and Dutch with respect to DP properties concerns the presence of the determiner. In French, the determiner is obligatory in most contexts (for exceptions, see e.g., Roodenburg 2004) while in a Germanic language like Dutch, determiner omission is more frequent. In Germanic languages, the presence of the determiner depends on aspectual properties of the verb and on semantic properties of the noun. The determiner is omitted in plural count nouns with a generic interpretation (cf. (3)) and singular mass nouns with non specific reading (cf. (4)). The examples illustrate that when these nouns are preceded by an adjective, they can appear without a preceding determiner. In contrast, mass nouns and plural count nouns must always be preceded by a determiner in French (cf. (5) and (6)). This also holds for adjective-noun combinations. In contrast to Dutch, French has an indefinite plural article: *des*. Note that when a plural noun is preceded by an adjective, *de* is used instead of *des* (cf. (5)c)).

(3) Ø (kleine) zebra’s zijn schattig
small zebras are cute

(4) Ø (koud) water
cold water

(5) a. *(les) petits* zèbres sont mignons
the small zebras are cute

 b. je vois des zèbres
I see indef.pl zebras

‘I see zebras’
c. de petits zèbres 
\textit{indef.pl small zebras}

(6) *(le) bon vin 
\textit{the good wine}

A second contrast between French and Germanic DPs concerns the position of the attributive adjective. In Dutch, adjectives are only allowed in the prenominal position (cf. (7)) whereas in French, both prenominal and postnominal adjectives are possible (cf. (8)). For most adjectives the canonical position is after the noun, although many adjectives may appear in prenominal position for semantic, pragmatic or prosodic reasons. There is a small lexical set of highly frequent adjectives that always appear in prenominal position.

(7) a. een grote / groene auto Dutch
\begin{align*}
\text{a} & \text{ big / green car} \\
\text{b. *een auto grote / groene} \\
\text{a} & \text{ car big / green}
\end{align*}

(8) a. une grande voiture French
\begin{align*}
\text{a} & \text{ big car} \\
\text{b. une voiture verte} \\
\text{a} & \text{ car green}
\end{align*}

Thus, French and Dutch DP syntax differs with respect to the presence of the determiner and the position of the attributive adjective. Another difference concerns agreement: In French, both attributive and predicative adjectives agree in number and gender with the noun. In contrast, in Dutch only attributive adjectives agree with the noun.

Tables 1 and 2 illustrate the morphological properties of the determiner system of these languages. In French, the determiner expresses gender (masculine and feminine), number and definiteness. Furthermore, French has a partitive determiner (cf. table 1). Dutch also has two grammatical genders, neuter and common gender, which are expressed by the determiner. In addition, the determiner expresses number and definiteness (cf. table 2).
### Table 1. French determiner paradigm

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<th>Singular</th>
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<th>Plural</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Masculine</td>
<td>Feminine</td>
<td>Masculine</td>
</tr>
<tr>
<td>Definite</td>
<td>le, l’</td>
<td>la, l’</td>
<td>les</td>
</tr>
<tr>
<td>Indefinite</td>
<td>un</td>
<td>une</td>
<td>des</td>
</tr>
<tr>
<td>Partitive</td>
<td>du, de, d’</td>
<td>de la, de, d’</td>
<td>des, de, d’</td>
</tr>
</tbody>
</table>

### Table 2. Dutch determiner paradigm

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<th>Plural</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Common</td>
<td>Neuter</td>
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</tr>
<tr>
<td>Definite</td>
<td>de</td>
<td>het</td>
<td>de</td>
</tr>
<tr>
<td>Indefinite</td>
<td>een</td>
<td></td>
<td>Ø</td>
</tr>
</tbody>
</table>

### 3.2 French Children

In the present study, the data of four monolingual French children were investigated: Nathalie, Daniel, Max and Grégoire. All children were acquiring French as their first language and have parents who are native speakers.

Nathalie’s and Daniel’s data were collected and transcribed by Patsy Lightbown. Both children are being brought up in Montreal but their families have a European background and speak European French. Nathalie has a younger brother; her father has university degrees from France and Canada, and her mother stays at home.2

Max’s data are part of the York corpus in the CHILDES database. The data were collected under the supervision of Bernadette Plunkett. The transcriptions were checked and coded by Cécile De Cat. Max has an older brother. His parents both have a baccalauréat degree. Like Daniel and Nathalie, Max is also being brought up in Canada. In Max’s surrounding, Canadian French is spoken, which differs from European French in a number of aspects. These differences concern some syntactic constructions and the vocabulary but not the presence of the determiner. His data were therefore decided to be suitable for the purpose of the present study. Grégoire and his parents live in Paris. He has two older brothers. Both parents have college

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2 For Daniel, no information about the education of his parents nor about possible siblings was available.
degrees. The recordings were videotaped, transcribed, and coded by Christian Champaud. Tables 3 and 4 give an overview of the files included in the study.

Table 3. French children Lightbown corpus

<table>
<thead>
<tr>
<th>Nathalie</th>
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<th>Daniel</th>
<th>Age</th>
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<td>1;08.07</td>
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<td>1;08.21</td>
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<td>1;11.14</td>
<td>3</td>
<td>1;09.21</td>
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<td>2;00.07</td>
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<td>1;11.07</td>
</tr>
<tr>
<td>6</td>
<td>2;02.14</td>
<td></td>
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<td>7</td>
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Table 4. French children CHILDES corpus

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<th>Grégoire</th>
<th>Age</th>
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<td>22</td>
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<td></td>
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<tr>
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<tr>
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<tr>
<td>31</td>
<td>2;11.24</td>
<td></td>
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<td>34</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>3;02.23</td>
<td></td>
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</tbody>
</table>

\(^3\) In the Lightbown corpus the age of the children is indicated in weeks. In order to facilitate the comparison with the other children, I converted the age into the\textit{year;month.day} format.
In Nathalie, Daniel and Grégoire, all files were included in the study. The age of the children is indicated as year;month.day. In Max, all files up to file number 13 (2;03.06) were included (there is no file number 5). After that age, recordings in intervals of one month were chosen until the end of the recordings. The reason for this is that the present study is especially interested in the early stage where children still omit the determiner. From 2;03.06 onwards, the overt production of the determiner in Max is already higher than 90%. Therefore, the analysis of Max’s data concentrates in particular on the recordings taken before this moment.

### 3.3 Dutch Children

For the investigation of Dutch first language acquisition, the two monolingual children Daan and Tomas were analysed. The data is part of the Groningen corpus available in the CHILDES database (Ruhland, Wijnen and Geert 1995, Bol 1996). Both children were brought up in Groningen and were acquiring Dutch as their first language. Daan’s parents are university students. He has a younger sister. The files were compiled by Paulien Rijkhoek and checked by Puck Goossens.

<table>
<thead>
<tr>
<th>File number</th>
<th>Age</th>
<th>File number</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1;08.21</td>
<td>1</td>
<td>1;07.05</td>
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<tr>
<td>2</td>
<td>1;09.09</td>
<td>3</td>
<td>1;08.03</td>
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<tr>
<td>3</td>
<td>1;10.01</td>
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<tr>
<td>6</td>
<td>2;00.04</td>
<td>9</td>
<td>2;00.13</td>
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<tr>
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<td>11</td>
<td>2;02.01</td>
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<tr>
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<td>2;03.04</td>
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<tr>
<td>34</td>
<td>3;03.30</td>
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</tbody>
</table>
The files of Tomas were compiled by Caroline Elskamp and checked by Paulien Rijkhoek. Tomas has a younger brother, and his parents have an academic education. In Daan and Tomas, recordings with one-month intervals were chosen. Table 5 gives an overview of the files investigated here.

### 3.4 French-Dutch Bilingual Children

In order to get as complete a picture of DP acquisition as possible, it was necessary to compare certain aspects of monolingual and bilingual acquisition data. Therefore, data from two French-Dutch bilingual children, Anouk and Annick, were included in the analysis. The data are part of the corpus collected at the University of Amsterdam under the supervision of Aafke Hulk and Elisabeth van der Linden (Hulk and van der Linden 1996, Hulk and Müller 2000, Van der Linden 2000, Van der Linden and Blok-Boas 2005). Both children are being brought up in the Netherlands, and all parents have an academic education. Anouk is the only child of a French mother and a Dutch father. Annick has a French father and a Dutch mother. At the moment of the recording, she had one younger sister. All parents use the “one parent, one language” strategy. An analysis including MLU, MMU, Upper Bound, and vocabulary richness has shown that both children are balanced bilinguals (Berkhout-Gerrits 2006). For the present study, only the French recordings were analysed (cf. table 6). For Anouk, I included the first and the last recording and in addition, six files as close to one-month intervals as possible, representing a cross-section of the corpus. In Annick the intervals between the recordings were longer than one month, and, therefore, all recordings were included.

<table>
<thead>
<tr>
<th>Anouk</th>
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<th>Age</th>
<th>Annick</th>
<th>File number</th>
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<td>1</td>
<td>2;05.10</td>
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<tr>
<td>3</td>
<td>2</td>
<td>2;04.17</td>
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<td>2;07.10</td>
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<tr>
<td>6</td>
<td>3</td>
<td>2;05.20</td>
<td>3</td>
<td>2;09.10</td>
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<tr>
<td>7</td>
<td>4</td>
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<td>3;01.26</td>
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<tr>
<td>8</td>
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<tr>
<td>13</td>
<td>8</td>
<td>2;11.27</td>
<td>8</td>
<td>3;09.12/3;09.17</td>
<td></td>
</tr>
</tbody>
</table>
3.5 Counting Criteria

The present study includes a quantificational analysis of the child data. Therefore, instances involving nouns, proper names and pronouns were counted in the children’s speech. This section deals with the considerations made with respect to what kind of utterances were included in the analysis.

The criteria for counting utterances in first language acquisition data often vary among researchers, potentially leading to different results in the quantification and to problems with respect to the comparability of different studies. In order to make my analysis comparable to previous studies on determiner acquisition, I followed Granfeldt’s (2000b), Hulk’s (2004) and Kupisch’s (2004) counting criteria for determiners. I excluded proper names, repetitions of the same noun unless interrupted by either an utterance of the parent or the child itself, imitation with or without determiner directly following a parent’s utterance, completion, incomprehensible utterances of the type ‘DET xxx’ and language mixed utterances. Furthermore, I did not count more than two repetitions of the same noun unless interrupted by either an utterance of the interlocutor or the child itself. The Dutch child Daan stutters sometimes. In these cases only the first production of a noun was included. Like Granfeldt, Hulk and Kupisch, I included possessives, numerals, quantifiers, partitives and demonstratives, all of which were counted as determiners. Furthermore, all children occasionally produced phonologically reduced forms of the determiner, which are referred to as protodeterminers in the acquisition literature. As illustrated here with an example from French, these protodeterminers can for instance have the form *l. neige* (‘protodeterminer definite article + snow’) and *ə wou wou* (‘protodeterminer indefinite article + dog’). Like Kupisch, I included these reduced forms of the determiner into the count. This decision was made because the present study is especially interested in the syntactic development of the child. The fact that the child produces a proform of the determiner is evidence that he is aware of the prenominal position but might still have problems in pronouncing the correct form. As the focus of the present study is on the syntactical rather than the phonological development of the child, these forms were included into the count. Notice that the transcripts of the spontaneous speech have their limitations in the sense that the transcription is only an approximation to what has actually been said. Another decision concerned the number of utterances included into the analysis. The files of the Dutch children Daan and Tomas contained a large amount of data. Therefore, the number of nouns included into the count was limited to the first 100 nouns per recording.
In many languages that have determiners, the determiner is omitted under certain semantic conditions and in some expressions. As pointed out above, in a Germanic language like Dutch, the determiner can be omitted in mass nouns and plural count nouns (cf. (3) and (4)). Furthermore, in both Dutch and French the determiner can be omitted in certain expressions (cf. (9) and (10)). This makes it difficult to decide whether the absence of a determiner observed in a child utterance in these contexts is systematic or not. Therefore, bare nouns that were licensed in the target language were excluded from the count.

(9) op tafel / op bed
    on the table/ on the bed

(10) par terre
     on the floor

In contrast to Pannemann (2006a), in the French data I excluded un peu (‘a bit’), (encore) une fois (‘again a time’) and un autre (‘an other’) as determiner-noun combinations because their status as noun is questionable. Both their morphological and distributional properties are atypical for nouns. Un peu cannot carry a plural marker, and it cannot combine with an adjective other than petit with which it forms a fixed expression (cf. (12)).

(11) a. un peu/ * deux peus
     a bit/     two bits
b. un petit peu
     a little bit
c. un *bon/ *mauvais peu /*rouge
     a good/  bad       bit     red

(12) a. une fois/ deux fois
     a time/ two times
b. une deuxième/ *grande/*petite/*bonne fois
     a second/     big/  small /good time

As illustrated in (12), une fois can be pluralized, but it can combine only with numbers and not with adjectives. Un autre is likely to be a substantivised adjective but in some cases it was impossible to decide whether autre was a noun or an

\footnote{For arguments supporting the view that peu is a noun, I refer to Kayne (2005).}
adjective. Only in contexts where autre combined with a noun did I include autre as an adjective. Likewise, I excluded (nog) een keer (‘again a time’) in the Dutch examples.
2 REQUIREMENTS FOR A THEORY OF DP ACQUISITION

1. Introduction

As pointed out in the previous chapter, the interest of the present thesis is to develop a theory of first language acquisition of the DP. Such a theory has two important obligations: First, it should capture the empirical facts. Second, it should be coherent with the theoretical assumptions developed in the framework so far. The present chapter focuses on these obligations. The requirements are illustrated by a survey of the relevant literature, supplemented by results from my own research. Section 2 deals with the first obligation, i.e., the empirical observations: I present the development of DP acquisition as described in previous cross-linguistic studies, with a focus on the syntactic development. Based on the observations made in these studies, I formulate six empirical requirements for a DP acquisition theory. Section 3 is an inventory of the theoretical assumptions. Two positions can be distinguished in theories of DP acquisition. According to some researchers, functional categories such as D are absent or not available at the onset of acquisition. A contrasting view is that the D-layer is actually present from early on. I present and discuss previous approaches to DP acquisition with special attention to these two opposing viewpoints. This discussion leads to four theoretical requirements for a theory of DP acquisition. Section 4 summarises the 10 requirements and concludes the chapter.

2. Empirical Requirements

Independently of the theoretical background, any model has to capture the empirical properties of the investigated phenomenon. Therefore, the empirical results of studies investigating first language acquisition of the DP will be the focus of the present section. The aim is to get as complete a picture of determiner acquisition as possible. Consequently I will include studies investigating the perceptive knowledge of very young children before they even start to speak. The results of these experiments are presented in section 2.1. The subsequent development of the determiner in the production of the child will be illustrated based on longitudinal
data. The studies presented in section 2.2 and 2.3 roughly cover the age period between one and a half years and three and a half years. These two sections include results from my own research. Based on the observations illustrated in the present section, I formulate six empirical requirements of DP acquisition any acquisition model has to account for.

2.1 Early Representation of the Determiner

This section deals with the very early representation of the determiner in the children’s grammar. Researchers agree that children have knowledge about the properties of the input language before they start to speak. In other words, perception in first language acquisition precedes production. Numerous studies investigated very young children by means of head turn experiments, preferential looking tasks and non-nutritive sucking experiments. In this subsection, I summarise several studies that have been designed to explore early grammatical knowledge of determiners and nouns. Two questions are in focus here: Do children have a representation of the determiner before they start to produce it? And what are the phonological and syntactic properties of the representation of the determiner at this early stage?

At the onset of first language acquisition, the child faces the difficult task of segmenting the speech stream: He has to identify phonological forms and to link them to semantic and syntactic properties. This also holds for the acquisition of the determiner. Christophe, Guasti, Nespor, Dupoux and Van Ooyen (1997) propose that prosodic information in the input guides the acquisition of determiners and other function words. Based on the idea of the phonological bootstrapping hypothesis (cf. Morgan and Demuth 1996, Morgan, Shi and Allopenna 1996), Christophe et al. (1997) argue that children can acquire function words through a distributional analysis of the input. Function words like prepositions, pronouns or determiners share a number of properties that increases their accessibility: They are short, highly frequent and characteristically appear at the edge of phonological phrases. Whether they occur at the left or right edge depends on the headed-ness of a language. Several experiments suggest that children are able to perceive phonological phrase boundaries during the first year of life. For instance, Gerken, Jusczyk and Mandel (1994) found that 9-month-old American infants were sensitive to interruptions in phonological phrases. Furthermore, Gout, Christophe and Morgan (2004) have shown that phonological phrase boundaries had an effect on lexical access in 10 and 13-month-old American infants. In this experiment, the children were familiarised
with the target word *paper*. In a test phase, they reacted to the target word only when it occurred in intact phrases but not when it was disrupted by a phonological phrase boundary as in *The outstanding pay # persuades him to go to France*. In addition, it has been shown that very young children (6-12 weeks) can perceive prominence within a phonological phrase: Christophe, Nespor, Guasti and Van Ooyen (2003) tested monolingual French children in a non-nutritive sucking experiment. The test material consisted of French and Turkish sentences where the original words had been replaced by meaningless syllables for the experiment (re-synthesis). French is a head initial language, and hence the prominence in the phonological phrase falls on the final syllable. The opposite holds for a head final language like Turkish where the prominence falls on the initial part of a phonological phrase. The experiment showed that the children were able to distinguish between the French and Turkish re-synthesised sentences.

Thus, children are sensitive to phrase boundaries, and in addition they can perceive prominence within a phonological phrase. Christophe et al. (2003) propose that children are able to use exactly this information in order to acquire the determiner. As pointed out above, function words typically occur at the edge of phonological phrases. Christophe et al. (2003) argue that children are not only able to perceive the phrase boundaries, but in addition, they have an innate strategy to look for phonological material at the edge of phonological phrases. The observation that children can perceive prominence suggests that the head-direction parameter is set very early and could help the child to decide at which edge of the phonological phrase to seek for phonological material. Consequently, babies could compile a list with syllables occurring at the edge of phonological phrases, storing the most frequent syllables in a separate list. This might take place at the onset of the acquisition process and before the end of the first year of life. In sum, the children’s ability to perceive phrase boundaries and prominence could be seen as a prerequisite in order to acquire the determiner.

It is thus conceivable that at this stage the child has stored a list of functional elements, including the determiner. In turn, the presence of such a list is likely to increase the attention of the child towards the determiner in the input. Indeed, a number of studies have shown that children are sensitive to the presence of function words before they start to produce them regularly. For instance, it has been shown that English children in the two-word phase better comprehend utterances which include determiners and other function words than utterances where the function word is omitted (*Get me the ball* vs. *Get ball*) (Shipley, Smith and Gleitman 1969, Petretic and Tweney 1977). This discrepancy could be due, however, to the unusual prosodic pattern of the utterance. Therefore, a number of studies have used
test material where real determiners were replaced by filler syllables. These studies have shown that young children can distinguish non-determiners from real determiners. For instance, 11-month-old English children discriminate between stories containing real determiners (the) and nonsense determiners (guh) (Shady 1997, Shafer, Shucard, Shucard and Gerken 1998). Similar results have been found for French: Hallé, Durand and De Boysson-Bardies (2006) tested 11-month-old French children in a preferential looking task. The material consisted of article + noun versus pseudo articles + noun combinations. For monosyllabic unfamiliar nouns there was a moderate preference for the true article, and in disyllabic familiar nouns there was a strong preference for the true article. Thus, children preferred combinations like le canard (‘the duck’) over ré canard (‘pseudo article + duck’). Hallé et al. conclude that children identify articles in simple contexts and that articles help children to recognise familiar words when they hear them in the experiment.

The results of these studies show that determiners are more than prosodic fillers in the speech stream: They must have a phonological representation in the children’s grammar. However, there is one important point to mention: Determiners are unstressed syllables. According to a number of studies (Echols and Newport 1992, Vihman, Nakai, DePaolis and Hallé 2004), stressed syllables are better represented than unstressed syllables. More specifically, according to Vihman, Nakai, DePaolis and Hallé (2004) the onset consonant of the accented syllable anchors lexical representation. In a iambic language like French, the second syllable of a disyllabic word is stressed. Consequently, altering of the onset consonant of the unstressed first syllable does not make a difference whereas altering of the onset consonant of the second syllable blocks word recognition. Evidence supporting this view comes from a head-turn experiment conducted by Hallé and De Boysson-Bardies (1996): 11-month-old French children recognised familiar words even if the initial consonant was changed. For instance, if they knew the word canard, they also looked longer during the presentation of the word ganard and Shanard. Vihman et al. (2004) predicted that in a trochaic language like English the opposite effect should be observed: In English the first syllable of a word is usually stressed, and, therefore, altering the onset consonant of the unstressed second syllable should not make a difference. This is indeed the case. In a head-turn experiment, 11-month-old English children failed to recognise familiar words when the onset of the accented first syllable was changed but did recognise them when the onset of the unaccented second syllable was changed. In conclusion, these studies support the view that unstressed syllables are less salient in perception. As the determiner typically occurs in unstressed syllables, it is remarkable that children are able to distinguish non-
determiners from true determiners as pointed out above. Hence, a theory of DP acquisition has to take into account that the determiner is part of the list of left-edge elements even though its phonological representation might be less salient due to its unstressed status.

So far we have seen that around the age of 11 months children are sensitive to occurrences of the determiner in the input. Up to this point we have not dealt with the syntactic status of the determiner. A number of researchers have suggested that the presence of the determiner helps the child to bootstrap the syntactic category of the subsequent content word. Christophe, Nespor, Guasti and Van Ooyen (2003) propose that function words help to discover and categorise lexical words as nouns and verbs. As illustrated above, they argue that the child establishes a list of elements occurring at the edge of phonological phrases. In a next step, the elements contained in this list could help identify the rest of the string as a content word. The function words might thus facilitate an initial segmentation of the input. Moreover, Christophe et al. (2003) put forward the idea that the function words have the ability to label the following content word as a member of a particular word class. This would imply that children could use the determiner to predict that the following word is a noun. Höhle, Weissenborn, Kiefer, Schulz, and Schmitz (2004) investigated whether children could indeed use the information of the determiner in order to categorise non-words as nouns. They tested young German children in a head turn experiment. The children were familiarised with two determiner + pseudo-word sequences (ein glamm, ein pronk, cf. (1)a). In a test phase, the pseudo-word was used in a syntactic position incompatible with its use in the familiarisation phase, i.e., as a verb (cf. (1)b). In a group of young children (12-13 months), there was no significant difference between nonsense words in a noun context or a verb context. However, in a second group of children aged between 14 and 16 months, there was a significant difference between listening to noun passages (familiarised) and verb passages (unexpected for the child); children listened longer to verb passages like in (1)b.

\[(1)\]
\[\begin{align*}
\text{a. familiarisation phase:} & \\
& \text{Das kleine Kind vergaß den Pronk dort.} \\
& \text{The little child forgot the pronk there.} \\
\text{b. test phase:} & \\
& \text{Der Förster pronk jeden Tag im Wald.} \\
& \text{The ranger pronk(ed) every day in the forest.}
\end{align*}\]
Höhle et al.’s interpretation of these results is that infants use the information given by the determiner to classify the following novel word as a noun. According to them, children must already have established a lexical representation about syntactic co-occurrence restrictions and can use this knowledge to classify unknown words syntactically.

A few remarks with respect to this hypothesis are necessary here: The first point to mention concerns the question whether the determiner actually helps to bootstrap the category of a novel word. Notice that in Höhle et al.’s study there was a familiarisation phase in which the non-word was repeatedly introduced with a determiner. Hence, during the familiarisation, the children learned during several repetitions that the words *glamm* and *pronk* are preceded by a determiner. However, this does not say anything about what happens if the child encounters a word for the very first time and whether the child uses the information on the determiner to categorise the novel word. And in fact, the study by Hallé et al. (2006) shows that the child’s familiarity with the noun in question plays an important role in the recognition effect of the determiner. Recall that in this experiment there was no experimental familiarisation phase. During the test, the children were exposed to *article + noun* versus *pseudo-articles + noun* sequences. Hallé et al. found that the children’s preference for the article over a pseudo article depended on the nouns used. The test material consisted of highly frequent nouns likely to occur in the children’s input (familiar) and low frequent words (unfamiliar). In fact, the children’s familiarity with these nouns played an important role: In disyllabic familiar nouns, the children preferred the true article. In contrast, in monosyllabic unfamiliar nouns the presence of a true determiner had only a moderate recognition effect and in disyllabic unfamiliar nouns there was no recognition effect at all. This suggests that at this age, the determiner helps the children to recognise familiar nouns, but articles do not necessarily help the children to recognise words they hear for the first time.

A second point to mention is that the novel words in Höhle et al.’s study were presented in a full sentence during the familiarisation phase. Therefore, we cannot exclude the possibility that the children also made use of other strategies in order to categorise the novel word as a noun. It is very conceivable that the child relies on other sources of information such as pragmatics, theta-role assignment or the canonical subject and object position. This possibility is supported by the fact that there are languages without determiners like e.g. Mandarin, Cantonese, Russian or Croatian. Children acquiring such a language cannot use the determiner in order to categorise unknown nouns but must rely on other strategies.
The last remark concerns the idea that the determiner predicts the category of the following word. Notice that at this stage, there is no reason to assume that the determiner should have this ability. Recall that Christophe et al. (2003) propose that children make a list of syllables found typically at the edge of phonological phrases. Consequently, this list contains determiners, but in addition to that, other functional elements like prepositions and pronouns are part of the same list (here illustrated for English, cf. (2)). Hence, it does not follow that the determiner should have the capacity to predict that the subsequent word is a noun whereas this does not hold for pronouns.

(2) “left-edge set”: {the, a, I, he, she, it, to, up,…}

To conclude this section, the studies summarised above have shown that children are sensitive to the presence of determiners in the input before they start to produce them. The children’s ability to perceive phonological phrase boundaries and prominence within these phrases might help them to find determiners and other functional elements in the speech stream and to store these elements in a list. This can be seen as the first grammatical representation of the determiner. The phonological and syntactic properties of the determiner at this stage seem to be still underspecified. Regarding the phonological representation, we have seen that unstressed syllables are less salient in the perception of young children (11 months). As the determiner is unstressed, this implies that its phonological representation might in some way be underspecified. However, it cannot be entirely underspecified because children are able to discriminate pseudo-determiners from true determiners, which is quite surprising considering the unstressed status of articles in the input.

With respect to the syntactic properties of the determiner, some researchers have suggested that children might use the determiner to categorise unknown words as nouns (Christophe et al. 2003, Höhle et al. 2004, Christophe 2006). However, Höhle et al.’s study involved a familiarisation phase in which the non-words were presented several times with a determiner in full sentences. Therefore, the children became more familiar with the nouns, and we cannot exclude the possibility that the children relied on other strategies in order to retrieve the category of the novel words. This view is supported by the results of Hallé et al.’s study (2006) where children did not recognise the determiner in unfamiliar words. This suggests that children do not use the information of the determiner, at least at the very first exposure to a new word. The determiner might however help to segment the following word in the speech stream. A theory of DP acquisition that is intended to capture all the stages of determiner acquisition has to take into account the
observation that young children are sensitive to the determiner in the input before they start to produce determiners. Hence, they must have a representation of the determiner, even though this representation is still phonologically and syntactically underspecified at this stage. This leads to a first requirement for a model of DP acquisition:

Requirement A:
Account for the fact that very young children have a grammatical representation of the determiner before they start to produce it.

2.2 Next Steps in the Acquisition of the Determiner Phrase

In the previous section we have seen that young children have a certain perceptive knowledge about the determiner before they start to speak. We turn now from the perception to the production of the determiner. The present section illustrates the emergence of the determiner and other DP internal elements in the speech of young children. Special attention will be paid to the systematic order in which these elements start to combine in the children’s speech. Furthermore, we will see that the developmental steps in the expansion of the DP are not clearly distinguishable. Rather, the child’s ability to combine more elements increases gradually, and during this process a lot of variation can be observed in the child’s output. This implies that at the moment the child is able to produce complex determiner-adjective-noun sequences, he can still omit the determiner in other nouns. This variation will be illustrated below by results of my own research.

Cross-linguistic studies agree that the child passes through the following stages in the process of DP acquisition (cf. Mills 1985, Chierchia, Guasti and Gualmini 1999a, Granfeldt 2000b, Eisenbeiß 2002, Kupisch 2004a among many others): In the one-word stage, the determiner is omitted and the first DP elements that emerge are bare nouns. The first adjectives also appear when the child is still in the one-word stage. Around the age of 18 months, children start to use two-word utterances. Now the first combinations of nouns with another element can be observed and children start to produce the determiner with nouns. It has been observed cross-linguistically that children produce phonologically reduced forms of the determiner (‘protodeterminers’). This is illustrated here with examples from French and Dutch (cf. (3)). The target determiner in the French example is un, and in the Dutch example een. Notice that protodeterminers co-occur with real determiners that are pronounced correctly by the child. Even though the children cease to
produce protodeterminers at a certain point, this co-existence can last for a while. For instance in the Dutch children Tomas and Daan, protodeterminers are observed until the end of the recordings (3;01.02 and 3;03.30 respectively).

(3) a. ə cochon French, Max (1;10.03)
    *(protodeterminer) pig*

b. ə fietsepomp Dutch, Tomas (2;0.13)
    *(protodeterminer) bicycle pump*

This leads us to the next requirement of a DP-acquisition model:

**Requirement B:**
Account for the occurrence of protodeterminers.

The acquisition of the determiner is a process that takes place gradually. Thus, at the moment that children start to produce determiners and protodeterminers, they still omit the determiner as illustrated in the examples in (4) and (5). This cross-linguistically observed phenomenon has been labelled as the *free variation stage* by Chierchia, Guasti and Gualmini (1999a, 1999b).¹

(4) a. pèse sur bouton French, Max (2;01.25)
    *press on button*

b. je vois le tunnel
    *I see the tunnel*

(5) a. even slokje drinken Dutch, Tomas (2;06.00)
    *just sip drink*
    *‘just take a sip’*

b. daar gaat de fles
    *there goes the bottle*

In a next developmental step, the noun can be preceded both by a determiner and a prenominal adjective or both. French –like other Romance languages– has postnominal adjectives. A number of studies have shown that in French first language acquisition, prenominal adjectives emerge slightly earlier than postnominal adjectives (cf. table 1).

¹ This manuscript by Chierchia, Guasti and Gualmini (1999b) has never been published but is circulated among researchers of first language acquisition and has received quite some attention.
Table 1. First emergence of prenominal and postnominal adjectives in monolingual French

<table>
<thead>
<tr>
<th>Name</th>
<th>Prenominal</th>
<th>Postnominal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grégoire*</td>
<td>2:00.05 (MLU 2.1)</td>
<td>2:05.01 (MLU 3.2)</td>
</tr>
<tr>
<td>Daniel**</td>
<td>1:08.07 (MLU 1.5)</td>
<td>1:08.21 (MLU 1.5)</td>
</tr>
<tr>
<td>Philippe**</td>
<td>2:01.19 (MLU 3.1)</td>
<td>2:02.03 (MLU 3.5)</td>
</tr>
<tr>
<td>Max***</td>
<td>1:11.00 (MLU 1.6)</td>
<td>2:02.09 (MLU 2.8)</td>
</tr>
</tbody>
</table>


Thus, DP acquisition is more than increasing the number of combining elements:
There is a particular order in which DP elements emerge. This observation is captured in requirement C:

**Requirement C:**
Account for the systematic order in the emergence of DP elements:
Nouns > determiners > prenominal adjectives> postnominal adjectives (in French)

Let us further explore the systematic order of emergence. A number of studies have investigated possible restrictions on the distribution of DP-internal elements. This section focuses on the restrictions of elements preceding the noun. Clahsen, Eisenbeiß and Vainikka (1994) investigated the acquisition of the DP in the German child Simone between 1;10 and 2;09. In the recordings between 1;10 and 2:00 the determiner was omitted in 113 of 116 noun phrases containing an adjective. Based on this observation, Clahsen et al. point out that determiners and adjectives appear in “nearly complementary distribution” (Clahsen, Eisenbeiß and Vainikka 1994). Eisenbeiß (2000) conducted a study of five longitudinal and two cross-sectional corpora of German child language (age range 1;11- 3;6, MLU 1.2 – 4.2). In four of the seven children, she found an early stage where determiners and adjectives alternate in prenominal position similar to Clahsen et al. (1994). This

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2 The notion of “complementary distribution” was originally introduced in phonological theory (Kensinger 1963). It has been applied generally to linguistic forms in order to capture relations between forms whose distribution does not overlap. However, this does not apply here because determiners and adjectives do appear in the same environment, i.e., in prenominal position. Therefore, it is preferable to say that determiners and adjectives are “mutually exclusive in prenominal position”.
empirical observation is relevant to mention here because based on this observation, Clahsen et al. concluded that at this stage “the child’s grammar provides only one structural position for prenominal modifiers” (Clahsen et al. 1994: 100).

This view has been applied to French first language acquisition by Müller (1994), Granfeldt (2000a) and Hulk (2004): They argue that similarly to German first language acquisition, French children pass through a stage where nouns can be preceded by a determiner or a prenominal attributive adjective but not both. Hence, determiners are not present in adjective-noun combinations (cf. (6) a and b (examples from Granfeldt 2000a: 274, the age is given in years and months)). As the occurrence of determiners and prenominal adjectives is mutually exclusive at this stage, D-A-N utterances as in (6)c are still absent. Müller, Granfeldt and Hulk take this observation as evidence that at this stage there is only one structural position for prenominal elements.

(6)   a.   petit bonnet    French, Jean (2;2)  
       little.MASC cap       
       
   b.   petit chat encore    French, Mimi (2;0)  
       little.MASC cat more       
   c.   # un petit chat
       a small cat

Two remarks are necessary here: First, there is evidence that determiners and adjectives can actually co-occur: Clahsen et al. report the co-existence of D-A-N and A-N sequences in the later files of the German child Simone. In addition, Eisenbeiẞ finds that determiners and adjectives alternate in prenominal position in only four out of seven children. Furthermore, a closer look at the studies on the acquisition of the French DP reveals that A-N and D-A-N combinations do appear in the same files (Granfeldt 2000a, Granfeldt 2000b) although this variation in the data is not commented on. This variability contradicts the claim that determiners and adjectives are mutually exclusive in prenominal position.

A second remark concerns the French data: Notice that the observations by Müller and Granfeldt and Hulk are based on the French production of French-Germanic bilingual children: Müller (1994) investigated French-German bilingual children, Granfeldt (2000a) investigated the combination French-Swedish, and Hulk (2004) study concerns a French-Dutch bilingual child. With regard to the bilingual acquisition context it might be problematic to draw general conclusions from this data as we cannot exclude interference between the two languages. In fact, in all cases the language acquired simultaneously with French is a Germanic language
where A-N combinations without a preceding determiner are possible in adult language under certain semantic conditions: In German, Dutch and Swedish, determiner omission in plural nouns (cf. (7)) and singular mass nouns is grammatical (cf. (8)). Hence the determiner omission in A-N combinations observed in the abovementioned studies could be an effect of the bilingual acquisition context.

(7) a. (kleine) Zebras sind niedlich German
    b. (små) sebror är söta Swedish
    c. (kleine) zebra’s zijn schattig Dutch

(8) a. (kaltes) Wasser German
    b. (kallt) vatten Swedish
    c. (koud) water Dutch

In order to exclude the possibility of interference, it is necessary to compare monolingual to bilingual first language acquisition and to investigate whether monolingual French children also pass through a stage where the determiner and the adjective are mutually exclusive in prenominal position. An analysis of the DP in two French monolingual children, Max and Daniel (Pannemann 2006a, Pannemann and Gijzel 2007) shows no evidence for such a stage. The data in these studies consist of two longitudinal corpora of spontaneous speech recordings (see chapter 1 for an overview of the data). In order to investigate the distribution of determiners and prenominal adjectives, the occurrences of bare nouns (N), determiner-noun sequences (D-N), adjective-noun sequences (A-N), and D-A-N, N-A and D-N-A sequences in both children were counted. Table 2 shows the result of this quantitative analysis for Max. In the first three recordings, he does not produce adjective-noun combinations. From 1;11.00 onwards, he starts to produce adjective-noun combinations with and without determiners. After 2;00.28, Max does not omit the determiner in adjective-noun sequences. Thus, the existence of a stage where determiners and adjectives are mutually exclusive in prenominal position cannot be confirmed for Max.

Notice that in Max there were only a few instances of A-N combinations. Even more convincing evidence comes from the other French child, Daniel. Table 3 illustrates the distribution of DP elements in Daniel’s data. Especially the third, fourth and fifth file (1;9.21-1;11.7) clearly show that the distribution of determiners
and prenominal adjectives is not mutually exclusive and thus that D-A-N and A-N utterances co-exist.\(^3\)

### Table 2. Distribution of DP internal elements in Max

<table>
<thead>
<tr>
<th>Age</th>
<th>MLU</th>
<th>N</th>
<th>D-N</th>
<th>A-N</th>
<th>D-A-N</th>
<th>N-A</th>
<th>D-N-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>M(1) 1;09.19</td>
<td>1.1</td>
<td>16</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M(2) 1;10.03</td>
<td>1.1</td>
<td>12</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M(3) 1;10.17</td>
<td>1.4</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M(4) 1;11.0</td>
<td>1.6</td>
<td>29</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M(6) 2;0.0</td>
<td>1.7</td>
<td>24</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M(7) 2;0.14</td>
<td>1.8</td>
<td>16</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M(8) 2;0.28</td>
<td>1.9</td>
<td>10</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M(9) 2;01.16</td>
<td>2.2</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M(10) 2;1.25</td>
<td>2.3</td>
<td>5</td>
<td>11</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M(11) 2;02.9</td>
<td>2.8</td>
<td>4</td>
<td>23</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>M(12) 2;2.22</td>
<td>2.5</td>
<td>4</td>
<td>28</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>M(13) 2;3.06</td>
<td>2.8</td>
<td>1</td>
<td>31</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

### Table 3. Distribution of DP internal elements in Daniel

<table>
<thead>
<tr>
<th>Age</th>
<th>MLU</th>
<th>N</th>
<th>D-N</th>
<th>A-N</th>
<th>D-A-N</th>
<th>N-A</th>
<th>D-N-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(1) 1;08.07</td>
<td>1.5</td>
<td>113</td>
<td>43</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>D(2) 1;08.21</td>
<td>1.5</td>
<td>61</td>
<td>20</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>D(3) 1;09.21</td>
<td>1.7</td>
<td>96</td>
<td>44</td>
<td>11</td>
<td>8</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>D(4) 1;10.07</td>
<td>2.3</td>
<td>100</td>
<td>51</td>
<td>27</td>
<td>14</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>D(5) 1;11.07</td>
<td>2.5</td>
<td>45</td>
<td>38</td>
<td>17</td>
<td>13</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

A similar observation has been made for the monolingual French child Grégoire investigated by Granfield (2000b). The data of Grégoire is available in the CHILDES database (MacWhinney and Snow 1990). Until the age of 2;01.24, Grégoire hardly produces adjective-noun contexts. Then, at 2;03.01, Grégoire produces 20 A-N combinations and 7 D-A-N combinations. Thus in Grégoire, too, determiner and adjectives are not mutually exclusive.

\(^3\) One could argue that A-N combinations at this stage are fixed units. However, this cannot be confirmed as there is a considerable amount of variation among the adjectives in Daniel (cf. Pannemann 2006b).
We have thus seen that the claim that French children pass through a stage where determiners and adjectives are mutually exclusive in the prenominal position cannot be confirmed for the monolingual children. In order to get a better comparison between monolingual and bilingual French, let us have a closer look at the bilingual acquisition data in a French-Germanic bilingual situation. For this I analysed the data of the two French-Dutch bilingual children Annick and Anouk from the UvA corpus. Table 4 shows the acquisition of A-N combinations in the French production of the French-Dutch bilingual child Annick. Between the ages of 2;05.10 and 2;09.10, there are two A-N combinations, and Annick indeed omits the determiner in these contexts. This could be seen as evidence for a stage where determiners and prenominal adjectives are mutually exclusive as has been observed by Müller, Granfeldt and Hulk. However, the small number of instances is not a strong support for this interpretation. From 3;01.26 onwards, D-A-N combinations occur in Annick’s production. Notice that Annick still sometimes omits the determiner in A-N combinations until the end of the recordings (3;09.12).

<table>
<thead>
<tr>
<th>Age</th>
<th>MLU</th>
<th>Total # of Nouns</th>
<th>D missing %</th>
<th>D-A-N</th>
<th>A-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ai(1) 2;05.10</td>
<td>2.9</td>
<td>71</td>
<td>17</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Ai(2) 2;07.10</td>
<td>2.1</td>
<td>43</td>
<td>51</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ai(3) 2;09.10</td>
<td>2.0</td>
<td>48</td>
<td>89</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Ai(4) 3;01.26</td>
<td>2.5</td>
<td>62</td>
<td>13</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Ai(5) 3;04.08</td>
<td>3.3</td>
<td>75</td>
<td>20</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Ai(6) 3;05.08</td>
<td>3.1</td>
<td>58</td>
<td>12</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Ai(7) 3;08.05</td>
<td>&gt;3.1</td>
<td>8</td>
<td>13</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ai(8) 3;09.12/3;09.17</td>
<td>&gt;3.1</td>
<td>119</td>
<td>13</td>
<td>13</td>
<td>5</td>
</tr>
</tbody>
</table>

The picture is even clearer for the French-Dutch bilingual child Anouk. Between the ages of 2;04.17 and 2;11.27, Anouk has a tendency to omit the determiner in A-N combinations (cf. table 5, Pannemann (2006b)). This tendency is stronger than in the monolingual children Daniel or Max (cf. tables 2 and 3 vs. table 5). After the first prenominal adjectives emerge at 2;04.17, Anouk leaves out the determiner in the majority of the A-N combinations until 2;08.03. From 2;11.27, the picture changes, and the majority of A-N combinations is preceded by a determiner.
A similar development can be confirmed for Jean, Anne and Mimi, three French-Swedish bilingual children investigated by Granfeldt (2000a). Jean, whose stronger language is Swedish, has a strong tendency to omit the determiner in A-N combinations in his production of French until the age of 2;9. He omits the determiner in 18 out of 20 A-N contexts (cf. table 6, the age of Jean is given in years and months). From 2;11 onwards, there is a change, and Jean produces the determiner in the majority of A-N contexts. The fact that in Swedish the determiner can be omitted in plural count nouns and mass nouns (cf. (7) and (8)) might have a possible influence on the determiner omission observed Jean’s French.

Similarly to Jean, Anne and Mimi pass through a stage where the determiner is omitted in A-N combinations. Interestingly, this stage does not last as long as in Jean. Anne produces the determiner in the majority of A-N contexts from 2;6 onwards (MLU 1.9). Between the age of 2;6 and 4;0, she omits the determiner only in three out of 24 A-N contexts. Likewise, Mimi consistently produces D-A-N combinations from 2;2 onwards (MLU 3.2). In the period from 2;2 to 3;7, the determiner is omitted only in one out of 25 A-N contexts. Note that both Anne’s and Mimi’s stronger language is French, in contrast to Jean. This might indicate that language dominance and interference play a role in the observed determiner omission in A-N contexts.
### Table 6. D-A-N and A-N combinations in Jean

<table>
<thead>
<tr>
<th>Age</th>
<th>MLU</th>
<th>Total # of nouns</th>
<th>D missing %</th>
<th>D-A-N</th>
<th>A-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>J(1) 1;10</td>
<td>1.6</td>
<td>33</td>
<td>51</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>J(2) 2;0</td>
<td>1.3</td>
<td>89</td>
<td>86</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>J(3) 2;2</td>
<td>1.5</td>
<td>35</td>
<td>89</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>J(4) 2;4</td>
<td>1.3</td>
<td>46</td>
<td>76</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>J(5) 2;6</td>
<td>2.0</td>
<td>24</td>
<td>42</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>J(6) 2;9</td>
<td>3.5</td>
<td>49</td>
<td>14</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>J(7) 2;11</td>
<td>2.8</td>
<td>35</td>
<td>34</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>J(8) 3;1</td>
<td>3.0</td>
<td>49</td>
<td>20</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>J(9) 3;3</td>
<td>3.0</td>
<td>38</td>
<td>32</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>J(10) 3;5</td>
<td>3.5</td>
<td>54</td>
<td>13</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>J(11) 3;7</td>
<td>3.6</td>
<td>35</td>
<td>20</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>J(12) 3;9</td>
<td>4.3</td>
<td>70</td>
<td>5</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

(numbers taken from Granfeldt (2000a: 272))

There is thus evidence from several studies that French-Germanic bilingual children tend to omit the determiner in A-N contexts. In fact, previous studies on French first language acquisition of the lexical determiner (Van den Berg 2001, Kupisch 2003, Hulk 2004) have shown that bilingual children who acquire French simultaneously with a Germanic language need more time to acquire lexical determiners than monolingual French children. For example, Van den Berg (2001) observes that the monolingual Grégoire reaches the 90% criterion for the correct use of determiners at 2;05.01 (MLU 3.3) and Philippe at 2;03.00 (MLU 3.6). Similarly, the monolingual French child Max investigated in the present thesis already crosses the 90% threshold at 2;03.06 (MLU 2.8, cf. chapter 4). In contrast, the bilingual children Anouk and Annick reach the 90% criterion at 3;03.17 (MLU 3.6) and 3;05.08 (MLU 3.1), respectively. Two possible explanations for this difference between monolingual and bilingual French come to mind. First, the delay in the acquisition of the DP in the bilingual children might indicate that there has been cross-linguistic influence from the Germanic language where determiner omission in A-N combinations is common in the input. The interference would then explain why the tendency to omit the determiner (in A-N combinations) is stronger in the bilingual children than in the monolingual children. However, a different interpretation of the delay is also conceivable: The observation that bilingual
children need more time to reach the next step of complexity in the combination of DP-elements could be caused by the fact that they have to acquire two languages at the same time. This task presumably requires more effort than acquiring only a single language.

To conclude, in previous studies it has been claimed that French children pass through a stage where determiner and adjectives are mutually exclusive in the prenominal position (Müller 1994, Granfeldt 2000a, Hulk 2004). However, these conclusions have been drawn based on bilingual acquisition data. As shown in the present section it seems to be the case that French-Germanic bilingual children generally need more time to acquire the determiner in A-N combinations than French monolingual children. In contrast, we have seen that monolingual children show a considerable overlap between D-A-N and A-N combinations. And, as pointed out above even in the studies by Clahsen et al. (1994), Eisenbeiß (2000) and Granfeldt (2000a, 2000b), A-N and D-A-N combinations occur in the same recordings. Any theory of DP acquisition has to capture this variability. Tables 2 and 3 actually illustrate that there is even more variability in DP elements. D-A-N utterances co-exist with A-N combinations, but also with bare nouns (N). Furthermore, determiner-noun combinations and bare nouns co-exist during the free variation stage (cf. (4) and (5)). The observed variety of DP elements leads us to the next requirement of a theory of DP acquisition:

**Requirement D:**

### 2.3 No Fixed Determiner-Noun Units

As pointed out above, Eisenbeiß (2000) also observed a restricted distribution of prenominal adjectives in some of the children. In contrast to Clahsen et al. (1994), she proposes a different account for the absence of determiners in noun phrases with adjectives. She relates the absence of D-A-N combinations to the status of early determiners. According to her analysis, early determiners in child language do not have the status of determiners but are impostors. They occur as unanalysed parts of formulaic utterances and “fixed” D-N units (cf. also Mills 1985). These combinations are assumed to be memorised as units by the children. D-A-N combinations are then excluded for two reasons: First, it is the fixed status of D-N combinations that makes the insertion of adjectives between determiners and nouns impossible. Second, A-N combinations can occur, but they are not preceded by a
determiner since “the presence of the adjective before the noun makes prosodically 
induced fillers superfluous” (Eisenbeiß 2000: 40).

On the basis of the results of the perception experiments described above, it 
would seem unlikely that determiners are parts of unanalysed units. Young children 
are able to perceive determiners in the input, and determiners seem to play a certain 
role in segmenting the speech stream. These observations indicate that the 
determiner has a representation in the child’s early grammar. Therefore, it becomes 
necessary to investigate in more detail the claim that determiners in early production 
are indeed parts of fixed units. Based on my own research (Pannemann 2006a), I 
will illustrate in this section that determiners in the speech of young children are not 
part of fixed determiner-noun units. I investigated the occurrences of determiner-
noun combinations in the French children Daniel and Nathalie. Before it is possible 
to identify a stage of ‘fixed unit’ formation, it is important to get a better 
understanding of the notion ‘fixed’. In the literature there are no standard criteria to 
define chunks. Basing myself on Eisenbeiß (2000), I developed three criteria for 
fixed D-N units. The first two criteria concern frequency and variation of 
determiner-noun units (cf. (9) and (10)).

(9) Frequency:
A determiner-noun combination has to occur at least three times in the 
same recording.

(10) Variation:
The noun that is part of the determiner-noun combination does not appear 
as a bare noun in other contexts or in combinations with other prenominal 
elements in the same recording.

Furthermore, deviations from the input support the idea that the children’s utterances 
are not an unanalysed reproduction of the input. For example, if a French child 
produces a gender error like la chien (‘the.FEM dog’), this is not likely to be an 
unanalysed imitation of the input since the target utterance in adult French would be 
le chien (‘the.MASC dog’). Instances in the child’s production where determiner 
and noun do not agree in gender or number are evidence that the D-N combination is 
not a stored unit memorised from the input. Therefore, I added a third criterion to 
identify fixed D-N sequences:

(11) Agreement:
Determiner and noun agree in gender and number.
We have thus the quantitative criterion in (9) and the two qualitative criteria in (10) and (11) to identify fixedness in D-N combinations. A phrase in the child’s speech is characterised as ‘fixed’ if and only if the three criteria in (9), (10) and (11) apply simultaneously.

Basing myself on these criteria, I investigated the status of early determiners in Daniel and Nathalie. Since we are interested in early stages of language acquisition, I applied these criteria to determiner-noun sequences in the very first recordings available for the two children. The qualitative analysis had the following results: First, the same nouns appeared with or without determiner in both children (cf. (12)). With respect to the criterion of variation, the D-N combinations at this stage cannot be characterised as ‘fixed’.

\[(12) \quad \text{a. dame/ le dame/ une dame} \quad \text{Daniel (1;08.07)} \]
\[
\text{dame/ the.MASC lady/ a.FEM lady}
\]

\[
\text{b. bébé / le bébé} \quad \text{Nathalie (1;09.21)}
\]
\[
\text{baby/ the.MASC baby}
\]

Second, both children produced gender errors in their early determiner-noun utterances as illustrated in the examples in (13). This makes it unlikely that the D-N sequence in question is an unanalysed repetition of the input. The presence of the gender errors suggests that the D-N combinations do in fact have an inner structure, consisting of a determiner and a noun.

\[(13) \quad \text{a. le dame (fem)} \quad \text{Daniel (1;08.07)} \]
\[
\text{le dame (fem) the.MASC lady}
\]

\[
\text{b. la cube (masc)} \quad \text{Nathalie (1;09.21)}
\]
\[
\text{la cube (masc) the.FEM cube}
\]

We have seen that the two qualitative criteria do not support the notion of fixed units in the data. The same holds for the results of the quantitative analysis summarised in table 7. In Daniel, only one out of 21 different D-N combinations met the frequency criterion for fixed units: l'eau (‘the water’). In Nathalie’s first recording, one out of 12 different D-N combinations fulfilled the criterion for fixed units: The sequence la pé (truncation of la poupée, ‘the doll’) occurred 71 times in the first file. In the second file, two out of 14 different D-N combinations can be characterised as fixed. Again, la pé in addition to the combination la couche (‘the diaper’) meet the criteria for fixed units.
I conclude that both the qualitative and the quantitative analysis show that early determiners in French cannot be accounted for as parts of unanalysed D-N units. There are a few determiner-noun combinations that meet the criteria for fixed units, but these instances are not representative for the overall development of determiners. This observation is formulated in requirement E.

**Requirement E:**
Account for the observation that early determiners are not parts of unanalysed units.

Furthermore, the examples in (13) show yet another important observation that has to be captured by a DP acquisition model: Children produce utterances where the determiner does not agree with the following noun. This is formulated as requirement F.

**Requirement F:**
Account for the occurrence of agreement errors in determiners.

According to Eisenbeiß, additional support for her chunk-formation hypothesis comes from the developmental curve of the overt production of determiners. She found a U-shaped development of the overt realisation of determiners in four German children (Annelie, Hanna, Leonie and Mathias). Initially, these children produce a relative large number of determiners (between 35% and 64% in obligatory contexts). This stage is followed by a short stage where the production decreases to values between 4% and 42%. Drawing an analogy with the acquisition of English tense morphology (Marcus, Pinker, Ullman, Hollander, Rosen, Xu and Clahsen 1992), Eisenbeiß interprets these U-shaped developmental curves in the production of functional elements as evidence that children pass through an initial stage where

---

### Table 7. Fixed D-N units in Daniel and Nathalie

<table>
<thead>
<tr>
<th>Type/tokens</th>
<th>Fixed units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daniel 1(1;08.07)</td>
<td>l’eau (9)</td>
</tr>
<tr>
<td>Daniel 2 (1;08.21)</td>
<td>un autre (10)</td>
</tr>
<tr>
<td>Nathalie 1 (1;09.21)</td>
<td>l’eau (7)</td>
</tr>
<tr>
<td>Nathalie 2 (1;10.14)</td>
<td>la pé (71)</td>
</tr>
<tr>
<td></td>
<td>la pé (53)</td>
</tr>
<tr>
<td></td>
<td>la couche (3)</td>
</tr>
</tbody>
</table>
determiner-noun combinations would be stored as whole units in the child’s lexicon. When the child discovers that the stored string actually consists of two elements, he drops the functional element, i.e., the determiner. In a following stage the child starts to use the determiner productively with nouns, indicating that the category of the determiner is now represented in the child’s grammar.

It is questionable whether it is legitimate to draw the comparison between the acquisition of English tense morphology on the one hand and the acquisition of the determiner on the other hand. The U-shaped curves in the acquisition of verbal morphology describe the percentage of correct forms. In the intermediate stage where the number of correct forms is temporarily low, children do not omit morphological material but produce forms like *goed* instead of the irregular *went*. In contrast, the children investigated by Eisenbeiß leave out the determiner completely in obligatory contexts. This omission is not necessarily related to a reanalysis but could also be due to other factors. Moreover, a look at the development of overt production of determiners in both Daniel and Nathalie (figures 1 and 2) shows that the presence of a U-shaped curve cannot be confirmed. The data for Daniel only covers a relatively short period, but figure 1 shows that initially, the overt production of the determiner is relatively low (about 30%) and increases slowly but steadily.

**Figure 1. Overt determiners in obligatory contexts in Daniel**
Figure 2. Overt determiners in obligatory contexts in Nathalie

Figure 2 shows the overt production of determiners in Nathalie. We see in the overall development (cf. dotted line) that initially, Nathalie produces a relative high percentage of determiners (80%) at a very young age (1;9.21). Then there is a sharp drop at 2;1.7, which could at first sight be interpreted as a U-shaped development. However, a closer look at the data reveals that the very high production rate of determiners at the beginning of the recording is mainly due to the use of one particular determiner-noun combination, i.e., la pé, referring to a particular toy (poupée) that was present at all recordings. Notice that the sequence la pé has been identified as a fixed determiner noun unit above. Table 8 shows the percentage of la pé in all determiner-noun combinations until the age of 2;01.07. In the first three recordings, the sequence la pé accounts for between 60% and 80% of all determiner noun-sequences. When this particular combination is excluded from the count, we see that the development of the overt determiner production is far more moderate (cf. unbroken line). The production rate in the earliest recordings between 1;09.21 and 1;11.14 is between 30% and 40%, which is comparable to Daniel’s production at the same period. At the end of the recordings at 2;03.14 (MLU 2.1), the determiner production rate is still not higher than 50%, which is relatively low in comparison to other French children. For instance, at 2;00.05 (MLU 2.1) Grégoire produces determiners in 67% of obligatory contexts (Granfeldt 2000b). Max’s overt determiner production is 75% at the age of 2;01.16 (MLU 2.1).
Table 8. Percentage of la pé in all D-N sequences in Nathalie

<table>
<thead>
<tr>
<th>Age</th>
<th>% of all D-N sequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>1;09.21</td>
<td>80</td>
</tr>
<tr>
<td>1;10.14</td>
<td>68</td>
</tr>
<tr>
<td>1;11.14</td>
<td>60</td>
</tr>
<tr>
<td>2;00.07</td>
<td>52</td>
</tr>
</tbody>
</table>

From the age of 2;01.07, Nathalie does not use the sequence la pé anymore but produces the correct form poupée with and without determiner. She even produces a gender error (le poupée) at 2;02.14, indicating that this utterance is not an unanalysed imitation of the input anymore. Notice that apart from la pé, there is only one other D-N combination (la couche) that has been characterised as a fixed unit whereas the other D-N combinations found in the early files do not meet the criteria for unanalysed units. We can therefore say that with the exception of la pé, Nathalie’s overt production of determiners increases gradually. I conclude that Daniel’s and Nathalie’s data presented here do not support the presence of U-shaped curves and thus stored D-N units.

We have seen that the U-shaped development in Nathalie’s production of determiners can be ascribed to the dominant use of only one particular fixed determiner-noun combination, i.e. la pé. An interesting question is whether a similar effect can explain the U-shaped curves of determiner production observed in some of the German children investigated by Eisenbeiß. Like in Nathalie, the initially high overt production rate in these children could be caused by the dominant influence of a small number of fixed D-N units. A closer look at the behaviour of the individual nouns in the German data could shed more light on this question.

3. Theoretical Requirements

In the previous section I have formulated six requirements based on empirical observations that a theory of DP acquisition has to account for. The present section deals with the theoretical issues that are relevant with respect to DP acquisition.

As pointed out in chapter 1, it is controversial whether functional projections are operative from the onset of acquisition. With respect to the acquisition of the DP, this leads to two options: The functional D-layer is either available at the onset of acquisition or it is not. Before I present these two points of view, I will first describe the properties of the D-layer in section 3.1. Then we turn
to the two opposing viewpoints: In section 3.2, approaches based on the assumption that the D-layer is absent at the onset of acquisition will be discussed. Section 3.3 deals with the opposite point of view, i.e. the idea that the D-layer is actually present in early child grammar. Based on the discussion of these two divergent perspectives, I formulate four theoretical requirements.

3.1 The Properties of the D-layer

In the generative literature, the functional D-layer has been ascribed characteristic semantic properties. The basic semantic function of D is to anchor the noun in the discourse. In the present section I will describe three basic properties that play a role in this process. The first property concerns the presence of a type-shifting operator. Let us have a closer look at the semantic properties of determiner phrases as for instance in (14).

(14)  \[ \text{DP a [NP cat]} \]

The denotations of nouns can be seen as sets of individuals that share the same characteristics. \([\text{cat}]\) is the set of cats (Heim and Kratzer 1998). Hence, the meaning of the noun \textit{cat} is the set of all individuals in the world that share the defining properties of cats, e.g. “four-legged, fluffy mammal that chases mice etc.”. An expression as in (14) enters the semantic computation as a predicate. A widely shared view among linguists is that the presence of a type-shifting operator is necessary in order to turn predicates into arguments (Szabolcsi 1987, Stowell 1989, Longobardi 1994). Thus, the expression \textit{cat} needs to be type-shifted before it can appear in argument position as in (15). The type-shifting operator is ascribed to the D head. Hence, the presence of the D-layer is necessary in order to type-shift predicates into arguments.

(15)  \text{Peter has a fat cat}

A second property of the D-layer concerns the deictic function of the determiner: As pointed out above, the NP denotes a set of individuals. This is referred to as \textit{kind or type} reference. The determiner has the ability to link this description provided by the NP to a specific entity in the real world. That is, a definite determiner as in (16) picks out one particular cat of the set of all cats. This specific reference has been referred to as \textit{token reference} (Carlson 1977). According
to Vergnaud and Zubizaretta’s Correspondence Law (cf. (18)), token reference is associated with the D-layer (Vergnaud and Zubizaretta 1992). Only the D-layer can establish reference to a specific individual and hence denote a token. In contrast, the N-layer denotes types or kinds only. In (17) only the NP denotes and hence the expression “cats” has a kind reading.

(16) Peter likes \[ \text{DP the [NP cat]} \]

(17) Peter likes \[ \text{DP } \emptyset \text{ [NP cats]} \]

(18) Correspondence Law

‘When a DP or an NP denotes, the DP denotes a token and the NP denotes a type.’ (Vergnaud and Zubizaretta 1992: 612)

Notice that the presence of a determiner is not directly linked to token reference. The utterance in (19) refers to specific cats even though there is no overt determiner. The opposite holds for inalienable possessive constructions in Romance languages (here illustrated with French in (20)): According to Vergnaud and Zubizaretta, even though there is an overt definite determiner, these kinds of expressions do not have a token reference, i.e. main does not refer to a particular hand that has been mentioned in the discourse before. As Vergnaud and Zubizaretta argue, the determiner in these kinds of constructions has an expletive status, and therefore, the DP has no denoting function. The issue of inalienable possessive constructions will be addressed again in chapters 3 and 4.

(19) \[ \text{DP } \emptyset \text{ [NP Cats]} \text{ are chasing our dog in the garden} \]

(20) Jean donne \[ \text{DP la [NP main]} \] à Marie French

Jean donne le main à Marie

‘Jean gives the hand to Mary’

‘Jean gives Mary a hand’

The third semantic property of the determiner is that it can encode definiteness. The definite determiner can denote a referent that has been introduced into the discourse. This property is illustrated by the contrast between (15) and (16). In sum, nouns in argument position have the basic semantic properties summarised in (21).
(21) \textit{D-layer implies}
- the presence of a type-shifting operator
- the possibility of referring to particular items
  (token reference, specificity, deictic function)
- the possibility of having a definite interpretation

After having illustrated the basic functions of the D-layer, we will now proceed to a discussion of the two viewpoints on the presence or absence of the D-layer in the child’s early grammar in section 3.2 and 3.3.

3.2 Absence of D-layer in Early Child Grammar

During the 1980s and 1990s, in a number of acquisition studies the idea was developed that functional categories are absent in early child grammar (Radford 1988, Radford 1990, Guilfoyle and Noonan 1992 among others). This idea has been referred to as the \textit{gradual development hypothesis} (Deprez 1994) or as the \textit{structure-building model} (Granfeldt 2000a). The main idea of this model is that children pass through a prefunctional stage where the utterances they produce contain only lexical categories like verbs, nouns and adjectives. The observed absence of functional material has been interpreted as evidence that the child’s grammar initially contains only lexical projections. In a next developmental step, around the age of two years, children start to develop functional structure like, e.g., tense marking.

This structure-building model has also been applied to the acquisition of the DP (Müller 1990, Clahsen et al. 1994, Müller 1994, Granfeldt 2000a, Hulk 2004). More specifically, the observed determiner omission in early child language has been interpreted as evidence that the functional D-layer is not yet available at the onset of acquisition. The DP structure is thus initially reduced and expands stepwise in a bottom-up fashion during the acquisition process. The following sequences of syntactic stages are distinguished within this model. Initially, the noun phrase is represented only as the bare lexical category N (cf. stage 1 in (22)). In this way, the observed absence of the determiner at this stage is accounted for. In a next step, the noun phrase is extended and allows for one prenominal position. This prenominal position can host all kinds of elements specifying the noun, such as quantifiers, adjectives and nouns denoting a possessor. Determiners also occur in this position.

As Clahsen et al. argue, determiners are “optional adnominal modifiers” and the functional category DET is absent (Clahsen et al. 1994). In a next step (stage 3), the D-layer is introduced above the NP. Determiners have changed their status and are
now situated in the head of DP and the whole X′-structure is available now. This structure-building approach can be summarised as in (22).

(22) 

Stage 1:  

\[
\begin{array}{c}
N \\
\text{tractor}
\end{array}  
\]  

Stage 2:  

\[
\begin{array}{c}
\text{Spec} \\
N' \\
\{ \text{little} \text{ the} \}
\end{array}  
\]  

Stage 3:  

\[
\begin{array}{c}
D \\
\text{the} \\
N \\
\text{tractor}
\end{array}  
\]  

\[
\begin{array}{c}
A \\
\text{little} \\
\text{tractor}
\end{array}  
\]  

\[
\begin{array}{c}
\text{NP} \\
\text{tractor}
\end{array}  
\]  

French and other Romance languages also have postnominal adjectives. In fact, only a small set of adjectives appears in prenominal position and the majority of adjectives, for instance colour adjectives, follow the noun (cf. (23). As pointed out above, in French first language acquisition, prenominal adjectives emerge slightly earlier than postnominal adjectives. In line with Cinque’s (1994) approach for noun raising, Granfeldt (2000a) interprets this as evidence that the DP structure eventually expands again such that there is an intermediate functional projection to host the raised noun. (cf. (24)).

(23) le tracteur bleu

*the tractor blue*

‘The blue tractor’

(24) Stage 4:  

\[
\begin{array}{c}
\text{DP} \\
\text{tractor}
\end{array}  
\]  

\[
\begin{array}{c}
\text{Spec} \\
\text{bleu}
\end{array}  
\]  

\[
\begin{array}{c}
N \\
\text{tracteur}
\end{array}  
\]  

(complement)
Even though the structure-building approach intuitively captures the initial absence of the determiner, it faces both empirical and theoretical challenges. To begin with the empirical problems, I have shown in section 2.2 that there is considerable overlap between different stages in the acquisition of DP elements. We have seen that determiners and adjectives are not mutually exclusive in prenominal position in the monolingual French children. Instead, bare nouns and D-A-N, A-N and D-N combinations co-exist in early production stages (cf. requirement D). The DP structure-building hypothesis in its present form is in conflict with this observation since it incorrectly predicts that the occurrence of determiners and adjectives is mutually exclusive. Moreover, as soon as the DP is extended to three positions, there should no longer be any instances of determiner omission in adjective-noun combinations. In the same way, it is unexpected that children still produce bare nouns at this stage.

Another empirical challenge concerns stage 2 of the structure-building model, where determiners and adjectives are assumed to share the same syntactic position (cf. (22)). This assumption is not in line with the observations made in the perception studies described in section 2.1. These studies show that the children perceive determiners at the age of 11 months and can distinguish them from pseudo-determiners. This implies that children must be able to distinguish determiners – situated at the edge of phonological phrases– from other lexical material like adjectives, which are not adjacent to phrase boundaries. In addition, this assumption is problematic from a theoretical point of view: There is no syntactic model that generalises over adjectives and determiners. Such a node, generalising over determiners and adjectives, would force an extension of the theory of possible categories. Based on these considerations, we can formulate the next requirement of a DP acquisition model:

**Requirement G:**
Account for the fact that determiners and adjectives are different syntactic categories.

The structure building hypothesis postulates structures in conflict with general linguistic principles also in other aspects. The first point to mention is that deficient structures appear in argument position: In stage 1 of the structure-building hypothesis, the utterance of the child is represented as projection of the lexical category N (cf. (22)). This implies that this structure occurs in argument position. However, in adult language only maximal projections can appear as arguments. Furthermore, the stepwise extension of the DP structure also has consequences for
the architecture of the whole clause. In stage 1, the complement of the verb is an N whereas in stage 2, the verb has NP as a complement, and finally, the clausal structure has to change again such that V takes DP as complement. Thus, the clausal structure is in constant change, and stages have to be postulated that are in conflict with adult grammar.

A variant of the idea that the D-layer is absent at the onset of acquisition has been proposed by Chierchia, Guasti and Gualmini (1999a, 1999b). Based on Chierchia (1998), they argue that languages that lack determiners, such as for instance Mandarin and Cantonese, do not project the D-layer. In this model nouns can be of two types: kind denoting or predicate denoting. Nouns denoting kinds do not project a D-layer. Typically mass nouns like, e.g., gold belong to this type of noun (cf. (25)). These nouns can occur without a determiner in argument position. In contrast, nouns that are predicative, like dog, have to project a D-layer in order to be turned into arguments (cf. (26)).

\[(25) \quad [\text{NP gold}]\]

\[(26) \quad [\text{DP the [NP dog]}]\]

Chierchia’s position differs thus from the view that nouns are always predicate denoting and need a determiner to be turned into arguments (cf. Longobardi 1994). Chierchia argues that the choice among whether nouns are kind denoting, predicate denoting or both is of a parametric nature. He points out that nouns in Chinese are never predicates but always kind denoting. Hence, no determiner is necessary to turn a Chinese noun into an argument. In other words, all nouns in Chinese are count nouns like dog, behave like mass nouns as for instance gold (cf. (25)) in the sense that they are kind denoting and no determiner is necessary to turn them into arguments. The generalisation over count nouns and mass nouns in Chinese is supported by the observation that there is no plural morphology in Chinese, which is a typical property of mass nouns as illustrated here with an English example (cf. (27)).

\[(27) \quad \text{gold/golds}\]

In contrast, in languages like French, where the presence of the determiner is (nearly) obligatory, all nouns are predicates, and therefore, a determiner is needed to type-shift them into arguments. Then there are also languages where nouns can be either kind denoting or predicative. These are, e.g., the Germanic languages, where
mass nouns can appear in argument position without determiners, but count nouns are predicative and hence must be preceded by a determiner.

Chierchia, Guasti and Gualmini (1999a, 1999b) apply this idea to first language acquisition in a way that is related to the structure building approach of DP acquisition. According to Chierchia et al., children start out with a setting where there is no functional layer projected above the lexical N position. Hence, all children, including those acquiring a Romance or Germanic language, pass through a “Chinese” stage where all nouns behave like mass nouns in the sense that they are kind denoting and can occur in argument position without a determiner (cf. (25)). Based on evidence in the input, the children acquiring a Romance or a Germanic language will eventually change this setting. Children acquiring a Romance language will encounter evidence that in their target language count nouns and mass nouns combine with a determiner. Therefore, they will conclude that all nouns are predicative and need a determiner to occur in argument position, and hence they will add a functional D-layer to their syntactic representation of nouns. Children acquiring a Germanic language will find a mixed setting in their language input: In their languages only a subset of nouns is kind denoting, namely the mass nouns, whereas regular kind nouns are predicative and need a determiner. These children have then to find out which nouns are predicative and which are kind denoting. In this way, the model captures parametric differences.4

There is one important problem for the model put forward by Chierchia et al. and also for the structure building hypothesis: Approaches based on the assumption that the D-layer is absent in early grammar cannot account for the semantics of the children’s utterances. Let us have a look again at the child data presented in chapter 1 (here repeated as (28)) in order to illustrate this.

4 But see Baauw, De Roo and Avrutin (2002) for arguments against a parametric approach.
If we have a look at the bare nouns produced by the children, we find that they behave exactly as determiner-noun combinations in languages that have determiners. First, the bare nouns in the examples in (28) are not predicates but appear in argument position. Hence, their status must have changed from predicate to argument, which indicates the underlying presence of a type-shifting operator. Second, as children talk about the here and now, it is evident that they do not refer to kinds but to particular instances of the objects they are naming, i.e., to specific objects present in the discourse situation (token reading). For instance, in (28)a, one particular box is singled out from the set that contains all boxes. Third, the examples in (28)a and b have a definite reading whereas the example in (28)c has an indefinite interpretation. This illustrates that bare nouns in child language can occur in definite contexts. Hence, the bare nouns in child speech occur in exactly the same semantic contexts as full DPs in adult language, summarised in (21) (here repeated as (29)).

\[(29)\]
\[
D\text{-}layer \text{ implies} \\
- \text{the presence of a type-shifting operator} \\
- \text{the possibility of referring to particular items} \\
\text{(token reference, specificity, deictic function)} \\
- \text{the possibility of having a definite interpretation}
\]

Approaches that assume that the D-layer is absent at the onset of acquisition, like the structure building hypothesis and Chierchia et al.’s proposal, cannot account for the fact that bare nouns in early child speech have these semantic properties. The bare nouns in (28) occur in the argument position of the verb, which implies that the expression must have type-shifted from a predicate into an argument. This property cannot be accounted for by models based on the assumption that the D-layer is not available at this stage. Furthermore, the absence of the D-layer implies that reference to particular instances cannot be established in the child’s grammar, with the consequence that the bare nouns in the child data in (28) can only denote kinds. However, it is unlikely that a bare noun like box as in (28)a has a type reading such that box refers to the concept of boxes in the world. Instead, children talk about the here and now. Thus, box refers to a token, namely a particular box that was there before and that is now gone. Finally, the observation that bare nouns can occur in definite contexts cannot be captured if the child does not have access to the D-layer. In sum, a theory assuming that the D-layer is not projected universally or not present from the onset of acquisition is challenged by the observation that referential properties that are typically ascribed to the D-layer are present in the children’s utterances, even though the determiner is absent. It is crucial that these semantic
properties of elements in argument position (cf. (29)) are accounted for. This is expressed by requirement H.

**Requirement H:**
Account for the observation that in the absence of an overt determiner, bare nouns in child language have the same semantic properties as DPs in adult language (type-shifting, reference to particular instances, definite reference).

### 3.3 Presence of D-layer in Early Child Grammar

In the previous section we have explored the point of view that the functional D-layer is not present in the initial grammar of the child. This hypothesis is challenged by the observation that the bare nouns in child grammar actually behave like full DPs in adult grammar. An alternative perspective that captures this observation is the assumption that the D-layer is available from the onset of acquisition. In the literature on acquisition, the idea that the D-layer and other functional categories are present in early child grammar has become known as the *strong continuity hypothesis* or the *full competence hypothesis* (cf. Poeppel and Wexler 1993, Hoekstra, Hyams and Becker 1999 among others).

The point of view that the child’s grammar contains already the full set of functional categories has several advantages: The postulation of non-adult like structures is no longer necessary. Thus, there are no deficient structures in argument position and in addition, adjectives and determiners are treated as different categories (cf. requirement G). Furthermore, the presence of the D-layer would be in line with the referential properties of the noun (cf. requirement H). On the other hand the assumption that the full DP is available from the onset of acquisition leads to a different kind of problem: The determiner omission in early stages of acquisition cannot be accounted for in terms of missing structure but has to be explained in a different way. Two kinds of approaches are distinguished here: A number of researchers explain the determiner omission as a discourse phenomenon. Hence, young children do not apply discourse rules in a target like manner. Another point of view relates determiner omission to the morphological development: The underlying structure is available, but children do not yet have access to the appropriate form of the functional element. In the present section I will discuss these two different perspectives.
With respect to the first point of view, a number of researchers interpret the determiner omission in child speech as evidence that children have not yet mastered the appropriate discourse rules. Baauw, de Roo and Avrutin (2002) have pointed out that there are basically two strategies to establish noun reference: On the one hand, the speaker can make use of syntactic means, i.e., overt determiners. A second strategy is discourse presupposition, meaning that the speaker relies on the assumption that the discourse provides enough information in order for the hearer to establish the intended reference. Baauw et al. argue that children and aphasia patients have in common that they rely on discourse presupposition in order to license bare nouns. The reason for this is that both groups of speakers have limited processing capacities. Relying on the discourse is more economical than using syntax to introduce new referents; hence, it is the preferred choice for children and agramatics. Children still have to automatise the syntactic introduction of a discourse referent whereas agramatics have lost this automatism. In this way, similarities between different groups of speakers are captured.

However, a few remarks are necessary with respect to the idea that children rely on the discourse in order to licence nouns without determiners. First, notice that this assumption implies that children are aware of discourse principles. However, it should be noted that discourse licensing is a rather complex mechanism that is based not only on linguistic but also on cognitive principles. The appropriate use of discourse rules is interrelated to the ability to attribute mental states like knowledge, intents and beliefs to other persons. This ability is referred to as Theory of Mind (cf. Mitchell 1997, Bloom 2002 for an overview). Young children do not have this capacity yet, and they therefore often misjudge what part of their own knowledge is also accessible to their interlocutors. This is reflected for example in the use of anaphora. Children use pronouns to refer to persons without having introduced the referent of the pronoun into the discourse. For instance in (30), the Dutch child Chantal uses the pronoun hij (‘he’) without making it clear to which person(s) she is referring (example from Roelofs (1998)). Roelofs observed these kinds of errors in Dutch children even up to the age of 8 years.

(30)  En dan is hij daar en hij hier en hij daar  Chantal (4;6)

and then is he there and he here and he there

Another violation of discourse rules concerns the relevance of the information given by the children. Children have problems with the cooperation principle as formulated by Grice (1975) with the result that their utterances often are not relevant
with respect to the previous utterance of their interlocutor. Roelofs (1998) observes these kinds of errors until the age of five years (cf. the Dutch example in (31)).

(31) Adult:  je dacht zeker dat je buurmeisje zo heette hè?
‘You thought for sure that the little girl from next door had this name, didn’t you?’

Chantal (4;6): eerst was een boom bij tante Coby …
‘First there was a tree at aunt Coby’s …’

The above examples illustrate that young children are not aware of the appropriate amount and relevance of information necessary for a successful linguistic interaction. Thus, the level of discourse rules mastered by the child is rather limited at the onset of acquisition. Therefore, it is problematic to assume that children “rely” on the discourse when licensing bare nouns. Rather, the omission of the determiner could be seen as a symptom of the children’s limited understanding of discourse rules. We first need a good analysis of the acquisition of discourse rules based on independent evidence. Only then can we relate discourse licensing to the acquisition of the determiner system.

A second argument against a discourse licensing analysis comes from empirical studies of the acquisition of reference. As Rozendaal and Baker (2007) argue, Baauw et al.’s approach predicts that the determiner is omitted more often in objects that are physically present or introduced earlier in the discourse than in objects not present in the context. However, this prediction could not be confirmed: Rozendaal and Baker investigated three English, three Dutch and four French children (age range 2;0-3;3) in a cross-linguistic study. This study shows no significant difference between determiner omissions in novel objects and objects that have already been introduced in the discourse.

A third point to mention relates to the free variation stage. Children produce the same noun with and without determiner in the same recording under very similar syntactic, semantic, and pragmatic conditions (Kupisch 2004b). This is illustrated in (32) with an example of the French child Alexandre (example from Kupisch 2004b). Again this is unexpected if discourse presupposition alone governs the omission of the determiner in the speech of young children.
A last argument against the position that discourse presupposition alone explains determiner omission concerns cross-linguistic differences with respect to the speed of determiner acquisition. Many studies have shown that children acquiring a Romance language reach an adult-like production far earlier than children targeting a Germanic language (see chapter 4 for a more detailed discussion). As argued by Baauw et al. (2002), the acquisition of discourse rules is interrelated to the development of processing abilities. Under the assumption that the maturation of these abilities is more or less the same in all children, the development of discourse rules should be the same cross-linguistically. In this light, the observation of differences between languages is rather unexpected. Apparently, the non-adult-like use of discourse rules alone cannot explain the omission of the determiner in child speech.

To conclude, we have seen that discourse presupposition alone cannot explain the omission of determiners. It is conceivable that the acquisition of discourse rules goes hand in hand with the acquisition of syntactic structures and semantic principles. We need a theory that takes a more general perspective. This is formulated as requirement I.

**Requirement I:**
Account for the observation that determiner omission is not exclusively a discourse phenomenon but that it involves more underlying mechanisms.

As pointed out above, Baauw, de Roo, and Avrutin (2002) ascribe the omission of the determiner in child speech to a lack of knowledge about discourse rules in adult language. A different point of view advocated in the literature is that children do not produce determiners at early stages of acquisition because they do not yet have access to the correct morphological form. According to Borer and Rohrbacher (2002), the absence of functional elements in child speech is evidence for the presence of functional projections rather than evidence against it. Borer and
Rohrbacher argue that children omit functional material because they are not yet certain of the phonological realisation of head features or grammatical formatives as e.g. determiners. They argue this on the basis of tense morphology. Borer and Rohrbacher assume that functional projections including the head features are present from the onset of acquisition. At this initial stage, the child’s verbal paradigm for a verb like move is restricted (see (33), Borer and Rohrbacher 2002: 136). The combination of the verbal root \( v \) move with a head feature is linked with a particular phonological representation. The head features are not yet linked to a phonological realisation in the child’s grammar (This missing information is indicated by the question marks).

\[
\begin{align*}
\text{(33) English root move} \\
&\begin{array}{ll}
\text{a. } & [v \text{ move}] \text{ (no head features)} \rightarrow /\text{muuv}/ \\
\text{b. } & [v \text{ move}] +<\text{pst}> \rightarrow ??? \\
\text{c. } & [v \text{ move}] +<\text{pres}> \rightarrow ??? \\
\text{d. } & [v \text{ move}] +<1\text{sg.m}> \rightarrow ??? \\
\end{array}
\end{align*}
\]

At a certain point of development, the child realises that head features like agreement and tense must be phonologically realised. However, as he does not yet have access to the appropriate phonological realisation (cf. (33)), he avoids the use of the inflected form. Instead, children produce non-inflected tense-less forms, i.e. the infinitive form of the verb. In the process of first language acquisition, the child will add the missing information step by step to the paradigm and eventually start to use agreement morphology. As Borer and Rohrbacher argue, this idea can also be applied to the acquisition of free grammatical formatives as for instance determiners.

Two remarks are necessary with respect to Borer and Rohrbacher’s claim that their analysis can be extended to determiner acquisition. The first point concerns an empirical difference between determiner omission and omission of tense morphology. In Borer and Rohrbacher’s model of the acquisition of verbal inflection, children produce the infinitive in order to avoid an inflected form. The situation is different with respect to determiner acquisition: The determiner is omitted entirely in the children’s early production. A second remark concerns a prediction of Borer and Rohrbacher’s (2002) analysis: This approach predicts that as soon as the initial setting changes, the child should produce the correct form of the determiner. Hence, as soon as the child has filled in the missing morphological information in the inflectional paradigm, the child should use the appropriate form of the determiner. This prediction is contrary to fact. It is well known that agreement
errors are common in the speech of young children (Müller 1994, Van der Velde 1999, Van den Berg 2001, Van der Velde 2004, Blom, Polišenská and Weerman 2006). This is illustrated here with examples from French (cf. (13) here repeated as (34)). Thus, any model of determiner acquisition has to account for the observation that agreement errors occur. This has been formulated as F above.

(34)  a.  dame/ le dame/ une dame  Daniel (1;8.7)  
   lady/ the.MASC lady/ a.FEM lady

   b.   la couteau/ un couteau   Nathalie (2;3.14)  
   the.FEM knife/ a.MASC knife

Borer and Rohrbacher’s approach (2002) is based on the idea that the child is prevented from producing the determiner. A comparable viewpoint has been put forward by Avrutin and De Lange (2004). They ascribe the absence of the determiner to a temporarily underdeveloped processing system. Based on Kostić (2004), they argue that there is a certain threshold for processing words. Words have a specific information load. If this information load is high enough, the threshold is reached and the processing mechanism can be activated. At early stages of acquisition, children have limited processing abilities; hence, only elements with a relatively high information load can reach the threshold. As Avrutin and De Lange argue, this is not the case for determiners: The information load of the determiner is not high enough to activate the processing mechanism; therefore, children omit the determiner. In the course of maturation of the brain, the processing abilities of the children will improve, and eventually, determiners will also be able to reach the threshold. Avrutin and De Lange’s approach predicts that as soon as the development of the child’s brain has reached the point where processing of the determiner is possible, the child should start to produce the determiner consistently. However, as pointed out earlier in the present chapter, children pass through a stage where the determiner is optional (‘free variation stage’, cf. Chierchia et al. 1999a). This optionality is unexpected within Avrutin and De Lange’s approach. We will address their proposal again in chapter 4.

Another question that remains open in a strong continuity approach is: What does the syntax of bare nouns look like? If indeed functional categories are available from the onset of acquisition, as argued e.g. by Borer and Rohrbacher, it follows that bare nouns in child language project a full DP. Consequently the determiner position must remain empty. The presence of such an empty position has consequences for the syntactic distribution of bare nouns. According to Rizzi’s
version of the Empty Category Principle, empty positions must be licensed by a proper lexical governor (cf. (35)).

\[(35) \quad \text{Empty Category Principle:} \]
\[
\text{Non-pronominal empty categories must be properly head governed}
\]

Within the Minimalist program, lexical government can be reinterpreted as an LF licensing requirement. In these terms, a lexical head, i.e. V, must license an empty D position via LF incorporation. In fact, in this way the subject-object asymmetry observed e.g. in Spanish has been accounted for (cf. e.g. Contreras 1986, Casielles 1996). In Spanish, bare nouns with a generic reading are possible in object position and in postverbal subject position but not in the preverbal subject position (cf. (36), example by Casielles (1996)). For the preverbal subject position there is no lexical head that can license the empty position and hence bare nouns are not possible in the subject position.

\[(36) \quad \begin{align*}
  a. \quad & \text{Esther lee novelas} & \text{Esther read-3sg novels} \\
  b. \quad & \text{Jugaban niños en el parque}^5 & \text{played-3pl children in the park} \\
  c. \quad & \text{*Niños jugaban en el parque} & \text{children played in the park}
\end{align*}
\]

If the DP is fully projected in the child’s grammar, including an empty D position, we expect a subject-object asymmetry even in child speech. Hence, we expect bare nouns only in object position but not in the preverbal subject position. However, a look at the data in (37) shows that the French child Daniel produces bare nouns in the preverbal subject position.

\[(37) \quad \begin{align*}
  a. \quad & \text{garçon pleure} & \text{boy cries} \\
  b. \quad & \text{auto cassé a tour moi pleure} & \text{car broke the tower me cry} \\
  c. \quad & \text{monsieur --- réparer} & \text{mister repair}
\end{align*}
\]

\[^5\text{This sentence has a poetic connotation.}\]
If bare nouns indeed project the full (empty) DP structure, the Empty Category Principle must be either violated or not operational at this stage of acquisition. However, neither option is desirable in a strong continuity approach. The observation that there is no syntactic evidence for empty positions in child language is summarised in requirement J:

**Requirement J:**
Account for the observation that bare nouns in child speech can occur in ungoverned positions.

### 4. Conclusions

In this chapter I presented 10 requirements that I argue are necessary for a theory of DP acquisition. I first formulated six empirical requirements (A-F). Notice that these requirements hold independently of a theoretical framework. In section 2, I developed four theoretical requirements (G-J) for a model of DP acquisition.

A. Account for the fact that very young children have a grammatical representation of the determiner before they start to produce it.

B. Account for the occurrence of protodeterminers.

C. Account for the systematic order in the emergence of DP elements:
   Nouns > determiners > prenominal adjectives > postnominal adjectives (in French).


E. Account for the observation that early determiners are not parts of unanalysed units.

F. Account for the occurrence of agreement errors in determiners.

G. Account for the fact that determiners and adjectives are different syntactic categories.

H. Account for the observation that in the absence of an overt determiner, bare nouns in child language have the same semantic properties as DPs in adult language (type-shifting, reference to particular instances, definite reference).
I. Account for determiner omission in terms of independently motivated principles.

J. Account for the observation that bare nouns in child speech can occur in ungoverned positions.

With respect to the theoretical requirements, I have discussed two points of view: The absence and the presence of the D-layer in early child grammar. Approaches assuming that the D-layer is absent can reflect the fact that language acquisition is a process of growth, both in structure as in category use. However, the point of view that the D-layer is absent implies that child grammar is different from adult grammar. This assumption is challenged by the observation that the bare nouns in child speech behave exactly like full DPs in adult language with respect to syntactic and semantic properties. The alternative option that the D-layer is actually available has the important advantage that coherence between child and adult grammar is maintained. It is not necessary to postulate structures that violate principles in adult grammar. However, such an approach has to account for the observation that children omit the determiner.

Obviously we need a theory that allows us to account for the growth in acquisition while at the same time coherence between child and adult grammar is upheld. In the next chapter, I will propose a new theory of DP acquisition that reconciles these opposing demands and meets the 10 requirements formulated in this chapter.
3  **MISMATCHES BETWEEN PHONOLOGY AND SYNTAX**

1. **Introduction**

In the previous chapter I have explored two different theoretical perspectives with respect to the acquisition of the DP: the absence versus the presence of the D-layer in the child’s grammar. According to some researchers, the D-layer is not present in early child grammar. The disadvantage of these models is that they have to make extra stipulations to overcome the differences between child and adult grammar. This is not an issue in models assuming that the D-layer is actually present. But these approaches need to account for the determiner omissions in other ways than by missing underlying structure. In the present chapter a theory will be developed that overcomes the disadvantages of the opposing viewpoints described above. This theory is based on the idea that the functional D-layer is present from the onset of acquisition. The omission of the determiner is caused by an initial mismatch between phonological units and syntactic categories in the child’s grammar.

In section 2, I will first give some background information about the theoretical assumptions made here. The main aspect is the idea that there is not necessarily a one-to-one relationship between phonological items and terminal nodes at the syntax. I will then illustrate how -based on this assumption- several phenomena in adult language inside and outside the nominal domain can be better understood. In section 3, I will apply this approach to child language. I will show how the idea of breaking through the one-to-one correspondence between phonology and syntax explains the determiner omission observed in early stages of first language acquisition. Furthermore, I show how the grammar of the child develops further towards the target setting. In section 4, I will concentrate in more detail on one particular aspect of the acquisition of DP structure, namely on adjective-noun combinations without determiner that have been observed in the children’s speech. Section 5 shortly addresses another observation, namely that there are languages where proper names can be modified by a determiner. The theory proposed in the present chapter is based on the assumption that the DP structure unravels in a top-down fashion. I will show in section 6 that this assumption is in perfect line with the theory of learnability, more specifically, the subset principle. In contrast, the
assumption that the DP structure is acquired bottom-up is not initially available is in conflict with this principle. Section 7 relates to the previous chapter: I show that the new approach presented in the present chapter meets the 10 requirements formulated in chapter 2. Section 8 contains the conclusions. Several of the issues discussed in this chapter will again be addressed in chapter 4 where I will further explore and empirically test the predictions that follow from the theory proposed here.

2. Theoretical Background

In this section I will first present the theoretical background of the theory, i.e. the possibility of breaking through the one-to-one relationship between phonological items and terminal nodes at the syntax. After this, I show how this idea accounts for syntactic co-occurrence restrictions in adult language in section 2.2.

2.1 No One-to-one Relation between Phonology and Syntax

As pointed out earlier, in this thesis I adhere to the generative framework initiated by Noam Chomsky (cf. Chomsky 1957, 1965, 1980a, 1980b for some key references). This framework has come to be known as the Government and Binding framework (Chomsky 1981). About 10 years later, Chomsky initiated a research agenda referred to as the Minimalist Program (Chomsky 1992, 1995), which succeeds the Government and Binding framework. The aspect that I want to focus on in this theoretical setting is the relationship between (phonological) items in the lexicon on the one hand and syntactic structure on the other hand. Within the Government and Binding theory it has been assumed that during the derivation of a clause, items are taken from the lexicon and inserted into syntactic positions. The consequence of this mechanism is that phonological units stand in a one-to-one relationship with terminal nodes at the syntax. Within the Minimalist Program, lexical items are characterised as a set of features containing phonological, semantic and formal information. During the derivation of a clause, lexical items combine in the syntactic operation Merge, yielding a syntactic constituent that once more can be merged with another element. Again, like in the Government and Binding framework, the result of this process is a one-to-one relationship between elements in the lexicon on the one hand and terminal nodes at the syntax on the other hand.

However, a different relationship between phonological and syntactic structures can also be imagined and has in fact been proposed. Jackendoff (1997)
puts forward a tripartite parallel architecture of grammar consisting of three sub-modules: the phonological, syntactic and conceptual component (cf. figure 1). These modules remain truly independent but are connected by a set of correspondence rules. These correspondence rules mediate between phonological, syntactic and semantic units.

**Figure 1. Tripartite parallel architecture (Jackendoff 1997)**

<table>
<thead>
<tr>
<th>Phonological formation rules</th>
<th>Syntactic formation rules</th>
<th>Conceptual formation rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonological structures</td>
<td>Syntactic structures</td>
<td>Conceptual structures</td>
</tr>
</tbody>
</table>

The independence between the sub-modules makes it possible to break through the one-to-one relationship between phonological items and terminal nodes at the syntax. In order to illustrate how this is possible, let us have a closer look at the organisation of lexical entries. In the Jackendovian model, the lexicon is not a list of items including their grammatical properties; rather, the syntactic properties of a lexical item are mapped onto the spell-out properties and the semantic properties. Accordingly the representation of a word like tractor in the lexicon is tripartite and looks like in (1). First, there is information about the phonological properties of the word: It must be pronounced /træktə/.1 A correspondence rule (↔) connects the phonological information with the information that this word corresponds to a noun (N) at the syntactic level. Another correspondence rule connects the syntactic representation with the conceptual properties of the word (Jackendoff 1997: 28/32). Similarly to Jackendoff, Sproat (1985) and Halle and Marantz (1994) propose that syntactic representations are associated with phonological material at the PF interface.

(1) \( \text{tractor}_w \leftrightarrow \text{N} \leftrightarrow \text{“vehicle used on farms etc.”} \)

---

1 In the phonological literature, the phonological representation of a word is noted as phonological transcript between forward slashes, for instance the English word *tractor* would be coded as /træktə/. As the phonological transcript is not relevant for the argumentation here, I will for reasons of readability notate all phonological representations of lexical entries in this thesis in italics with the subscript \( w \), indicating the phonological unit word \( \text{tractor}_w \).
Let us focus on the relationship between phonology and syntax. Phonological and syntactic structures are linked by correspondence rules. Jackendoff (1997: 28) describes the general form of these correspondence rules as in (2). One example for such a correspondence rule that maps phonological units onto their syntactic representation is given in (3).

(2) **General form for phonological-syntactic correspondence rules (PS-SS)**

\[
\text{(PS-SS) rules}
\]
\[
\text{Syntactic structure } X
\]
\[
\{\text{must/may/preferably does} \} \text{ correspond to}
\]
\[
\text{phonological structure } Y.
\]

(3) A syntactic \( X' \) constituent preferably corresponds to a phonological word.

Notice that this correspondence is *preferably* but not necessarily a one-to-one relation between a syntactic \( X' \) constituent and a phonological word. This gives rise to an interesting logical possibility: There can be exceptions to this rule in both directions. As Jackendoff argues (1997: 28, 110), phonological units can be larger or smaller than terminal nodes in the syntax. Instances where lexical items are smaller than terminal nodes are productive derivational morphemes and also inflectional morphemes. Furthermore, lexical items can also be larger than terminal nodes. This means that words at the phonological level can correspond to phrases at the syntactic level. For instance, compounds like *throttle handle* consist of two phonological words but of one syntactic word (Jackendoff 1997: 29). Another example comes from idiomatic expressions (Jackendoff 1997: 158). As Jackendoff points out, the lexicon contains more than a list of words. Next to words, expressions such as *let the cat out of the bag* or *look up* must also be stored in the lexicon. They correspond to a maximal projection, i.e., a verb phrase (VP) at the syntactic component (cf. (4)).

(4) \[ \text{[let the cat out of the bag]} \leftrightarrow \text{VP} \]

Hence, the correspondence between phonology and syntax makes it possible that there is not necessarily a one-to-one relation between phonological items and terminal nodes at the syntax, contrasting with the Government and Binding theory or the Minimalist Program.

Treating idiomatic expressions as phonological strings stored in the lexicon like in (4) has the following advantages over other approaches: A first advantage concerns the semantics of idiomatic expressions. The interpretation of these
expressions cannot rely on the principle of compositionality, i.e., the meaning of expressions like *let the cat out of the bag* is more than the sum of the meaning of its independent components. According to Chomsky (1980a), idiomatic expressions are derived in the same way as regular clauses. Whenever the resulting string coincides with an idiomatic string that is stored in the lexicon, an *idiom rule* applies that erases the regular syntactic and semantic properties of the clause and assigns an idiomatic reading to the output. However, as Van Gestel (1995: 94) points out, this approach predicts that all idiomatic expressions always have “regular, literal counterparts”, contrary to fact. A second advantage of analysing idiomatic expressions as phonological units concerns their opaqueness. It has been proposed that idioms are stored in the lexicon as subtrees and are then inserted simultaneously (Di Sciullo and Williams 1987, Abeillé and Schabes 1989) or *en bloc* (Van Gestel 1995) in the already generated structure. The assumption that subtrees are stored in the lexicon captures the idiosyncrasies of idiomatic expressions and makes the stipulation of an *idiom rule* superfluous. However, these approaches still face the problem that the structure of the idiomatic expression is generated by regular syntactic processes. This makes it impossible to account for structurally non-transparent idioms like *op en top* (Dutch, ‘up and top, all over’) or amalgamations of the type *ten einde raad* (Dutch, ‘at one’s wits’ end’) where a determiner and a preposition have fused together (Dutch examples from Van Gestel 1995: 93). This problem does not arise in the Jackendovian model: In terms of the tripartite model, the phonological form *ten einde raad* is stored as a whole in the lexicon and mapped onto a syntactic representation, i.e., the maximal projection AP (cf. (5)). This explains why idioms can but do not necessarily have to be syntactically transparent.

\[(5) \quad [ten \ einde \ raad] \leftrightarrow AP\]

The option that there is not necessarily a one-to-one relation between phonological units and terminal nodes in the syntax not only captures the characteristics of idiomatic expressions but has also been proven constructive to account for other phenomena. This is illustrated in the next section.

### 2.2 Syntactic Co-occurrence Restrictions in Adult Language

Several studies of adult language have successfully made use of the idea that phonological words can correspond to non-terminal nodes. For instance, Radford (1988: 174ff) argues that the ungrammaticality of (6)b versus (6)a can be explained
if the proform *one* corresponds to N’ rather than N. The string [king of England] is an N’ and can be replaced by the proform *one*. The status of *one* as N’ in the example in (6) can be derived from the fact that it cannot be modified by a PP complement (‘of Spain’) whereas the noun *king* can be modified by a PP (‘of England’). Thus, the N’ *one* cannot replace the N *king*.

(6) a. The present [king of England] is more popular than the last one
b. *The present [king of England] is more popular than the last one of Spain

Similarly, restrictions on modification have been observed in the pronominal system. In English, attributive adjectives can only precede common nouns but not pronouns and proper names (cf. (7) and (8), (Bloom 1990: 344)):

(7) big dogs

(8) a. *big Fred
b. *big he

Bloom takes this as evidence that proper names and pronouns are NPs rather than Ns, but he does not further elaborate on how this claim can be implemented in a syntactic model. Weerman and Evers-Vermeul (2002) offer a syntactic analysis of these kind of restrictions based on the Jackendovian model illustrated above. Similarly to Bloom, Weerman and Evers-Vermeul observe co-occurrence restrictions within the pronominal system. Dutch possessive pronouns like *mijn* (‘my’) or *jouw* (‘yours’) can be adjoined with a suffix –e. These forms, *mijne* and *jouwe*, can combine only with a determiner but not with other DP internal material (cf. (9)a vs. (9)b, (Weerman and Evers-Vermeul 2002: 315)).

---

2 Notice that *one* seems not always to have the status of N’ as it can actually be modified in other contexts (cf. (i), N. Smith, p.c.):

(i) The tree with the chestnuts I much prefer to the one without (chestnuts)

3 Bloom (1990) observes some exceptions to this. In nicknames and also expressions of praise or censure proper names and pronouns can be modified by an adjective (cf. e.g., *Proud Mary, Silly me*!). In Dutch these expressions are possible, too (cf. section 4 below).
Furthermore, Dutch has a substandard pronoun *mijnes*. Notice that Standard English and Standard German have an equivalent pronoun (cf. (10)). As illustrated in (11), *mijnes* cannot combine with other DP internal material at all. The same holds for its English and German counterparts:

(10) a. Mijnes is niet zo goed  Dutch
    b. Mine is not so good    English
    c. Meins ist nicht so gut  German

(11) a. (*het) mijnes (*mooie) (*boek) Dutch
    b. (*the) mine (*nice) (*book) English
    c. (*das) meins (*schönes) (*Buch) German

Weerman and Evers-Vermeul conclude that this restriction is evidence that the pronouns in example (9)-(11) do not correspond to terminal nodes but with higher projections. More specifically, the phonological word *mijnes* in (10) corresponds to a maximal projection at the syntactic level, more specifically, with DP (cf. (12)). Notice that the syntax is intact, i.e., at the syntactic module the whole DP structure is present.

(12) \[ mijnes_w \leftrightarrow \]

As pointed out above, Bloom (1990) argues that pronouns are NPs rather than Ns as they cannot be modified by a prenominal adjective. In light of Abney’s (1987) DP hypothesis, it is feasible to generalise over his approach and Weerman
and Evers-Vermeul’s model and to assume that pronouns correspond to DPs. As a matter of fact, the idea that pronouns correspond to DP has been shown to be constructive in accounting also for other phenomena within the nominal domain. For instance, Neelmean and Szendrői (to appear) show that based on this assumption, cross-linguistic differences can be derived between languages that can freely drop pronouns (‘radical pro-drop’) and languages that allow for pro-drop only in restricted contexts.

The assumption that words can correspond to non-terminal syntactic nodes as illustrated in (12) contrasts with theories based on the idea that lexical units are inserted into the syntactic tree. In Weerman and Evers-Vermeul’s approach, mijnes corresponds to the maximal projection DP. Thus, it is not inserted in that position, leaving the rest of the structure empty. Note that the co-occurrence restrictions of mijnes (cf. (11)) can in principle be integrated within theories based on lexical insertion. It is possible to assume that mijnes is raised from the N position to the D head. However, in this case another assumption has to be added to the model, namely that the specifier positions and complements have to remain empty in these particular circumstances. Such an assumption cannot be motivated independently, which gives it a stipulative character.

Let us return to proper names for a moment. Bloom observes that the combination of proper names with adjectives is prohibited in English. But the co-occurrence restrictions are even stricter as proper names do not combine with DP internal material at all in languages like English or French which is illustrated here for English (cf. (13), (Pannemann and Weerman to appear)). Bloom points out that proper names are NPs. Again, based on Abney’s approach, I will slightly adjust Bloom’s proposal to more recent syntactic theory by assuming that they correspond to DPs (cf. (14)b/c) (disregarding here the correspondence rule with the semantic component (cf. (1)), as it is not relevant for the further argumentation).

(13)  

a. (*the) Peter reads a book  
b. (*the) Amsterdam is the capital of the Netherlands

---

4 In some languages, e.g., southern German varieties and also some registers of French, proper names can combine with a determiner but nevertheless receive a proper name interpretation. The same holds for instance for geographical names (cf. the Netherlands in (13)b). Furthermore, in several languages like, e.g. Dutch, proper names can combine with an adjective. These issues are dealt with in more detail below in section 5. As we will see there, these facts are perfectly compatible with the analysis proposed in the present section.
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Notice that this assumption accounts nicely for the semantic properties of proper names: The proper name Peter refers to a particular individual in the sense of Vergnaud and Zubizaretta (1992), which implies that even though there is no determiner, the D-layer must be active. This is a given if the phonological item Peter corresponds to DP at the syntax.

In the morphological process of conversion, phrases can be turned into Ns when they combine with a determiner (cf. (15)). This can also be done with proper names and city names (cf. (16)). An interesting observation is that the presence of the determiner has an effect on the interpretation of both nouns and proper names. As soon as proper names appear with a determiner, their unique reference is lost, and hence, the name Peter in (16)a receives a type reading. A similar thing is going on in (16)b where Amsterdam is presented by the speaker as if it were a type consisting of multiple elements.

(15) That interminable [I've got to slip out for a fag] from Bill is really getting on my nerves (example by N. Smith, p.c.)

(16) a. I need a Peter who cooks and plays the guitar
    b. This is not the Amsterdam of my childhood

The reverse process is also possible: If a noun occurs without a determiner, a unique reference can be established. Interestingly, a domain where this process is extraordinarily productive is in children’s books and stories, where virtually any noun, animate or inanimate, receives unique reference once it occurs without a determiner (cf. (17)). The effect is a proper name interpretation.


Quite a similar effect can be observed in names for months (cf. (18)) or days of the week (cf. (19): For instance, when Tuesday is used without a determiner, there is only a single interpretation possible, namely the Tuesday closest to the moment of the speech act, which can be in the future but also in the past (cf. (19)a vs. (19)b). If the Tuesday that the speaker wishes to refer to is not the Tuesday closest to the moment of speech, the speaker has to modify the day (cf. (19) vs. (20)). Hence, the

\[
\begin{align*}
(14) & a. & \text{Amsterdam}_w & \leftrightarrow & \text{DP} \\
    & b. & \text{Peter}_w & \leftrightarrow & \text{DP}
\end{align*}
\]
absence of a modification has the effect that only the narrowest interpretation is possible. As soon as Tuesday is used with a determiner (and an adjective), the unique reference disappears and the utterance has a type reading (cf. (21)).

(18) I was born in (*the) March

(19) a. Let’s meet (*the)Tuesday
    b. I saw him (*the)Tuesday

(20) a. Let’s meet Tuesday next week
    b. I saw him Tuesday two weeks ago

(21) I was born on a (very sunny) Tuesday

More examples for restrictions with respect to the presence of the determiner are words like dawn or noon, which usually appear without determiner (cf. (22)a). Note that dawn can also be modified with the effect that it loses its unique reference (cf. (22)b).

(22) a. Let’s meet at (*the) dawn / (*the) noon
    b. The dawn of the Golden Age

The observation that words like March, Tuesday, dawn or noon usually do not combine with DP internal material and have unique reference can once more be accounted for if these words correspond to the maximal projection DP (cf. (23)).

(23) a. $March_w \leftrightarrow DP$
    b. $Tuesday_w \leftrightarrow DP$
    c. $dawn_w \leftrightarrow DP$
    d. $noon_w \leftrightarrow DP$

Thus, co-occurrence restrictions are not uncommon in the vocabulary of a language. Examples can also be found outside the DP. For instance, the adverb yesterday appears in the same position in the clause as prepositional phrases (PP), e.g., on a very sunny day, but it is impossible to combine it with PP-internal material such as prepositions, determiners and adjectives (cf. (24)b vs. (24)c). Again, the co-occurrence of other material is correctly excluded if the phonological unit yesterday
corresponds to a maximal projection in the syntax (cf. (25)a). The same holds for the adverb tomorrow (cf. (25)).

\begin{enumerate}
\item I went to the market yesterday
\item I went to the market [on a very sunny day]_{pp}
\item I went to the market (*on a very sunny) yesterday
\item I will go to the market (*on) tomorrow
\end{enumerate}

To conclude, in this thesis I adopt the standard assumptions of the generative framework. The only relevant difference is the assumption put forward in a number of studies that there is not always a one-to-one relationship between phonological words and terminal nodes at the syntax (Sproat 1985, Radford 1988, Halle and Marantz 1994, Jackendoff 1997, Weerman and Evers-Vermeul 2002, Neeleman and Szendröi to appear). As shown in the present section, this viewpoint accounts for syntactic co-occurrence restrictions in adult language. In addition, semantic properties of lexical items can be explained in this way as shown, e.g., for proper names. In the following section I will develop my analysis of first language acquisition. The starting point of this analysis is the possibility of breaking through the one-to-one relationship between phonological units and terminal syntactic nodes.

**3. Towards an Acquisition Theory**

In the previous section we have seen that co-occurrence restrictions in adult language can be understood if we adopt the point of view that there is not always a one-to-one relationship between phonological and syntactic elements in the sense that phonological units can correspond to non-terminal nodes at the syntax. In the present section, I will apply this idea to first language acquisition of the DP. I will first show in section 3.1 that this assumption can likewise account for the determiner omission in early stages of first language acquisition. In section 3.2, I will illustrate the next stages of acquisition and show how the subsequent transformation from child grammar towards adult grammar is captured by the theory.
3.1 Determiner Omission in Early Stages of Acquisition

Let us return to the child data. As pointed out above, children pass through a stage where they omit the determiner. In other words, children produce elements in argument position that do not combine with other DP internal material as example (1) in chapter 2 (here repeated as (26)) illustrates.

(26) a. box gone [= the box is gone] English, Anne (1;11.04) ‘The box is gone’
 b. mets savon bain [=je mets du savon dans le bain] French, Daniel (1;09.21) put soap bathtub ‘I am putting some soap into the bathtub’
 c. da auch Buch [= da ist auch ein Buch] German, Kerstin (2;0.10) there also book ‘There is a book, too’

Notice that this situation is rather similar to the phenomena observed in adult language illustrated in the previous section. Above we have seen that there are co-occurrence restrictions for pronouns and proper names in the sense that these usually do not combine with DP internal material. The same holds for words like March, Tuesday, dawn and noon. The examples, here repeated as (27), show that this situation is comparable with the child data in (26) where nouns combine with neither a determiner nor an adjective.

(27) a. (*big) he
 b. (*De) mijnes (*twee) (*mooie) (*boeken) the mine two nice books
 c. (*the) Peter
 d. (*the) Amsterdam
 e. I was born in (*the) March
 f. Let’s meet (*the) Tuesday
 g. Let’s meet at (*the) dawn / (*the) noon

It has been argued above that the absence of other DP internal material in pronouns, proper names and words e.g. Tuesday, March, dawn, noon can be understood if these phonological units do not correspond to terminal nodes but to the maximal projection DP in the syntax. Hence, in adult language the lexical entries of these words look like in (12) and (23), here repeated as (28).
If in adult grammar phonological units can correspond to syntactic positions larger than heads, it is conceivable that this option is also available in the child’s grammar. As a matter of fact, this follows directly from the subset principle as we will see below in section 6. I propose here that similarly to the expressions in (28), the bare nouns in the child data in (26) correspond to a unit larger than X’ in the syntax. More specifically, the phonological words box_w, savon_w, bain_w and Buch_w in (26) correspond to DP (cf. (29)).

(29)  a.  box_w  \leftrightarrow  DP  
b.  savon_w  \leftrightarrow  DP  
c.  bain_w  \leftrightarrow  DP  
d.  Buch_w  \leftrightarrow  DP  

The setting in (29) makes it possible to account both for syntactic as well as semantic properties of bare nouns in child speech. Recall from chapter 2 that the D-layer encodes the semantic properties summarised in (30).

(30)  \begin{align*}
D\text{-}layer \ implies \\
& \quad \text{the presence of a type-shifting operator} \\
& \quad \text{the possibility of referring to particular items} \\
& \quad \text{(token reference, specificity, deictic function)} \\
& \quad \text{the possibility of having a definite interpretation}
\end{align*}

The absence of a determiner in the child data does not imply that there is no DP syntax or semantics. As the phonological word box_w corresponds to the DP, all the semantic properties of the D-layer in (30) are available in the syntactic sub-module even though there is no determiner.

At this initial stage, bare nouns in child language resemble proper names as both are associated with the syntactic representation of a DP (cf. (28)b/c and (29)). Note that I do not want to claim that bare nouns in child language are equivalent to
proper names. But I do want to argue that during an initial phase there is a parallel as
proper names and bare nouns share an important characteristic: They have the
properties in (30) even though there is no determiner. Above in section 2.2 we have
seen in several examples that the absence of modification by a determiner or another
element can narrow down the possible interpretations of an expression. For instance,
if a word like Tuesday occurs without a determiner, the Tuesday closest to the
speech act is the only possible target of the speaker’s intention. Equally, in
children’s books common nouns can be used without determiner with the effect that
they lose their type reading and refer to specific individuals instead (“Goose and
Duck”). The same effect can be found in the bare nouns in early stages of language
acquisition. With respect to other aspects, proper names and bare nouns in child
language differ: Proper names refer to unique animate individuals, in most cases
persons, whereas bare nouns in child language can refer to one particular member of
a class of objects.

To conclude, as pointed out in chapter 2, our interest is to account for non-
adult like determiner omissions in child language while maintaining coherence
between adult and child grammar. The modular approach as described in section 2
makes this possible. The initial absence of the determiner can be accounted for
without the postulation of non-adult like structures in the children’s grammar. The
continuity between adult and child grammar is upheld as the D-layer is present from
the onset of acquisition. Furthermore, adult and child grammar are coherent in the
sense that both grammars allow for phonological words to correspond to non-
terminal nodes at the syntax. In this way, the theory generalises over a phenomenon
in adult and child language. The only difference between adult and child grammar
lies in the mapping between phonological units and their syntactic representation.
This different mapping is the cause for the observed discrepancies between child and
adult speech. In the child’s initial grammar, the correspondence rules between the
three sub-modules of language are not yet in the target setting. During the process of
acquisition, the child can reset a mapping rule but only if he encounters positive
evidence in the input that cannot be accommodated by the initial setting. We will
proceed to see how the grammar of the child develops towards an adult-like setting
in the next section.
3.2 Towards Adult Grammar: Structure Unravelling

In the previous section, I proposed that at the onset of acquisition all nouns correspond to the maximal projection DP at the syntax. We could thus say that this initial setting is the default setting for nominal items (cf. (31)).

(31) **Initial state of acquisition:**

```
“nominal items” ↔ DP
```

We have seen how this assumption explains the semantic properties of bare nouns in child speech. But so far we have not dealt with an important fact: The correspondence rule in (29) differs from the target setting in English adult grammar, where the phonological unit box is associated to a noun (N) at the syntax and must therefore be preceded by a determiner. In the present section I will illustrate how this setting is adjusted in the course of acquisition. We will see that positive evidence in the input plays the key role in this process.

I propose that the resetting of the initial correspondence rule in (31) takes place as follows: Recall from chapter 2 that determiners have a special status in the child’s early grammar. Determiners and other function words typically occur at the edge of phonological phrases (Christophe, Guasti, Nespor, Dupoux and Ooyen 1997). Whether it is the left or right edge depends on the headedness of the language. Christophe, Nespor, Guasti, and Van Ooyen (2003) have shown that very young French children (6-12 weeks) are able to perceive these phonological boundaries. Furthermore, they can perceive prominence within a phonological phrase, which helps them decide about the headedness of their target language.

Let us illustrate this process with the English article *the* (under the assumption that determiner acquisition is comparable cross-linguistically). Christophe et al. argue that children have an innate strategy to search for function words at the edge of a phonological phrase, and the ability to perceive prominence helps them focus on the appropriate side of the phonological phrase. As English is a head-initial language, the child’s attention is drawn to the left edge of the phonological phrase. Subsequently, the child makes a list of closed class elements appearing typically at the left edge of the phonological phrase, such as determiners, pronouns or prepositions (cf. (32)).

(32) “left-edge set”: \{the, a, I, he, she, it, to, up, \ldots\}
As determiners are part of this list, the phonological form of the word *the* is stored in the lexicon at this early stage of development. Höhle, Weissenborn, Kiefer, Schulz and Schmitz (2004) and Christophe (2006) propose that in a next developmental step, the child is able to use the determiner in turn to predict that the following word is a noun. However, there is a problem with this: At the moment the child has made the list in (32), the syntactic status of the determiner is still unclear. Notice that the determiner *the* is stored together with pronouns and prepositions in the same group. Hence, at this stage it does not follow that the determiner has the capacity to predict that the following word is a noun. Thus, the child may become more sensitive to the phonological form of the article *the* in the input, but this alone cannot help him to predict the syntactic category of the following word. I would like to propose here that it is more likely that determiners and nouns interact in the acquisition process. The role of the determiner in this early stage is not to predict the category of the following word. Rather, the phonological form of the determiner *the* can function as a signal that helps to segment the speech stream. After the child has made the list in (32), he can find out in a next step that the phonological item *the* typically precedes a word denoting an object. Of course, an increasing knowledge of the world and pragmatics are indispensable in this process. In this way, the child can in return classify the element *the* as an element that predicts an object (rather than a word expressing an activity). In the same way, a pronoun like *he* is characterised as a form typically preceding a word denoting an activity. Hence, the acquisition of the syntactic status of determiners and nouns is likely to be a process of mutual bootstrapping.

Let us now change perspectives and turn to the acquisition of nouns for a moment. Notice that there are languages without determiners like Russian or Mandarin. This implies that children learning such a language must rely on other strategies, e.g., the canonical subject position or the argument structure of the verb, in order to classify an unfamiliar word as a noun. This shows that children do not necessarily have to rely on the determiner but also have access to other mechanisms in order to retrieve the syntactic category of nouns. Whenever the child encounters a novel word, he has to figure out first whether this word is object denoting or not. As pointed out above, the syntactic position and thematic structure of the verb, together with an increasing knowledge of the world, can help the child in this process. Once the child has found out that the novel word is an object, he can use semantic information in order to categorise new words. According to the semantic bootstrapping hypothesis (cf. Grimshaw 1981, Macnamara 1982, Pinker 1984), there are innate mappings between syntax and perception. As Bloom (1990: 352) puts it,
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these mappings can have the form “if X refers to an object, then X is a noun”. We can thus reformulate the rule in (31) as (33).

(33) Initial state of acquisition:
/X/_{object} ↔ DP

Hence, in the initial default setting words denoting objects correspond to the maximal projection DP (cf. (31)). Thus, the child starts out with the assumption that semantic properties as type-shifting and the deictic function (cf. (30)) are inherent to the noun. After the child has learned the semantic and phonological properties of a particular noun, as for instance ball, the sensitivity towards occurrences of this word in the input increases. This makes it possible for the child to discover that the phonological word ball is consistently preceded by a determiner. The phonological unit the constitutes at first uninterpretable material to the child. However, in the course of development the child will again and again experience situations where the determiner the is used in definite contexts, i.e., to refer to objects that are present in the discourse. The child will then conclude that definiteness is expressed overtly in his target language and can link definiteness to the determiner the. This has two important consequences: First, the child deduces that the noun cannot be inherently definite. This implies that the initial setting in (31) where the noun corresponds to the maximal projection DP does not accommodate the input anymore. And second, the child is now forced to assume that the determiner the must be integrated into the DP structure. The structural position that presents itself to host the determiner is the D head, under the assumption it innately contains a definiteness feature. After the child has run through this process for some words, he can thus link the to the syntactic D head.

The default setting in (33) is not in contradiction with the rule in (3) according to which a syntactic X constituent preferably corresponds to a phonological word. Rather, the rule in (3) captures the preferred relation between phonological units and syntactic categories in adult grammar. This implies that a deviation from this rule as in (31) is possible. In fact, the presence of the rule in (3) can be seen as a mechanism guiding language acquisition, causing the child to identify new phonological material in the input, to integrate it into the syntactic structure and thus to deviate from the default setting in (33). The seeming antagonism between the rule in (3) and the default setting in (33) is comparable to the acquisition of inflectional morphology. Children start out with the default setting that there is no inflection but have to abandon this assumption if the target language provides evidence for inflectional morphology.

---

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Once the correspondence between the and the D head is established in the child’s grammar (cf. (34)), it in turn helps the child to find out the syntactic status of novel words and the acquisition of the DP-structure can proceed further, an important step in the child’s development.

When the child encounters a novel word, as for instance box, he has first to find out whether this word denotes an object. If this is the case, the semantic bootstrapping mechanism can take place: The child applies the format of the correspondence rule in (33) and links the phonological form of box to the maximal projection DP at the syntactic level (cf. (35)).

\[ (34) \quad \text{the} \leftrightarrow \text{D} \]

The presence of the determiner in the input helps the child to abandon this non-target-like setting. The child discovers that the phonological form boxw is consistently preceded by an element corresponding to D (cf. (34)), which is part of the innate DP structure. It follows from this observation that boxw cannot correspond to the maximal projection DP as the element corresponding to D must be integrated in the structure. In other words, the child encounters an input property that cannot be accommodated by the initial setting of the correspondence rule in (35), and hence he must somehow adjust the setting to the observed facts. This takes place as follows: The presence of the determiner in the input leads to a retuning of the correspondence rule of the lexical item boxw such that this phonological string corresponds to a lower syntactic projection. The child extends the structure in a conservative way, i.e., he allows for as little structure as is possible in accordance with the input facts. This extension of the structure is guided by innate X'-principles. According to these principles the closest projection is the sister of the D head, the maximal projection NP. Hence boxw is associated with NP (cf. (36)).

\[ (35) \quad \text{box}_w \leftrightarrow \text{DP} \]

\[ (36) \quad \text{box}_w \leftrightarrow \text{NP} \]

Notice that children keep omitting the determiner with a particular word for a longer period even though they hear it regularly in the input. Hence, the input property that changes the initial setting cannot be seen as a ‘trigger’ where one instance of a grammatical construction in the input is sufficient in order to reset an initial hypothesis. Rather, it seems that a threshold must be reached before the resetting takes place. Thus, the child apparently needs to hear a certain number of
instances in which a particular noun is preceded by a determiner before a fine-tuning of the correspondence rule between the phonological and the syntactic representation can take place.

The child’s reanalysis of the noun box as an NP becomes evident in the output of the child, where box is now preceded by a determiner. The syntactic structure that is accessible to the child at this stage is indicated in (37).

(37)     DP  
          Spec  D'  
            D   NP

At this developmental stage, the setting of the correspondence rule as in (36) can accommodate determiner-noun combinations like the box in the input, but it is not yet target-like as in adult English box corresponds not to NP but to N. Thus the rule in (36) cannot accommodate determiner-adjective-noun combinations in the input such as, for instance, the little box. As the adjective little occurs in a position between the determiner and the noun, the child concludes that this element needs to be accommodated within the DP as well. Again, following the X'-architecture, the closest possible projection to host the adjective is the specifier position below the NP projection. At the moment that the adjective is associated with this specifier position, the noun box can no longer correspond to the NP projection dominating that position. Hence, following again a conservative strategy, the correspondence rule is retuned such that box is associated to the closest projection below NP, namely N’ (cf. (38)). In this way, the child unravels the syntactic structure of the DP top down, layer by layer. (39) shows the layers of the DP structure unravelled so far by the child.

(38) box \leftrightarrow N'

(39)     DP  
          Spec  D'  
            D   NP  
              AP  N'
This theory thus captures the observation described in chapter 2 that more and more DP elements combine together (requirement B). An overview of the developmental steps that the child passes through in the acquisition of correspondence rules is given in (40).

\[(40)\]

\[
\begin{align*}
\text{box}_w & \leftrightarrow \text{DP} \\
\text{box}_w & \leftrightarrow \ldots \\
\text{box}_w & \leftrightarrow \text{NP} \\
\text{box}_w & \leftrightarrow \ldots \\
\text{box}_w & \leftrightarrow \text{N}
\end{align*}
\]

The final step in the fine-tuning procedure is reached when \(\text{box}_w\) is eventually associated with N (cf. (41)). The relevant evidence that is necessary to establish this correspondence rule is provided by prepositional phrases (PP) of the type \([\text{on the table}]_{PP}\). A PP in the complement position of the noun is evidence for the child that \(\text{box}_w\) cannot correspond to N’ but must correspond to a lower node such that the PP-complement can be accommodated as complement of N within the X’-structure. (42) illustrates the layers of the DP structure unravelled by the child at his last step. Notice that the structure unravelling process can leap one or several of the intervening steps in (40). For instance, the correspondence rule in (36) where \(\text{box}_w\) corresponds to an NP in the child’s grammar can be reset immediately to the rule in (41) if the child perceives an utterance like “the box \([\text{on the table}]_{PP}\)” in the input. Such an utterance involving a PP-complement is evidence for the complement position of N and hence indirectly also for the N position. Thus, the intermediate step where \(\text{box}_w\) corresponds to N’ (cf. (38)) is not always necessary in the process of structure unravelling.

\[(41)\]

\[
\text{box}_w \leftrightarrow \text{N}
\]

\[(42)\]

Diagram of DP structure unravelled by the child at his last step.
A note with respect to the compatibility of the new structure unravelling approach and the theory of DP syntax: The structure in (42) is one possible model of the DP structure, but the structure unravelling theory of DP acquisition certainly allows for additional functional projections intervening between DP, NP or N, for instance the presence of a functional projection FP that can host the raised noun in the case of postnominal adjectives as Cinque has proposed for Romance languages (Cinque 1990, 1994).

The structure unravelling theory proposed here differs from the structure building model discussed in chapter 2 in several respects. I want to point out three important differences between the two hypotheses: First, the structure building model is based on the assumption that the DP is initially deficient in the sense that functional projections are absent (or not accessible). In contrast, the structure unravelling approach presented here implies that at the syntax, the D-layer is completely present from the onset of acquisition, including its functional properties. Second, in the structure building approach, the DP structure is built up stepwise bottom-up. In contrast, in the model presented here the DP structure is unravelled in a top-down fashion. As we will see below in section 5, the latter view is supported by learnability principles, more specifically the subset principle. Third, above I have argued that a lexical entry consists of phonological information that is mapped onto its syntactic representation. For each individual phonological word, there is a separate mapping rule with its syntactic representation as for instance in (29), here repeated as (43).

(43) \( \text{box}_w \leftrightarrow \text{DP} \)

An important consequence of this assumption is that the acquisition of the determiner-system must take place item by item. In other words, the child has to find out for each nominal item \(X\) whether \(X\) is preceded by a determiner or not. Thus, the process of DP acquisition is characterised as a process of lexical learning. This is another important contrast with the structure building model. In chapter 4 we will deal with the process of lexical learning in more detail. We will see evidence supporting the view that the acquisition of the determiner indeed takes place item by item. This observation cannot be captured by the structure building model.

So far I have argued that children acquire the determiner for each nominal item individually. Whenever they learn a new word denoting a particular object, they start out with the default hypothesis that this word corresponds to a DP. However, what happens when adults hear a new word? It is conceivable that the process of stepwise structure unravelling has been run through so often that it has
become an automatism. The adult speaker can rely on cues in the input telling him that the novel word does not correspond to a DP. This means that if the novel word occurs in an environment typical for nouns, the adult speaker will also conclude that the category of the novel word is “noun”. Such an environment is the argument position of the verb, or more generally, the canonical positions for subjects and objects. The presence of modifiers like determiners and adjectives are additional information for the hearer to decide that the novel word is a noun. Furthermore, knowledge of the world and additionally linguistic information like the absence or presence of the determiner and plural morphology give information about the semantic properties of the new word and can tell the language user whether this word is a proper name, a mass noun or a count noun.

To illustrate this, take the nonsense word *dingsda*. If the adult speaker hears an utterance as in (44)a, he can conclude that -whatever the meaning of *dingsda*- it must correspond to a DP. When hearing an utterance like (44)b, the speaker gets the information that the novel word can be modified, and hence he can reset the correspondence rule between the phonological unit *dingsdaₜ* and its syntactic representation, such that the word corresponds to an N at the syntactic module. The process of structure unravelling for *dingsda* is illustrated in (45). Thus, like the children, the adult speaker starts out with the default setting for novel nouns in (45), where *dingsda* corresponds to the maximal projection DP. Only when the adult speaker gets evidence in the input that the novel word can be modified will he reset the correspondence rule such that *dingsda* corresponds to a lower syntactic position.

(44)   
   a. Dingsda is new  
   b. The new dingsda in the shop next door tastes like peppermint  
   c. The dingsda-s I ate yesterday are still stuck between my teeth

(45)   
   dingsdaₜ <-> DP  
   ...  
   dingsdaₜ <-> NP  
   ...  
   dingsdaₜ <-> N

Furthermore, the speaker will also semantically categorise the new word by using his knowledge of the world and morphological information. Thus, when the speaker hears (44)a, he can conclude that *dingsda* is either a proper name (like for instance for a brand) or a mass noun. When hearing (44)b, the speaker gets the information that *dingsda* is not a proper name for a person but can refer to a mass noun or a count noun. Only after hearing a clause like in (44)c, where the new word combines
with a plural suffix (-s), can the speaker conclude that *dingsda* must be a count noun.

Thus, the categorisation of words that are new for the language user is not only an item-based process for children but also in adults. The only difference between adults and children is that this process is run through faster in adults than in children. The adult speaker is confronted with fewer new words than a child; hence, a new word will receive more attention and be categorised immediately, which would explain the absence of a free variation stage of determiners in adults.

In sum, in this section we have seen how the grammar of the child develops towards a target-like representation. The child will depart from the initial setting of the correspondence rule if (and only if) he encounters relevant positive evidence in the input. In a conservative way, the child extends the structure, guided by X'-principles. The child unravels the layers of the DP step by step in a top-down fashion. I will refer to this process as *structure unravelling* in the remainder of this thesis. The assumption that DP acquisition starts out with the topmost projection of the DP has the important advantage that it is in line with learnability principles. Before we proceed to illustrate this advantage in section 5, we will first have a closer look at the role that the adjective plays in this process in the next section.

### 4. Adjective-Noun Combinations

The present section deals with adjective-noun combinations without a determiner that have been observed in child language. As will be illustrated here, at first sight these constructions seem to constitute a challenge to the structure unravelling theory proposed in the previous section. A number of hypotheses are conceivable to account for the missing determiner in adjective-noun combinations, and six different potential analyses will be presented and discussed in this section. When necessary, the analyses are illustrated with data of the Dutch children Tomas and Daan but note that the analyses hold more generally. I will conclude by showing that a model allowing the adjective to be either in Spec-DP or in Spec-NP is the most attractive analysis.

As pointed out in chapter 2, French and Dutch children pass through a stage where they omit the determiner in adjective-noun combinations (here illustrated with Dutch, cf. (46)).
At first sight these constructions are unexpected within the top-down fashion of DP acquisition proposed in the previous section: If we assume that the adjective is situated somewhere below the D-head, for instance in the specifier position of N, or in the specifier position of an intermediate functional projection, as argued by Cinque (1990, 1994) among others, then the presence of the adjective seems to indicate that the child has already discovered several lower layers of the DP, more specifically the specifier position below the D head. This would imply that at this point of development the child must have discovered the structural D-position and a word like auto corresponds to N’ (or a lower projection) as illustrated in (47). If the child actually categorised auto as N’, then it would be unexpected that he omit the determiner in (46).

Several analyses are conceivable to account for the missing determiner in A-N combinations like in (46). The first option that will be discussed here is the possibility that the adjective is in these cases adjoined to the DP. Then the observation that the child produces an adjective does not necessarily imply that he has discovered the structural D position above the adjective, and in this case, an account for the missing determiner is no longer necessary. One aspect that can tell us whether the construction is indeed an adjunction is the presence of agreement. If we subscribe to the canonical viewpoint that agreement is only possible in structural relationships but not in adjunctions, then the absence of agreement in these adjective-noun sequences in child data would support the hypothesis that these two elements are adjoined (see for instance Hulk (2004)). Hence, it makes sense to investigate the agreement properties of the adjective-noun sequences. In Dutch, the attributive adjective carries an inflectional –e suffix. The only exception to this is found in indefinite singular contexts where the adjective precedes a noun with neuter gender (cf. table 1). In this case, the adjective appears without overt inflection.
I analysed all adjective-noun combinations in the Dutch children Tomas and Daan produced from the beginning of the recordings until the age of 3;01.02 and 3;03.30 respectively. Utterances where the adjective was not correctly pronounced were not included into the count. In Tomas, who produced 27 adjective-noun sequences, the adjective was inflected in 85% of the cases. Daan produced 52 adjective-noun combinations, where the adjective was inflected in 81% of the cases. If instances were included where the children correctly omitted the inflection on the adjective like e.g. *klein huis*, then in Tomas 93% of adjective-noun combinations were correctly inflected and in Daan 96%. The children sometimes produced the adjectival inflection even in contexts where the adjective preceded a singular noun with neuter gender (cf. (48)). These also concerned situations where children introduced new objects into the discourse. Hence the contexts were indefinite, and the overt inflection on the adjective would be illicit in the target language. The overgeneralisation of the inflection for common gender has also been observed in other studies of Dutch first language acquisition [cf. Weerman, 2006 #140; Blom, 2006 #179]. This overuse of the –e suffix shows two things: First, the adjective-noun combinations cannot be instances of memorised units. And second, the presence of the inflection even in non-adult like contexts supports the view that there is a structural relationship between the adjective and the noun, and hence the hypothesis that their combination is the result of adjunction cannot be supported.

(48)  
a.  here little apple.DIMINUTIVE  
hier kleine appeltje  
Daan (2;06.25)  
b.  look nice mushroom.DIMINUTIVE  
kijk mooie paddestoeltje
The second option to account for the missing determiner in adjective-noun contexts is that these are instances of vocatives. In languages where proper names are preceded by a determiner, the determiner is illicit in vocative contexts (here illustrated with Southern German, cf. (49)a). Vocatives can be also used with adjectives, and in this case, the determiner is also absent (cf. (49)b).

\[(49)\]
\[
a. \quad (*\text{Der}) \text{ Peter, komm!} \quad \text{Southern German}
\]
\[
(\text{The}) \text{ Peter, come!}
\]
\[
b. \quad \text{Kleiner Peter, komm!}
\]
\[
\text{Little Peter, come!}
\]

This construction is very similar to the child data in (46). But a look at the child data shows that in both Tomas and Daan, 25% of the adjective-noun sequences occur in argument position. This is illustrated here with the examples in (50). Hence, the hypothesis that the adjective-noun sequences are vocatives is ruled out.

\[(50)\]
\[
a. \quad \text{grote buik heeft die} \quad \text{Tomas (2;7.10)}
\]
\[
\text{big belly has that}
\]
\[
\text{‘This one has a big belly’}
\]
\[
b. \quad \text{grote straat heeft de pats} \quad \text{Tomas (2;9.12)}
\]
\[
\text{big tail has the horse}
\]

A third hypothesis that can possibly explain the omission of the determiner could be the effect of a performance constraint. It might be difficult for the child to produce a complex string of words. Then the omission of some phonological material facilitates the production of the intended utterance. In this case, the structural D position is actually filled, but something goes wrong during the spell-out procedure of the word, and hence the word is not pronounced by the child. However, even though it is true that younger children produce shorter utterances than older children and that performance may play a role in the omission of words in young children, a performance hypothesis needs to be more refined and based on independent evidence as it otherwise runs the risk to have the status of an ad hoc solution.

The fourth option is related to the previous one: It is possible that there is a phonologically empty (Ø) determiner in the D-position. This is not at all uncommon: In Germanic languages like Dutch, mass nouns can occur without determiner (cf. (51)). In the same way, common nouns can appear without a determiner in indefinite plural contexts (cf. also table 1). They can have an existential reading (cf. (52)a) or a
generic reading (cf. (52)b). It has been argued that these bare nouns are introduced by a phonologically empty determiner (Longobardi 1994, 2001). Note that these bare nouns can also be preceded by an adjective. The situation parallels thus again the child data in (46). Consequently, the adjective-noun sequences in the children’s speech could also be preceded by a phonologically empty determiner (cf. (53)). If this is correct, the child will have to learn that this option is only possible for the contexts in (51) and (52) but not for singular count nouns like auto.

(51)   Ik wil Ø (koud) water           Dutch
       *I want (cold) water

(52)   a.  Er blaffen (jonge) honden buiten  Dutch
       *There bark Ø (young) honden outside
       ‘Young dogs are barking outside’
   b.  Ø (Grote) honden zijn goede bewakers
       (large) dogs are good guards

(53)

\[
\begin{array}{c}
\text{DP} \\
\text{Spec} \\
\text{D'} \\
\text{D} \\
\text{Ø} \\
\text{Spec} \\
\text{N'} \\
\text{mooie} \\
\text{auto}
\end{array}
\]

One argument against this hypothesis is that children use adjective-noun combinations both in definite and in indefinite contexts. Hence an extra assumption would be necessary that children have to unlearn using the Ø-determiner in definite contexts.

The fifth possibility to account for the determiner omission in adjective-noun sequences is to assume that the adjective has been raised. Two contexts of adjective movement are conceivable: DP internal movement of the adjective and predicate inversion in a small clause context. To start with the first option, it is possible that the adjective moves to the D head and picks up inflection there. Notice that in this case the analysis of adjectives as a specifier is no longer an option since specifiers cannot move to head positions. The only way to maintain a DP-internal adjective movement analysis is to assume that there is an AP between DP and NP.
(cf. (54)) as suggested by Abney (1987, but see Kester 1996 for arguments against such an analysis).

The second possibility of adjectival movement is predicate inversion. For constructions like in (55) (from Corver 2004) it has been proposed that the inflectional suffix \(-e\) is the head of a small clause. This head has the predicate as its complement and the subject as specifier (cf. Den Dikken 1998, Aboh 2004, Corver 2004).

\[(55)\quad \text{'n kiste törref} \quad \text{(Dutch, dialect of Katwijk)}
\]

\[a \text{ box-} e \text{ peat} \]

Applied to the adjective-noun combinations, this means that the adjective is the predicate and is situated in the complement position, the noun is the subject and situated in the specifier position of the small clause (cf. (56)). The inflectional suffix \(-e\) is the head of the small clause (cf. Aboh 2004). Both the predicate and the inflectional head move to the head position of a focus phrase, with the effect that the adjective carries inflection. This is in line with the observation that the adjective is inflected as illustrated above in table 1. Furthermore, concerning the semantics of the clause, it is actually plausible that the intended meaning of the child’s utterance in (46) is indeed a predicate construction with the sense “It is nice, the car”.\(^1\) After

\[^1\text{Even though this interpretation is less likely for the examples in (50).}\]
the predicate inversion, the construction superficially looks like a combination of an
attributive adjective and a noun, but as a matter of fact the underlying structure is a
small clause. Note that small clauses can appear in argument position without
problem (cf. (57)). This would explain why adjective-noun sequences without
determiner can appear in argument position in child language.

(56)  
```
\begin{tree}
  \text{FocusP} \\
  \text{Spec} \\
  F' \\
  [F^{-1}X] \\
  \text{mooi} -e \\
  \text{Spec} \\
  X' \\
  \text{auto} \\
  X \\
  \text{complement}
\end{tree}
```

(57)  I consider [John very intelligent]

The problem with such an analysis is that it is difficult to generalise over the child
data in (46) and the Dutch constructions in (55) as analysed by Corver. Furthermore,
one the inflectional head and the predicative adjective have moved outside the
small clause, the additional structure of the Focus Phrase is involved, and it is
unclear how this structure behaves in argument position.

The sixth and last option that will be discussed here is the possibility that
the adjective has specifier status and can be hosted in Spec-NP, as has been assumed
above, but additionally that it can be in Spec-DP. Hence, in the case of adjective-
noun combinations, the adjective corresponds to the highest specifier position. In
order to illustrate this, let us first have a look at the following construction: In adult
Dutch proper names can be preceded by an adjective. These constructions appear in
argument position without determiner (cf. (58)). Notice that in these cases, there is
an agreement effect with the following proper name: The adjective carries the –e
suffix when it precedes a person’s name but there is no overt inflection when it
precedes a place name (cf. (58)a vs. (58)b). In Dutch, person names have common
gender (de Jan) whereas place names have neuter gender (het Amsterdam), which
might explain this agreement pattern. Nevertheless, the agreement effect in (58)b is
remarkable as usually the absence of agreement is only observed in indefinite
contexts (cf. table 1). Like in Dutch, in French, person names and city names can
combine with a determiner, and also here, the adjective agrees with the noun (cf. (59)). Furthermore, these constructions are also possible in English, but Bloom (1990: 344) points out that occurrences of proper names with articles are restricted to a limited range of contexts. Interestingly, as Bloom notices, while these adjective noun combinations are rare in adult-to-adult speech, they are more frequent in “motherese”.

(58)  
- a. Grot-e Jan en klein-e Jan hebben dezelfde smaak in muziek
  big Jan and small Jan have the same taste in music
- b. Ik ben weer terug in mooi-Ø Amsterdam
  I am again back in beautiful Amsterdam

(59)  
- a. petite Marie
  little.FEM Marie
- b. petit Jean
  little.MASC Jean

Above in section 2.2, I have argued that proper names correspond to DPs because they cannot be modified. Considering the data in (58) and (59), in Dutch and French there is obviously a structural position preceding proper names. If we assume that proper names correspond to D’ as in (60), the semantic properties of the expression can still be explained because the proper name is still associated with the D-layer where specific reference is encoded (cf. section 3.1 above). At the same time, we can account for the observation that proper names can be preceded by an adjective. The adjective can but does not necessarily have to be hosted in Spec-NP. Considering that adjectives are specifiers, nothing prevents them from being hosted in the highest specifier position of the DP. Apparently there are two structural positions for the adjective within the DP, namely Spec-DP and Spec-NP. Furthermore, the agreement between the adjective and the noun (cf. table 1) follows straightforwardly as an effect of specifier-head agreement (cf. (61)).

(60)  
\[ Jan_w \leftrightarrow D' \]

---

2 I subscribe here to the canonical point of view that agreement takes place in specifier-head configurations. Other possibilities with respect to agreement have in fact been proposed but are not in contradiction with the general ideas of the argumentation here.
This analysis is supported by the observation that adjective-proper name combinations that do involve a determiner have quite a different interpretation: In this case the proper name receives a type reading, similar to common nouns (cf. (62) a vs. (62)b).

(62) a. De kleine Jan gaat naar huis
   *the little Jan goes to house*
   *The little Jan goes home’*

   b. De kleine man gaat naar huis
   *the little man goes to house*
   *The little man goes home’*

This indicates that in this construction the proper name *Jan* actually corresponds to *N*, and the adjective in this case is situated in Spec-NP, dominated by the determiner in D (cf. (63)).

(63)
If we now return to the adjective-noun combinations in child language ((46), here repeated as (64)), we find that the situation parallels the construction in (58) in the sense that the adjective carries inflection, and the utterance has a specific reference. It thus makes sense to generalise over these very similar constructions and to assume that the underlying structure of (64) is as in (65), where parallel to the adult construction the adjective is linked to the specifier position of the DP and the noun corresponds, to D’. In this way, the inflection on the adjective follows from specifier head-agreement. In addition, the semantic properties of the construction can be derived from the noun being associated with the D-layer: Recall that the D-layer encodes the properties in (29), i.e., a type-shifting operator, specificity and definitness. If auto\textsubscript{w} corresponds to D’, we can understand how the utterance of the child can refer to a specific car even in the absence of a determiner.

(64) mooie auto Dutch, Daan (2;06.25)

(65) \[ \text{DP} \]

\[ \text{mooie} \stackrel{\leftrightarrow}{\rightarrow} \text{AP} \]

\[ \text{D’} \stackrel{\leftrightarrow}{\rightarrow} \text{auto}_w \]

\[ \text{D} \]

\[ \text{NP} \]

\[ \text{N’} \]

\[ \text{N} \]

In the process of structure unravelling, this setting changes. The input of the child provides positive evidence against the setting in (65). This evidence consists of determiner-adjective-noun combinations like de mooie auto (‘the beautiful car’). Once the child is able to process this information, he must conclude that the adjective cannot always occupy the highest structural position in the DP. The status of the adjective does not change; it remains a specifier, but the adjective can also be associated with a specifier position lower in the DP. Hence, depending on the semantics of the expression, the adjective can be hosted in either of the two specifier positions. The option to host the adjective in the highest specifier position remains possible, as constructions like in (58) are grammatical in adult Dutch.

Notice that constructions like mooie de auto (‘nice the car’) are not possible in Dutch and other languages. Hence, if the determiner is present, the adjective
cannot be hosted in the highest specifier position in (65). The presence of A-D-N combinations is excluded by semantic properties. As Heim and Kratzer (1998) point out, predicate modification can exclusively take place between two predicates of the same type. The adjective mooie and the noun auto are both of the type <e,t>, and therefore, they can enter into a predicate modification relation. In contrast, D-N combinations are not of this type, and therefore, they cannot establish a predicate modification relation with APs. Thus, determiner-noun combinations like de auto cannot be modified by an adjective.

To conclude, in this section I have discussed several analyses to account for the missing determiner in adjective-noun sequences in child language. I want to argue here that the possibility that the adjective is a specifier that can either be hosted in Spec-DP or Spec-NP is the most attractive. It correctly predicts the presence of inflection on the adjective and the semantics of the utterance. Note that this is also the case in the analysis based on the presence of a phonologically empty determiner (Longobardi 2001). But unlike Longobardi’s approach, the analysis where the adjective can be hosted in either of the two specifier positions allows us to generalise over a phenomenon that can be found both in child and in adult language. Furthermore, Longobardi’s approach, i.e., the assumption that the determiner is phonologically empty, predicts that adjective-proper name combinations in adult language and adjective-noun combinations in child speech always have an existential or generic reading like the examples in (52), contrary to fact.

5. Proper Names with Determiners

In the previous section I have argued that proper names can correspond to D’. This proposal can account for yet another observation: In some languages, e.g., Hungarian or southern varieties of German, proper names can be preceded by a definite determiner but still have a proper name interpretation rather than a type reading. In languages like English or Standard Dutch, this is not possible. This contrast is illustrated here with Southern German and English (cf. (66)a vs. (66)b). If the determiner is present in English, the result is a type reading of the proper name (cf. (67)).

(66)  a.   Der Peter  ging heim   Southern German
     b.  (*The) Peter  went home  English

(67) Do you mean the Peter I met yesterday or the Peter who lives downstairs?
Apparently, the definite determiner has different functions in the above examples. In the example in (67) the determiner singles out one individual of the set of all persons called “Peter”. In contrast, in (66)a the determiner has no deictic function: It does not pick out a particular instance denoted by the following proper name. This is very similar to inalienable possessive constructions in Romance languages, where nouns denoting body parts are preceded by an expletive definite determiner (here illustrated with French, cf. (68)), and still the expression does not have a specific reading in the sense that the utterance does not refer to a particular hand that has been introduced in the discourse before.

\[(68)\]

\begin{itemize}
  \item a. Jean donne la main à Marie \\
       Jean gives the hand to Marie
       ‘Jean gives Mary a hand’
  \item b. Jean s’essuie le nez  \\
       Jean REFL cleans the nose
       ‘Jean wipes his nose’
\end{itemize}

I want to argue here that parallel to the inalienable possessive constructions, the determiner in (66)a has an expletive status. The determiner is not situated in the D-head in this case but in the specifier position of the DP. Hence, similarly to adjectives, for determiners two structural positions are possible targets of the correspondence rule, namely Spec-DP and D. Furthermore, as pointed out above, proper names can correspond to the D’ position. It makes sense to assume that this is also the case in (66). In this way, we can understand the fact that the name Peter does not have a kind reading but denotes a specific individual. Similarly, we can understand inalienable possessive constructions like in (68) if the determiner in this case corresponds to the specifier position of DP. The noun in these constructions regularly corresponds to the N head of the NP. French and German children have to find out in which contexts the definite determiner has a deictic function. French children have to learn that the determiner can have an expletive status when preceding the semantic class of nouns denoting body parts while German children have to figure out that determiners are expletives when preceding proper names.

In sum, in this section we have again seen evidence supporting the view that proper names correspond to D’. Furthermore, the assumption that determiners can correspond either to Spec-DP or D’ allows us to capture parametric differences with respect to the status of the definite determiner as deictic or expletive.
6. Top-down versus Bottom-up

In chapter 2, two viewpoints on first language acquisition have been contrasted: According to some researchers, the D-layer is initially not available. The DP structure is acquired in a bottom-up fashion, starting out with the lexical N position. The opposing point of view is that the D-layer is available from the onset of acquisition. The theory proposed in the present chapter subscribes to the latter position: Children have access to the functional properties of the D-layer from early on. At the onset of acquisition, nominal items correspond to the top-most projection DP, and subsequently the internal structure of the DP is unravelled top-down. In this section I will show that this initial setting is a direct consequence of learnability principles, more specifically, of the subset principle. Approaches based on the assumption that the D-layer is not present at the onset of acquisition are challenged by the following considerations about learnability.

The subset principle is a learning principle capturing the observation that certain errors are absent during the acquisition process (Berwick 1985, Wexler and Manzini 1987). The subset principle implies that when more than one possible analysis of a certain construction is possible, the child opts for the most restrictive option. For instance, in English sentences like (69), reflexives can only refer to the subject of the subordinate clause, i.e., the reflexive is bound within its local domain (principle A of the binding theory (cf. Chomsky 1980, 1981, 1982)). In contrast, in Korean the reflexive can also refer to the subject of the matrix clause, and thus a sentence like in (69) would be ambiguous (example from Goodluck (1991)).

(69)  Tom said [that Fred had shaved himself]

According to the subset principle, all children, hence also Korean children, start out with a grammar where the reflexive is locally bound. This is only a subset of the possible interpretations of the clause, represented by the inner circle in figure 2. Thus, children acquiring English will not accidentally interpret the subject of the matrix clause as antecedent of the reflexive. On the other hand, the subset principle predicts that the Korean children pass through an initial phase where they choose for the least permissive interpretation of the sentence and thus prefer the closest subject possible as antecedent of a reflexive (cf. inner circle). This has been confirmed in a study of Korean first language acquisition (Lee 1987). Children can only change the initial setting in the presence of positive evidence. Thus, if the Korean children find evidence in their language input that the reflexive
can target the higher subject in the matrix clause, they will change the initial setting in a next development step. This corresponds to the larger circle in figure 2.

**Figure 2. The subset principle applied to the acquisition of reflexives**

Reflexive free

Reflexive locally bound

In the same way, the subset principle can be applied to the acquisition of DP structure. This is illustrated again with typological differences. As pointed out above in section 2, in languages like English, French, Dutch or German, pronouns cannot co-occur with modifiers like adjectives or determiners. In contrast, languages like Japanese (Fukui 1987) or Korean (Kim 1987) allow for this possibility. This is shown here with Japanese pronouns that can be modified by a relative clause (cf. (70)a), an adjective (cf. (70)b and c), a determiner (cf. (70)d) or a nominal (cf. (70)e, data by R. Vermeulen, p.c.).

(70) a. [e sono hon-o katta] kare
    [this book-acc bought] he
    ‘he who bought this book’

b. ayasasi-i kare
    kind he
    ‘he, who is kind’

c. genki-na kanojo
    energetic she
    ‘she, who is energetic’

d. sono kanojo
    this she

e. isya-no kare
    doctor-gen he
    ‘he, who is a doctor’

f. kinoo-no anata
    yesterday-gen you
    ‘yesterday’s you’
Thus, in contrast to English or Dutch, Japanese pronouns cannot correspond to a maximal projection. This leads to two logical options for the initial setting at the onset of acquisition: One is that the child starts out with the assumption in (71) that all nominal expressions, including proper names and pronouns, are nouns. Then the setting for Dutch and English children would differ from the adult grammar. As a consequence, Dutch and English children would have to recategorise proper names and pronouns as DPs during acquisition in order to obtain conformity with the co-occurrence restrictions in adult language where proper names and pronouns cannot be modified by determiners or adjectives. The other option is that in the innate setting all nominal expressions correspond to a maximal projection (cf. (72)). In this case, children acquiring Japanese or Korean would have to reset the initial hypothesis such that pronouns are not DPs but rather correspond to a lower projection.

*Initial setting A:*  
(71) All nominal expressions are Ns.

*Initial setting B:*  
(72) All nominal expressions are DPs.

The following consideration about learnability sheds more light on the question which of the two options to choose. As argued above, the child can only give up an initial setting in the presence of positive evidence. The question is what evidence the child can rely on in order to reset the initial hypothesis in (71) that all names, including pronouns and proper names, are nouns. As Bloom points out, pronouns and proper names share many characteristics with nouns. Proper names and pronouns have the same distribution as common nouns: They appear in the argument positions of the verb, i.e., in subject or object position (cf. (73)). In addition, they share the same semantic roles, for instance AGENT or THEME. Furthermore, pronouns and proper names are not preceded by a determiner or modifier in the input, but the same holds for common nouns, which can also appear unmodified in the plural (cf. (73)a vs. (73)d). Thus, if the child starts out with the setting in (71) the fact that proper names and pronouns never combine with a determiner is not sufficient for the child to conclude that these do not correspond with the terminal node N. In other words, the mere absence of a particular construction, namely the absence of modified pronouns and proper names, is not sufficient to alter the initial setting.
The situation is different if the child starts out with the setting in (72) where all nouns, i.e., common nouns, proper names and pronouns, correspond to the maximal projection DP. In this case, it is possible to depart from this initial setting if there is positive evidence. The children acquiring Korean or Japanese can give up the initial setting in (72) if they encounter instances of modified pronouns as, e.g., in (70) in the input. In the same way, children acquiring English or Dutch are able to recategorise names for objects and substances as corresponding to N (instead of DP) if they perceive that these are preceded by a determiner in the input. It follows from this consideration about positive evidence that all children, including those acquiring Korean or Japanese, start out with the setting in (72) where all nominal items correspond to DP. This setting is represented by the inner circle (the subset) in figure 3 below. As argued above, the subset principle predicts that the child opts for the least permissive setting. As a matter of fact, the option in (72), represented by the inner circle in figure 3, is the most restrictive option as no modification of the nominal item is possible. In terms of markedness, we could thus say that nominal expressions occurring with a determiner are marked with respect to nominals that occur without a determiner. Hence, the subset principle predicts that children pass through a stage where all nouns correspond to DP and thus cannot be modified by a determiner or an adjective. Children can give up the initial setting of the inner subset when they encounter positive evidence in the input. In principle, it is possible that the initial setting changes only for a class of nominal expressions within the same language. This is for instance the case in English and Dutch, where, as pointed out above, the setting of the inner circle is target-like for pronouns as these cannot be modified whereas the setting for the class of common nouns changes to the outer circle because nouns can be modified.

Figure 3. The subset principle applied to DP-acquisition
It is important to note that figure 3 illustrates only the initial setting and the possible final setting. However, intermediate settings are in fact possible. For instance, as argued above in section 6, proper names can correspond to D’, as for instance in Dutch and French. A more detailed picture is given in figure 4. Notice that this assumption is compatible with models that assume additional functional projections between DP and NP.

**Figure 4.** *The subset principle applied to DP-acquisition, including possible intermediate settings*

We thus find that the direction in which the recategorisation of nominal expressions takes place (starting out with the highest projection DP) is captured by the subset principle. Furthermore, the subset principle predicts that children do not fall into error during the acquisition process of a particular construction. This prediction is also empirically testable with respect to DP acquisition. If the child does indeed start out with the assumption that all nominal expressions correspond to DP, we do not expect a child acquiring English, French or Dutch to incorrectly modify pronouns and proper names. Hence, we do not expect errors of the type *he* or *the Peter*. We will come back to the acquisition of proper names and pronouns in chapter 4. We will see there that indeed these kinds of errors do not occur in French and Dutch child language, which supports the argument made here that initially all names correspond to maximal projections.

Notice that Bloom (1990) proposes a similar initial setting. He assumes that the two principles in (74)a and (74)b are included in the innate properties the child has access to at the onset of acquisition.

(74)  

| a. | Names for kinds of objects and substances are nouns. |
| b. | Pronouns and names for individuals are NPs. |
Even though Bloom’s proposal captures the learnability of proper names and pronouns, it does not account for the absence of determiners in early child language. The proposal I put forward here is even stronger than the two principles proposed by Bloom as I argue that not only pronouns and proper names but also names for kinds of objects and nouns correspond to a maximal projection at the onset of acquisition (cf. (72), here repeated as (75)). In this way, the theory is more economical than Bloom’s proposal. Moreover, it makes it possible to account for the determiner omission as well as for the referential properties of bare nouns in early child speech.

(75) *Initial setting:*

All nominal expressions are DPs.

As we have seen, it follows directly from the subset principle that when the child encounters a new nominal item in the input, the initial setting of a correspondence rule targets the maximal projection DP. In other words, the child is equipped with a default setting, namely the setting in (75). In the point of view adapted in this thesis that lexical items correspond to syntactic categories rather than being inserted in terminal nodes, such a default setting is possible without any problems. In contrast, a theory based on lexical insertion is not compatible with a default setting like in (75) as elements are inserted only into terminal nodes but cannot correspond to maximal projections. In the structure building model, the only possible option for a default hypothesis is a setting where all nominal expressions are inserted into N (cf. (71)). However, as shown in the present section, this setting is incompatible with the subset principle and cannot be unlearned as there is no positive evidence against this setting in the input. Another problematic issue concerns proper names. Recall that the structure building model assumes the presence of a prefunctional stage where there is no D-layer. The only option this leaves is that proper names are inserted into N at this stage. However, as argued earlier (cf. Vergnaud and Zubizaretta 1992), the N-layer only establishes type (or kind) reference. Hence, the semantic properties of proper names cannot be captured at this early stage. When the DP structure has expanded, the structure building model offers the option that proper names can raise to the D head. But then an extra explanation for why the child raises only proper names to the D-head but not common nouns has to be found. We will return to this issue in chapter 4.

To conclude this section, the theory proposed in this chapter that the D-layer is present at the onset of acquisition and that DP structure is unravelled in a top-down fashion follows directly from learnability principles, more specifically, the subset principle. This theory implies that at the onset of acquisition all nominal
items correspond to DPs. This initial default hypothesis can be reset in the presence of positive evidence. In contrast, approaches based on the assumption that all nominal items are Ns and the D-layer is absent at the onset of acquisition cannot account for how the child “unlearns” this initial setting. We will come back to this issue in chapter 4 where empirical evidence will be presented supporting the viewpoint that children have access to the D-layer from early on.

7. Returning to the Requirements

In chapter 2, I formulated 10 requirements for a DP acquisition theory. In the present chapter I proposed a new approach to first language acquisition of the DP, to which I refer as the structure unravelling theory. After having seen the mechanisms of this theory, we can now evaluate whether the new proposal meets these 10 requirements. As we will see in the present section, this is indeed the case.

A. Account for the fact that very young children have a grammatical representation of the determiner before they start to produce it.

As pointed out in chapter 2, a number of different studies have investigated the perception of the determiner in very young children. Several experiments have illustrated how children are able to perceive the determiner in the input. These results show that children must have stored at least some phonological properties of the determiner. Furthermore, according to Höhle, Weissenborn, Kiefer, Schulz and Schmitz (2004) and Christophe (2006), the presence of the determiner creates an expectation in the children that the following word is a noun.

These observations are perfectly compatible with the structure unravelling theory proposed in the present chapter. As argued above in section 3.2, the observed effects of the determiner in perception by Höhle et al. (2004) and Christophe (2006) do not show that the determiner predicts that the following word is a noun but rather that the determiner predicts that the following word is object denoting. Once a phonological item has been identified as object, either by the determiner or by other strategies, the innate correspondence rule in (32) (here repeated as (76)) links this item to a DP.

(76) Initial state of acquisition:
\[ X_{\text{object}} \leftrightarrow \text{DP} \]
At this developmental stage, the determiner is not part of the syntactic DP structure, but again, this is not in contradiction to the fact that the children perceive the determiner in the input. As argued above in section 3.2, articles and nouns interact in the acquisition process. The presence of the noun helps to categorise the determiner and to integrate it into the DP-structure. The child will discover that a particular noun like *box* is always preceded by a determiner. At first, the determiner constitutes phonological material that is uninterpretable at the syntax. However, once the child has figured out that a determiner like *the* always appears in definite contexts, he can conclude that definiteness is expressed overtly in his target language. Under the assumption that the definiteness feature is innately present in the D-head, the child can establish a correspondence between the phonological form of the determiner and its representation at the syntax (cf. (33), here repeated as (77)). In sum, the observed effects of the determiner in perception in the experiments are in perfect line with the structure unravelling approach presented here.

(77) \[ \text{the} \leftrightarrow \text{D} \]

B. Account for the occurrence of protodeterminers.

The structure unravelling theory describes how the syntactic representation of the DP develops in the child’s grammar. As pointed out above, at the onset of acquisition, all nominal expressions correspond to DPs. After the child has realised that a certain nominal item like *box* is always preceded by a determiner, this initial correspondence is reset such that *box* corresponds to an NP or a lower projection (cf. (78)) and the determiner is integrated in the DP structure.

(78) \[ \text{box} \leftrightarrow \text{DP} \]
\[ \ldots \]
\[ \text{box} \leftrightarrow \text{NP} \]

Thus, at this stage the child “knows” that *box* must be preceded by a determiner. However, this does not imply that the child immediately masters the pronunciation of the article. As pointed out above in chapter 2, several studies have shown that unstressed syllables are less salient in the children’s perception (Echols and Newport 1992, Vihman, Nakai, DePaolis and Hallé 2004). Determiners are also unstressed syllables. Hence, it is likely that at early stages of language acquisition the phonological properties of determiners are not fully specified in the child’s grammar. It might be conceivable that the child does not perceive the determiner
properly and is therefore not able to reproduce the determiner in an adult-like way. In order to test this hypothesis, it might be interesting to investigate whether young children are able to discriminate between protodeterminers and true determiners in the input.

As pointed out above, in some of the children protodeterminers and true determiners co-exist for a while. It is a well-known phenomenon that children produce different phonological realisations of the same target utterance. Within the framework of *optimality theory* (Prince and Smolensky 1993), this observation has been accounted for by arguing that there are still several phonological output candidates available in the child’s grammar. The child needs first to fine-tune phonological constraints before he can rule out the non-target like candidates. In this developmental stage it is possible that there are different phonological realisations of the same word. This could also apply to the production of the determiner and explain the co-existence of target-like realisations of the determiner and protodeterminers in the children’s production.

Thus, I want to argue here that phonological development and syntactic development are processes that interact with each other but still follow their own path. Hence, it is possible that the articulation of lexical items, as for instance determiners, is not yet target-like, even though the underlying syntactic representation is present in the child’s grammar.

C. Account for the systematic order in the emergence of DP elements:

Nouns > determiners > pronominal adjectives > postnominal adjectives (in French).

As we have seen in chapter 2, there is a certain order in the emergence of DP elements. The first DP elements produced by the child are bare nouns, followed by D-N combinations. In a next step D-A-N combinations are possible and finally D-N-A combinations (in languages allowing for postnominal adjectives). I want to argue here that a number of factors have an influence on this order of emergence: Prosodic properties, semantic aspects, input frequency and the top-down structure unravelling process, which is guided by X'-principles.

Regarding the first aspect, we have seen evidence in chapter 2 that the determiner is less salient in the perception of the child as it falls on unstressed syllables. In addition, the semantic information of determiners is rather abstract for young children whereas the interpretation of nouns is more easily accessible. Thus, even though determiners are highly frequent, children start out with the production of nouns. Furthermore, the emergence of DP-elements is influenced by the top-down
unravelling of DP-layers. The unravelling is guided by innate X’-principles and takes place only if there is positive evidence in the input. In this way, the order in the emergence of DP elements can be accounted for. At the onset of acquisition, words denoting objects correspond to DPs. Thus, nouns like box occur bare as the determiner cannot be accommodated in the structure. From this starting point, the DP structure is unravelled, driven by positive evidence in the input. As pointed out above, the first part of the DP internal structure discovered by the child is the functional head D that hosts the determiner. This makes determiner-noun combinations possible and explains why D-A-N combinations are still absent at this stage. In a next developmental step, the child has unravelled the DP structure further such that the specifier position that is the sister of N’ is available and can host the adjective. For Romance languages it has been assumed that there is an intermediate functional projection. In cases of postnominal adjectives, the noun can raise to the head position of this projection. It follows that this position is discovered only after the child has encountered the relevant evidence in the input, i.e., postnominal adjectives.


As pointed out in chapter 2, there is a lot of variation in the acquisition of the DP. It has been observed that bare nouns and combinations like D-N, A-N, D-A-N, N-A and D-N-A co-exist (cf. Pannemann 2006), which has been captured in requirement D. The assumption that phonological forms are linked to their syntactic representation by correspondence rules implies that the acquisition of syntactic properties takes place for each nominal item separately. The resetting of the correspondence rule is a process of lexical learning that takes place item-by-item. It follows then that variation is possible: The hypothesis that the DP structure is unravelled per lexical item if there is relevant evidence in the input predicts that the fine-tuning must be sensitive to input properties of lexical items, such as for instance frequency. These input properties can differ, and consequently we expect variation among nouns: Some items will already be reanalysed as an NP or a lower category by the child and therefore be preceded by a determiner or even several DP internal elements. At the same stage, other items are still associated with DP and therefore occur as bare nouns. In this way, the co-existence of bare nouns, D-N, D-A-N and D-N-A combinations reflects the fact that items are in different stages of unravelling.

Furthermore, one and the same noun can occur with and without a determiner, which is illustrated in (79) (repetition of example (12)a from chapter 2).
(79) dame/ le dame/ une dame  
    lady/ the.MASC lady/ a.FEM lady

The presence of the determiner *une* indicates that a reanalysis of the correspondence rule has already taken place for this item. It corresponds now to NP or a lower category; therefore, the determiner should not be omitted. This observation makes more sense if we consider the general organisation of the lexicon. Obviously at this stage, two lexical entries for *dame* co-exist in the lexicon: One that corresponds to DP at syntax and a second entry where the phonological string $dame_w$ corresponds to NP (cf. (80)).

As illustrated in chapter 2, D-A-N combinations and A-N combinations co-occur in the children’s speech. Hence, utterances like in (81)a and (81)b can co-exist.

(80) a. $dame_w$ $\leftrightarrow$ DP  
b. $dame_w$ $\leftrightarrow$ NP

(81) a. petite dame  
    little lady  
    French  
b. une petite dame  
    a little lady

In section 6 I argued that in adjective-noun combinations without determiner, the noun corresponds to the D’ position. It is conceivable that like in (80), two entries for the same phonological word also co-exist in the lexicon (cf. (82))

(82) a. $dame_w$ $\leftrightarrow$ D’  
b. $dame_w$ $\leftrightarrow$ N

This leads to a situation of homonymy in the lexicon: The same phonological form corresponds to two different syntactic representations. Thus, we have two different correspondence rules between syntax and phonology for the same output. This is in conflict with the general principle of grammar that a particular form is mapped only to one representation (Humboldt 1836, Aronoff 1976). As a consequence, the two rules in (80) are in competition with one another. The competition between these rules is regulated by the elsewhere principle (also known as the Paninian Principle),

---

3 Earlier studies account for this variation based on parallel grammars (Kupisch 2003, Hulk 2004). I will discuss this proposal in more detail in chapter 4.
a notion introduced into generative grammar by Kiparsky (1973). According to this principle, a more specific rule blocks a general rule. For instance, the English past tense for regular verbs is formed by the stem of the verb + ed (cf. (83)a). In contrast, irregular verbs like to go have an idiosyncratic past form stored in the lexicon (cf. (83)b). According to the elsewhere principle, the learner opts for the more specific rule in (83)b.

(83)   
a. past (X) → X-ed  
b. past (go) → went

If we now consider the two competing correspondence rules in (80), we find that the rule in (83)a, where dame corresponds with a DP, is the more general rule. It is the default assumption that the child starts with and that is applied to every phonological item referring to an object. Only in the case of positive evidence will the child depart from this rule and establish a correspondence rule that is more specific. The competition situation in the acquisition process is thus regulated by the elsewhere principle: The more specific rule in (80)b, which accommodates the input better, wins over the general rule in (80)a.

E. Account for the observation that early determiners are not parts of unanalysed units.

At the onset of acquisition, children produce bare nouns, and according to the theory proposed here, these correspond to the maximal projection DP. In contrast, the determiner initially plays an important role, especially in perception, whereas syntactically it is not yet implemented in the DP structure. In a next step in the development, the determiner also gets a syntactic representation and is integrated into the X'-structure. Thus determiners and nouns have independent lexical entries and are generally speaking not treated as unanalysed units.

Notice that, as pointed out in chapter 2, there can be exceptions to this. In the French child Nathalie, there were two determiner-noun combinations that met the criteria for fixed units. As we saw, the excessive use of one of these sequences, i.e., la pé ( = la poupée, ‘the doll’), could be identified as distorting the general shape of the developmental curve. The presence of this sequence caused a U-shaped development in the production of determiners. When this sequence is excluded from the count, the developmental curve increases gradually. These infrequent fixed-unit formations can actually be understood within the structure unravelling theory. In this case, the child has analysed the sequence la pé as one phonological word denoting
an object. Consequently the representation in the child’s grammar looks like in (84).
Only in a subsequent stage did Nathalie identify the noun *poupée*. At this point she started to use the word without determiner, which indicates a reanalysis as in (85). Later on, Nathalie produces the word with a determiner (including gender errors), which shows that from then on, the word passed through the regular process of structure unravelling (cf. the subsequent steps in (86)).

\[
\begin{align*}
(84) & \quad [læ\text{pé}]_w \leftrightarrow \text{DP} \\
(85) & \quad \text{poupée}_w \leftrightarrow \text{DP} \\
(86) & \quad \text{poupée}_w \leftrightarrow \text{DP} \\
& \quad \text{poupée}_w \leftrightarrow \text{D'} \\
& \quad \text{poupée}_w \leftrightarrow \text{NP} \\
& \quad \ldots
\end{align*}
\]

In sum, the structure unravelling theory treats nouns and determiners as independent elements, which is in accordance with the empirical observation that, generally speaking, there are no fixed D-N units. In addition, the new theory explains the presence of exceptionally observed fixed determiner-noun units.

**F. Account for the occurrence of agreement errors in determiners.**

The structure unravelling theory captures the syntactic development of the child’s grammar. At a certain moment the child has acquired the prenominal position, but this does not imply that he uses the correct form of the determiner. It is conceivable that the child’s choice for a particular form of the determiner is guided by other strategies like frequency of a particular form in the input. Hence, I assume here that the morphological development and the syntactic development are independent processes. I will come back to this in more detail in chapter 4.

**G. Account for the fact that determiners and adjectives are different syntactic categories.**

The theory proposed in the present chapter distinguishes between determiners and adjectives in the following way: Only determiners are identified as functional elements as they are situated at the edge of the phonological clause. Adjectives are
identified as extra material that needs to be accommodated within the DP structure and that pushes the unravelling of the structure further downwards. In section 4, I argued that adjectives like little can be hosted either in Spec-DP or in Spec-NP. Furthermore, I pointed out that determiners correspond to D but can also be situated in Spec-DP when they have an expletive interpretation like in inalienable possessive constructions or in languages where proper names combine with a determiner. This explains why the determiner does not have a deictic or definite interpretation in these cases. In chapter 2, I pointed out that one problematic aspect of the structure building model is that determiners and adjective are assumed to share the same syntactic position, namely an unspecified pronominal specifier position. One might argue that determiners and adjective share a position here as well, namely Spec-DP. However, there is an important difference in the present theory: Adjectives have specifier status whereas determiners are heads. Heads can be hosted in specifier positions, but specifiers like adjectives can never be hosted in head positions.

H. Account for the observation that even though there is no overt determiner, bare nouns in child language have the same semantic properties as DPs in adult language (type-shifting, reference to particular instances, definite reference).

The main idea of the structure unravelling theory is that at the onset of acquisition, the functional D-layer is present, including its characteristic semantic properties. All nominal items correspond to the maximal projection DP at this early stage. In this way it follows that the D-layer is activated, and hence the semantic properties encoded in D are present and fully operational in the child’s grammar. In this way, we can understand why bare nouns in child speech can occur in argument position even in the absence of a determiner. In addition, this idea explains the observation that the children can refer to particular instances even though they are using a bare noun. Furthermore, this assumption accounts for the observation that children use bare nouns in definite contexts.

Models based on the hypothesis that the functional D-layer is not available from the onset of acquisition are forced to make extra assumptions in order to account for the referential properties of bare nouns in child speech. In contrast, within the structure unravelling theory, the principles that are assumed to hold for child grammar are the same as those in adult grammar, making extra assumptions superfluous while accounting for the observation that the bare nouns produced by the children behave exactly like full DPs in adult language.
I. Account for the observation that determiner omission is not exclusively a discourse phenomenon but that it involves more underlying mechanisms.

As argued in chapter 2, discourse presupposition alone cannot explain the determiner omission in early child speech. Rather, additional underlying mechanisms seem to be involved in this process as well. The structure unravelling approach goes beyond a discourse account by explaining determiner omission in terms of underlying syntactic principles. More specifically, the new theory relates the determiner omission in child speech to syntactic co-occurrence restrictions observed in adult language. The possibility to break through the one-to-one relation between phonological words and syntactic positions is available both in child and adult grammar. In fact, the theory generalises over the same syntactic phenomenon observed in different domains.

J. Account for the observation that bare nouns in child speech can occur in ungoverned positions.

According to the Empty Category Principle (ECP), DPs with an empty D head must be licensed by proper head-government, thus they must be preceded by a verb or a preposition (Rizzi 1990). I have shown in chapter 2 that bare nouns in child language can actually appear in non-governed positions, i.e., without verbs or prepositions. This implies that there is no empty D-head in the structure. The structure unravelling theory is in line with this assumption. In this theory, bare nouns like box correspond to the maximal projection DP in an initial stage. In other words, at this stage it is not the case that the noun corresponds to the N position, which is in turn preceded by an empty D position.

8. Conclusions

In this chapter I have presented a new approach to determiner acquisition. This analysis is based on the standard assumptions of the generative framework except for one important aspect: I adopt the viewpoint that there is not necessarily a one-to-one relationship between phonological items and terminal nodes at syntax (Sproat 1985, Radford 1988, Halle and Marantz 1994, Jackendoff 1997, Weerman and Evers-Vermeule 2002, Neelerman and Szendrö to appear). Based on this position, I have presented a new approach for first language acquisition of the determiner, i.e.,
the structure unravelling theory. According to this model, the functional properties of the D-layer are present from the onset of acquisition.

A remark is necessary with respect to the compatibility of this theory with other models. The view that bare nouns in child language correspond to DPs at the syntax implies that the DP is present universally in all languages. Still, it is important to note that this view is not shared by all linguists. I want to argue here that the structure unravelling approach presented in this thesis is still compatible with these models under the following considerations: Recall from chapter 2 that nouns in argument position have a number of characteristic semantic properties, here repeated as (87). As argued above, the bare nouns observed in child speech display exactly these properties. Therefore, in a theory assuming that the DP is not projected universally or not present from the onset of acquisition it, is nevertheless crucial that these semantic properties are taken into account.

(87)  

- the presence of a type-shifting operator
- the possibility of referring to particular items
  (token reference, specificity, deictic function)
- the possibility of having a definite interpretation

One alternative has been proposed by Cheng and Sybesma (1999). Even though they agree with Chierchia (1998) in that they assume that the D-layer is not present in Chinese, they argue that Chinese bare nouns project a Classifier Phrase (ClP, cf. (88)).

(88)  

This view is supported by the following observation: In contrast to Chierchia (1998), Cheng and Sybesma argue that Chinese actually makes a distinction between mass nouns and count nouns, which is reflected in two different types of classifiers. There are classifiers that create a unit of measure, and these can combine with the modification marker de. Another group of classifiers names units of natural semantic partitioning and cannot combine with de (cf. (89) vs. (90), Cheng and Sybesma (1999: 515/6)).
(89) san bang (de) rou
    *three CL-pound DE meat
    'three pounds of meat'

(90) ba tou (*de) niu
    eight CL-head DE cow
    'eight cows'

Cheng and Sybesma propose that similar to D, classifiers in Chinese have a deictic function: They can single out particular instances described by the NP. We find thus that even though there is no determiner present, there is at least one functional layer above the NP that makes sure that the semantic properties of nouns in argument position are represented in the structure.

To conclude, I want to argue here that the semantic properties like the presence of the type-shifting operator, specific reference and definiteness as in (87) are in fact universal. They are not necessarily spelled out overtly in all languages; they can be only partly expressed by the morphology of a language as the Mandarin examples show or not spelled out at all as in Russian. The semantic properties remain morphologically unspecified unless positive evidence in the input provides information for the child that they are in fact expressed overtly in the target language.\(^4\) The distribution and interpretation of bare nouns in child language shows that these semantic properties are present from early on. The structure unravelling theory is based on the assumption that the properties encoded in the D-layer are present universally. I have shown that this is not a priori in contradiction with models that assume that the DP is not projected in all languages as long as these models account for the semantic properties of nouns in argument position in another way. In the awareness that other notational variants are certainly conceivable, I will keep using the notion “DP” when referring to the semantic properties in (87) in the remainder of this thesis.

As illustrated in this chapter, the structure unravelling theory meets the 10 requirements for a DP acquisition theory formulated in chapter 2 based on empirical observations and theoretical considerations. The most important advantages of this theory are listed here again: Firstly, the structure unravelling theory captures the observation that bare nouns in child speech behave exactly like full DPs in adult language with regard to referential properties and syntactic distribution. Secondly, the new theory generalises over syntactic co-occurrence restrictions in adult and

\(^4\) See Zeijlstra (to appear) for a similar point of view.
child language. And finally, the theory is in accordance with learnability principles. The last point is an important contrast with models based on the assumption that the DP structure is acquired in a bottom-up fashion.

The next chapter deals with the predictions made by the new theory. Two important aspects of the new model will be addressed there. First, the structure unravelling theory correctly predicts that the process of DP unravelling takes place individually for each nominal item. Second, we will see empirical evidence supporting the view that the child actually unravels the D-layer in a top-down fashion.
4 IMPLICATIONS OF STRUCTURE UNRAVELLING

1. Introduction

In chapter 3 I introduced a new point of view on DP acquisition. This new perspective leads to certain predictions for first language acquisition. The present chapter investigates the predictions of the structure unravelling theory in more detail. Two important implications of the new theory will be focussed on. First, as argued in chapter 3, it follows from the structure unravelling theory that the syntactic properties of a lexical item are acquired item-by-item. Thus, the question whether a particular item is preceded by a determiner is dealt with individually for each item. This leads to three predictions, which will be investigated in section 2. The predictions concern a) differences between individual items, b) cross-linguistic differences, c) the shape of the developmental curve of determiner production.

A second implication of the new theory concerns the direction in which the different layers of the DP are unravelled. As pointed out in the previous chapter, it follows from considerations about learnability that the unravelling takes place in a top-down fashion, starting out with the topmost projection. This direction of structure unravelling predicts that children should not fall into error with respect to syntactic co-occurrence restrictions. More specifically, lexical items that cannot be modified by a determiner or a prenominal adjective in adult language should behave exactly like this in child language as well. These co-occurrence restrictions will be investigated in section 3 based on a) the acquisition of proper names and b) the acquisition of pronouns. As we will see there, the issue of co-occurrence restrictions is related again to the item-based learning mechanism.

The predictions outlined here are tested with longitudinal data of spontaneous speech in parent-child interaction. I investigated the two monolingual French children Grégoire and Max and the two monolingual Dutch children Daan and Tomas. I will present evidence that supports the two main implications of the new theory proposed in this thesis: The DP structure is unravelled in an item-based fashion, and this structure unravelling takes place top-down, starting with the

1 Parts of this chapter have been presented earlier in Pannemann and Weerman (2006, to appear) and Pannemann and Gijzel (2007).
topmost projection. Furthermore, I will show that the hypothesis that the functional D-layer is not available and DP structure is built up gradually in the acquisition process (i.e. the structure building model, Clahsen, Eisenbeiß and Vainikka 1994, Müller 1994, Granfeldt 2000a) is challenged by the results presented in this chapter.

In section 4, I will deal with the question how the presence of agreement errors in first language acquisition is compatible with the idea of an item-based learning mechanism. Section 5 concludes the chapter.

2. Item-based Learning

Three predictions will be investigated in this section: First, if DP acquisition is a process of item-based learning we expect that differences between items are possible. More specifically, an item-based model predicts that at a certain stage of acquisition, some items are preceded by a determiner while others still occur as bare nouns. In contrast, the structure building model predicts no differences between items. This prediction is dealt with in section 2.1. As we will see there, during the process of acquisition, differences between lexical items can indeed be observed, which supports the item-based approach. Second, the item-based approach predicts correctly that the determiner system is acquired earlier in Romance languages than in Germanic languages as illustrated in section 2.2. The third prediction concerns the shape of developmental curves, which can provide more insight into the nature of the acquisition process. As shown in section 2.3, the development of overt determiners increases gradually; this again is more in line with an item-based approach than with a rule-based learning mechanism. Note, however, that even though the structure unravelling theory implies that the determiner system is acquired individually for each lexical item, the theory is based on the assumption that the child disposes of abstract linguistic knowledge at the onset of acquisition. This contrast to constructivist views on first language acquisition is discussed in section 2.4.

2.1 Differences within and between Items

As pointed out in chapter 2, according to the structure building hypothesis, DP acquisition is characterised as a stepwise expansion of syntactic structure (Clahsen et al. 1994, Müller 1994, Granfeldt 2000a, Hulk 2004). In an initial stage, there is only a minimal projection of the lexical category N. Subsequently the structure
expands and allows for one prenominal position. In a last developmental step, the D-layer that dominates the NP becomes available to the child. This point of view can be characterised as a rule-based mechanism. Potential differences between nouns play no role; all nouns are treated in the same way and enter into the syntactic structure that is available to the child at a particular stage.

The alternative position advocated in this thesis is that the unravelling of the DP structure takes place item-by-item. Above I have argued that the initial default setting of the correspondence rule in (1), where a nominal item X corresponds to the maximal projection DP, can only be abandoned if there is positive evidence in the input.

(1) \[ X \leftrightarrow \text{DP} \]

Hence, only if the child perceives that a particular nominal item X is consistently preceded by a determiner will he reset the correspondence rule such that X corresponds to a projection lower than DP. As the resetting of the correspondence rule takes place item-by-item, this approach allows for differences between nouns with respect to the presence of the determiner. In this section, I will present evidence supporting the latter viewpoint: The acquisition of the determiner system is a lexical process.

In chapter 2 we have already seen that there is variation in the acquisition of the determiner. At a certain stage of acquisition, the same noun can appear with and without determiner (here illustrated with French in (2)), which has become known as the free variation stage (Chierchia, Guasti and Gualmini 1999).

(2) a. dame
   lady
   Daniel (1;8.7)

I will refer to this phenomenon as variation within items. Notice that the structure building approach does not a priori exclude this kind of variation: It has been proposed that during the process of DP acquisition, different grammars can co-exist (Hulk 2004, Kupisch 2004b). Hence, it is possible that two grammars of the type (3)a and (3)b co-exist, leading to the output in (2)a and (2)b where the same item can appear with and without a determiner.
Similarly, the structure unravelling approach can handle the variation of the determiner within the same lexical item illustrated in (2)a and (2)b. As argued in chapter 3, this follows if at this point in the acquisition two versions of the lexical entry for *dame* co-exist (cf. (4)).

\[
\begin{align*}
\text{(3)} & \quad a. & \quad \text{N} \\
& & \quad \text{dame} \\
& \quad b. & \quad \text{NP} \\
& & \quad \text{une} \quad \text{N} \\
& & \quad \text{dame}
\end{align*}
\]

Hence, both approaches capture the observed differences within the same item as in (2). However, the two approaches differ with respect to differences between items in the sense that a noun X is consistently preceded by a determiner while at the same stage a noun Y still occurs as bare noun. Within the structure building model there is no reason to assume that a noun X is more often inserted into the grammar in (3)a than into the grammar in (3)b whereas the opposite holds for a noun Y. All nouns are treated in the same canonical way in the sense that they all evenly undergo the process of being inserted in either of the two grammars. Thus, as soon as the child starts to regularly combine nouns with determiners, he should do so with all nouns in the same way. In contrast, the structure unravelling approach advocated in this thesis predicts that there is also variation between individual items. It is possible that a lexical item like *dame* still corresponds to a DP (cf. (5)a), and hence is produced without a determiner, while another item like *chien* (‘dog’) corresponds to N and occurs therefore with a determiner (cf. (5)b).

\[
\begin{align*}
\text{(4)} & \quad a. & \quad \text{dame}_W & \leftrightarrow \text{DP} \\
& \quad b. & \quad \text{dame}_W & \leftrightarrow \text{NP}
\end{align*}
\]

\[
\begin{align*}
\text{(5)} & \quad a. & \quad \text{dame}_W & \leftrightarrow \text{DP} \\
& \quad b. & \quad \text{chien}_W & \leftrightarrow \text{N}
\end{align*}
\]
Thus, the structure unravelling theory predicts the existence of developmental stages where some nouns occur as bare nouns whereas other nouns are already preceded by a determiner (cf. (6)).

(6) Prediction 1:
There is a difference in the syntactic development of individual nouns. Some nouns still occur as bare nouns whereas other nouns have already started to combine with a determiner.

A way to investigate whether there are differences between items is to follow the development of a particular noun in the course of time in longitudinal data. This method makes it possible to observe the chronological development of the determiner system in a particular item, and at the same time it allows us to synchronically compare an item with other items produced at the same time. An aspect complicating this investigation is that the longitudinal data consist of spontaneous interaction. Therefore, the situations at which the recordings were taken were not always comparable. Different activities took place, and different toys or other objects were present. As a result, the nouns produced by the children varied between the recordings. For that reason only nouns that occur in at least three files were chosen in Grégoire, Max and Tomas. Daan produced a higher number of items during different recordings; therefore, only nouns that occurred in at least six files were chosen. Furthermore, only nouns appearing in the early recordings as well as in the late recordings were selected in order to be able to compare their development over a longer period. In the count, protodeterminers were included but noted separately in the tables. Notice that in Grégoire’s data no protodeterminers were coded in the transcript. In Max’s data, only a very small number of protodeterminers was found, but these did not show any effect in the investigation of the item based acquisition. In Tomas’ and Daan’s data, protodeterminers were coded and included in the tables. In order to get a global orientation with respect to the stage of determiner acquisition the children are in during a certain recording, the overt production of determiners was integrated in the tables (note that this overt rate does not include protodeterminers).

Table 1 summarises the results for Grégoire. For each file, the age and the overt determiner rate is indicated at the top of the table. For each word, the number of bare nouns (BN) and determiner-noun combinations (DN) is specified. We see for example that in the first recording at 1;9.18, where the overt determiner production is 15%, Grégoire produces 11 instances of voiture (‘car’) as bare noun and 3
instances where *voiture* is preceded by a determiner. A synchronic comparison between all items reveals that even though *voiture*, *lumière* (‘light’), *chausson* (‘slipper, bootee’) and *chien* (‘dog’) combine with a determiner already in the early files, there are still many instances where they occur as bare nouns. In contrast, *main* (‘hand’) and *nez* (‘nose’) always appear with a determiner from early on.

Table 1. Acquisition of D in Grégoire per item

<table>
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<td>1:11:22</td>
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<td>67</td>
<td>88</td>
<td>83</td>
<td>95</td>
<td>99</td>
</tr>
</tbody>
</table>

*voiture*  
BN | 11 | 0 | 12 | 15 | 4 | 0 | 14 | 0 | 0 | 0 |
DN | 3 | 0 | 2 | 8 | 6 | 0 | 4 | 0 | 0 |

*lumière*  
BN | 3 | 10 | 4 | 1 | 0 | 1 | 0 | 0 |
DN | 0 | 2 | 1 | 0 | 0 | 2 | 0 | 0 |

*chausson*  
BN | 3 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
DN | 0 | 7 | 0 | 0 | 0 | 0 | 3 | 2 |

*chien*  
BN | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
DN | 2 | 12 | 1 | 0 | 0 | 0 | 2 | 0 |

*main*  
BN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
DN | 0 | 5 | 34 | 0 | 0 | 0 | 1 | 0 | 0 |

*nez*  
BN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
DN | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 2 |

2 Light grey and dark grey shades were used in order to visualise the presence of bare nouns (BN) and determiner-noun combinations (DN), respectively, in the table.  
3 Overt determiner rate based on Granfeldt (2000b: 67).  
4 The high number of *main* in this recording is caused by a playful conversation between Grégoire, his mother and one other adult where the adults seem to practise the distinction between the left and right hand with Grégoire.
We find thus that in Grégoire some items can occur as bare nouns whereas other items are consistently preceded by a determiner even in the early files (1;9.18-1;11.2), where the overall average production of determiners is still relatively low (15%-47%). Some words, like voiture, appear with and without a determiner. This is in sharp contrast with the words main and nez, which always combine with a determiner from the moment the recordings start. A statistical comparison of the number of bare nouns and determiner-noun combinations in voiture and main, shows a significant difference between the two words (two-tailed Fisher’s exact test, \( p < 0.000 \)).

The observed differences between individual nouns support the idea that the determiner system is indeed acquired per item. However, two other possibilities come to mind in order to explain the observed differences: First, the early productions of main and nez could be instances of fixed determiner-noun chunks with an unanalysed determiner (cf. Eisenbeiß 2000). This can occasionally be observed in individual nouns as has been found for instance in the French child Nathalie where the relative high number of the fixed unit la pé (=la poupée ‘the doll’) caused a U-shape of the overall development (cf. chapter 2) whereas the average development followed a gradual growth. However, Grégoire produces main with different determiners, i.e., the definite determiner and different forms of possessives (cf. (7) for some examples). Furthermore, the examples show that main is not part of a fixed idiomatic expression here because it appears in different kinds of constructions with and without adjectives. Likewise, nez is preceded by different types of determiners (cf. (8)).

(7) a. et celle+là ça c'est ma main gauche  
    Grégoire (1;10.03)
    and that-there, this. is my hand left
b. elle est montée la main
    she is raised the hand
    ‘The hand is raised’
c. ça c'est ta main gauche
    that this. is your hand left
    ‘This is your left hand’
Recall that, as pointed out in the method section in chapter 1, imitations of the adults’ utterances were not included into the count. Thus, the different forms of the determiner with the noun main and nez were produced independently by Grégoire, as illustrated e.g., in (9), again supporting the view that these determiner-noun combinations are not just repetitions of the input (examples from file 1;10.03).

(9) a. MOTHER: c'est ma main droite ça
c'est my hand right that
GREGOIRE: ça c'est ta main gauche
that this.is your hand left
b. CHRISTIAN: oh qu'est ce qu'elle a fait la main?
oh what.is that what.she has done the hand?
'What did the hand do?'
GREGOIRE: le nez
the nose

A last argument against the presence of fixed determiner-noun units is that chunk formation would involve an initial high number of determiner-noun combinations, followed by a stage where the construction is reanalysed and the determiner is omitted for a while (the so-called u-shaped development). However, table 1 shows that main and nez also combine with a determiner in the later recordings. To conclude, the consistent presence of the determiner preceding main and nez cannot be attributed to their being unanalysed determiner-noun combinations.

A second possible explanation for the observed differences between items might be found in the prosodic properties of the nouns (see Lleo and Demuth 1999 among others). After all, both main and nez are monosyllabic. French is generally considered to be a iambic language. Therefore, it is conceivable that the child tends to omit syllables that do not fit into the iambic weak-strong pattern. This would explain why disyllabic words as lumière, voiture and chausson tend to occur without a determiner as the determiner would interrupt the weak-strong pattern. In contrast,
monosyllabic words have to be combined with a determiner in order to fit into such a weak-strong template. Note however, that the monosyllabic word *chien* does not pattern with *main* and *nez* as it occurs without a determiner. This observation indicates that even though a weak-strong template might have a possible influence on the realisation of the determiner, prosody alone cannot determine the presence of the determiner. The different behaviour of *chien* versus *main* and *nez* might be related to the fact that the latter two are nouns denoting body parts and can hence occur with an expletive determiner. This will be discussed in more detail below in section 2.2. In conclusion, there are in fact differences with respect to the acquisition of the determiner in Grégoire that cannot be explained by fixed unit formation or prosodic restrictions.

Similarly to Grégoire, differences between items can also be observed in the French child Max. The results for Max are summarised in table 2. We find that *avion* (‘plane’), *papier* (‘paper’), and *cheval* (‘horse’) never occur with a determiner, not even after the overall production of determiners has reached values between 75% and 98%. *Bouton* (‘button’), *chien* (‘dog’), *canard* (‘duck’) are produced with a determiner at this stage, but the determiner is still occasionally omitted. In contrast, the word *bonhomme* (‘little man’) consistently occurs with a determiner from 2;02.09 onwards. The words *queue* (‘tail’) and *chapeau* (‘hat’) are always preceded by a determiner from 1;11.0 and 2;0.0, respectively. Remarkably, the determiner is present in these nouns even in the early recordings where the overall production of determiners is still not higher than 27%. If we again use the two-tailed Fisher’s exact test to compare the distribution of bare nouns and determiner-noun combinations in individual words, we find a significant difference between for instance *avion* and *queue* (*p* ≤ 0.002). Likewise, as the number of bare nouns in *avion* and *papier* is the same, there is a significant difference between the distribution of bare nouns in *papier* and *queue*.

Once again, prosody alone cannot explain these differences. Notice that the monosyllabic word *queue* is consistently preceded by a determiner from the age of 2;0.0 onwards. One could thus argue that the child produces a determiner with *queue* in order to comply with the French iambic weak-strong template. However, why does this not hold for the monosyllabic word *chien* which occurs without a determiner in Max’s (and also in Grégoire’s) data? Furthermore, the fact that the disyllabic word *chapeau* occurs with a determiner even though the determiner interrupts the weak-strong pattern again shows that there must be non-prosodic factors involved in the presence of the determiner. To conclude, we see that like in Grégoire there are differences in Max between individual items with respect to the presence of the determiner, supporting the prediction in (6).
<table>
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<td>71</td>
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<td>89</td>
<td>98</td>
<td></td>
</tr>
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</table>

**avion**
- BN: 0 0 0 0 0 0 1 2 1 0 0 0 0
- DN: 0 0 0 0 0 0 0 0 0 0 0 0 0

**papier**
- BN: 0 0 0 2 1 0 0 0 0 0 0 0 1
- DN: 0 0 0 0 0 0 0 0 0 0 0 0 0

**cheval**
- BN: 0 0 0 1 1 0 1 0 0 0 0 0 0
- DN: 0 0 0 0 0 0 0 0 0 0 0 0 0

**chien**
- BN: 1 1 0 4 1 1 0 0 0 0 1 0 0
- DN: 0 0 0 0 0 0 0 0 0 0 0 0 0

**canard**
- BN: 1 1 0 0 1 1 0 0 0 0 0 0 0
- DN: 0 0 0 0 1 0 0 0 0 0 0 0 0

**bouton**
- BN: 0 0 0 0 0 0 0 0 0 2 0 1 0
- DN: 0 0 0 0 0 0 0 0 1 1 0 0 0

**main**
- BN: 0 0 0 0 0 0 1 0 0 0 0 0 0
- DN: 0 0 0 0 0 0 0 1 3 0 0 0 0

**bonhomme**
- BN: 6 3 4 0 2 1 0 0 0 0 0 0 0
- DN: 0 0 0 0 0 0 0 0 3 0 1 0 0

**chapeau**
- BN: 0 0 1 0 0 0 0 0 0 0 0 0 0
- DN: 0 0 0 1 1 0 0 0 0 0 0 0 0

**queue**
- BN: 0 0 1 0 0 0 0 0 0 0 0 0 0
- DN: 0 0 0 1 0 0 4 3 4 1 0 0 0

Let us now turn to the two Dutch children Tomas and Daan. In contrast to Grégoire and Max, many protodeterminers could be found in the data of the Dutch children. These protodeterminers were included in the count. Furthermore, plural
nouns were excluded in the count in order to exclude the possibility of the bare noun being licensed by other morphological elements. In addition, nouns with the diminutive suffix –je were excluded since we cannot exclude the possibility that the child has two different lexical entries for e.g., *auto* (‘car’) and *autootje* (‘car’ + diminutive suffix). Table 3 shows the results for Tomas:

<table>
<thead>
<tr>
<th>Table 3. Acquisition of D in Tomas per item</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
</tr>
<tr>
<td>age</td>
</tr>
<tr>
<td>%D</td>
</tr>
</tbody>
</table>

**auto**

| BN | 0 | 0 | 0 | 4 | 9 | 12 | 6 | 28 | 18 | 16 | 11 | 3 | 5 | 11 | 0 | 5 | 0 |
| DN | 0 | 0 | 0 | 1 | 4 | 1 | 3 | 7 | 4 | 9 | 15 | 10 | 5 | 7 | 13 |

**trekker**

| BN | 0 | 0 | 0 | 30 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| DN | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 4 | 2 | 0 | 0 | 2 |

**boek**

| BN | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| DN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**hond**

| BN | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| DN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 |

**paard**

| BN | 0 | 2 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| DN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 |

**bal**

| BN | 0 | 7 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

**huis**

| BN | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**trein**

| BN | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 0 |

We see that in some items like *auto* (‘car’), *trekker* (‘tractor’), *boek* (‘book’), *hond* (‘dog’) and *paard* (‘horse’), the determiner is still omitted in the later recordings, where the overt production of determiners has reached values between 66% and 86%. In contrast, *bal* (‘ball’), *huis* (‘house’) and *trein* (‘train’) are
consistently preceded by a determiner from 2;09.12, 2;07.10 and 2;02.01, respectively.

If we use Fisher’s exact test to compare the two items auto and trein, we find no significant difference. However, it is striking that in the period between 2;07.10 and 3;01.02, where the overt determiner rate has crossed 65%, trein still does not combine with a determiner. If we compare trein with trekker with the two-tailed Fisher’s exact test, we get a p-value of 0.066, which is almost significant. This indicates a tendency that trein behaves differently from trekker. Thus, the investigation of the behaviour of individual items in Tomas supports prediction 1.

Dutch is a trochaic language, which implies the presence of a strong-weak prosodic template. This might explain why the disyllabic words auto and trekker tend to occur without a determiner for such a long time: These words comply with the trochaic strong-weak template and the presence of a determiner would interrupt this pattern. However, the determiner is omitted not only in disyllabic words but also in monosyllabic words like boek, hond and paard. Furthermore, the determiner is produced consistently in other monosyllabic words, i.e., bal, huis and trein. Thus, like in French, we find that the number of syllables of the noun is not a predictor for the presence of the determiner.

In Daan, we were in the fortunate position that a higher number of nouns could be found that occurred consistently throughout all the recordings. Therefore, nouns occurring in at least 6 files were chosen. The results summarised in table 4 show that appel (‘apple’) and muis (‘mouse’) occasionally occur as bare nouns in the later recordings even though the overt production of determiners reached 71% and higher. In contrast, motor (‘motor’) and poes (‘cat’) appear consistently with a determiner from 2;08.13 and 2;11.19 onwards, respectively. Hence, there are only minor differences between words. Notice that the number of syllables does not play a role with respect to these differences. The words muis and poes are both monosyllabic, but only the latter is preceded consistently by a determiner from 2;10.14 onwards. It is difficult to compare the development of auto (‘car’), paard (‘horse’) and trein (‘train’) with those of the other items as there are no occurrences of these words in the later recordings from 2;10.14 onwards.

Both Tomas and Daan produce the word trein during several recordings. Interestingly, Tomas combines trein with a determiner consistently from 2;02.01 onwards (cf. table 3) whereas Daan still omits the determiner in this word at the age of 2;09.10. This indicates that the omission of the determiner is not necessarily related to properties of the word itself but could also be caused by external factors such as for instance the frequency in the input of a particular child. This hypothesis will be discussed in more detail below in section 2.2.
Table 4. Acquisition of D in Daan per item

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To conclude, we find that the two kinds of variation discussed above can be observed in all four of the children: differences within and differences between items. Concerning the first kind of variation, the results in tables 1, 2, 3 and 4 confirm the existence of a free variation stage (Chierchia et al. 1999), in which one and the same item can occur with or without a determiner. Recall that this variation can be captured both by the structure building hypothesis (under the assumption of...
parallel grammars) and the structure unravelling theory (under the assumption of
doublets in the lexicon). With respect to the second type of variation, the differences
between items, tables 1, 2, 3 and 4 show that indeed some items are consistently
preceded by a determiner whereas others can still occur as bare nouns. Thus,
prediction 1 (here repeated as (10)) which supports the structure unravelling theory
can actually be confirmed.

(10) Prediction 1:
There is a difference in the syntactic development of individual nouns. Some
nouns still occur as bare nouns whereas other nouns already combine with a
determiner.

On the contrary, in the structure building view on DP acquisition, these differences
between individual items cannot be accounted for. The structure building view
offers no explanation why a lexical item like main is always inserted into a structure
as in (3)b whereas voiture is sometimes inserted in (3)a and sometimes in (3)b.

2.2 How to Explain the Differences?

A question that has not yet been addressed is: How can these differences between
items be explained? If the acquisition of the determiner takes place item-by-item
only in the presence of positive evidence, it follows that this process is sensitive to
the input properties of items. Hence, a closer look at the input might shed more light
on the different behaviour of nouns. Therefore, the child-directed speech in the
recordings of the children was analysed for those items that differed with respect to
the presence of the determiner. This investigation is based on the assumption that
the child-directed speech recorded during the sessions is representative of the overall
input a particular child is exposed to. Even though this does not necessarily have to
be the case, the investigation can give a first idea about the frequencies of these
particular items in child-directed speech.

One possible explanation that comes to mind is the input frequency of a
particular item. If a noun Y occurs more frequently in the input than a noun X, then
the child will encounter more instances of determiner+Y than of determiner+X and

\[
^{5} As the differences between the nouns under investigation are less obvious in Daan
than in the other three children, no analysis of the child-directed speech was made.
reset the correspondence rule earlier in noun Y with the consequence that Y combines with a determiner at a stage where X still occurs as a bare noun. In Grégoire for instance, we find a clear difference between the words voiture and main (cf. table 1). An analysis of the child-directed speech in all 9 recordings of the Grégoire corpus shows that in total there are 48 occurrences of main and 42 occurrences of voiture. Hence the difference in the frequency between these two items is negligible and cannot account for the observation that voiture can still occur without a determiner in the early recordings while main is always preceded by a determiner. In Max, the word queue was consistently preceded by a determiner whereas avion, papier and chien still occurred as bare nouns, even in the later recordings (cf. table 2). An analysis of the child-directed speech in the 12 recordings of Max between 1;9.19 and 2;3.6 shows that again, the input frequency of these words alone cannot explain this difference in Max’s production: In this period the words avion and papier occur only 34 and 17 times, respectively, in the input whereas queue is more frequent in the input as it occurs 80 times. This could explain why queue is consistently preceded by a determiner while the former two words still occur as bare nouns. However, chien is also relatively frequent in the input (69 instances) but nevertheless occurs without a determiner for a longer period in Max’s production. Thus again, input frequency is not a good predictor for the presence of the determiner in the child’s speech. In Tomas, the word auto was produced with a determiner from early on, but still this word occurred without determiner until 2;10.24 (cf. table 3). In contrast, trein occurred consistently with determiner from 2;7.10 onwards. An analysis of the child-directed speech in the 16 recordings of Tomas shows that there are noticeable differences with respect to absolute numbers: There are only 21 instances of trein whereas auto occurs 311 times. Regarding these numbers, it is unexpected that auto can occur without determiner until the age of 2;10.24 (where the overt production of determiner has reached more than 70%) whereas at this same stage, trein occurs consistently with a determiner. Hence, if we assume that the child-directed speech recorded during the sessions is representative for the overall input of a particular child, we have to conclude that the absolute number of occurrences of a particular noun in the input is not a predictor for the consistency of the determiner in a particular noun in the three children investigated here.

If it is not the absolute frequency of words in the input, could it be another property of the input that causes the differences with respect to the presence of the determiner in the children’s output? If we have a look at Grégoire’s data again, we notice that an interesting difference between voiture, lumière, chausson and chien on the one hand and main and nez on the other is that the latter two are nouns denoting
body parts. In French and other Romance languages, this semantic class of nouns typically combines with an expletive definite determiner, a phenomenon known as *inalienable possessive construction*:

(11) Jean donne  la main  à Marie  
    Jean gives  the hand  to Mary  
    ‘Jean gives Mary a hand’

(12) Jean s’essuie   le nez  
    Jean REFL cleans  the nose  
    ‘Jean wipes his nose’

Due to this property, we expect that these words occur more often with a definite determiner in the input than regular common nouns. Again, a look at the child-directed speech in Grégoire can shed more light on the issue. A first comparison between the regular noun *voiture* and the noun *main*, which denotes a body part, shows that there are indeed differences. *Main* occurs with the definite determiner in 96% of all instances in the input. In contrast, *voiture* only occurs with the definite determiner 50% of the time whereas the other instances are preceded by an indefinite determiner (14%), the definite plural determiner (12%), different forms of possessives (10%), demonstratives (7%), and partitive *des* (7%). The observation that nouns denoting body parts combine relatively more often with a definite than with an indefinite determiner can also be confirmed in other registers of French. As table 5 shows, a search using the Internet search tool Google confirms that *main* and *nez* are indeed more often preceded by the definite determiner than by for instance the indefinite determiner.

<table>
<thead>
<tr>
<th></th>
<th>la main</th>
<th>le nez</th>
</tr>
</thead>
<tbody>
<tr>
<td>one main</td>
<td>953,000</td>
<td>un nez</td>
</tr>
<tr>
<td>one main</td>
<td>953,000</td>
<td>un nez</td>
</tr>
</tbody>
</table>

*search performed on 27.11.2006, only including sites in the French language with the domain extension “.fr”*

This observation suggests that it is not the absolute frequency of a noun in the input that influences the speed with which the determiner system is acquired but rather the frequency of a consistent form of the determiner in the prenominal position. The child acquires the determiner system faster in items that are consistently preceded by the same determiner whereas this process takes longer in nouns that combine with
various kinds of determiners. Apparently, it is more difficult for the child to identify the prenominal position when this position is occupied by a variety of determiners as it is the case for *voiture*. It seems to be a more complex task for the child to figure out that all these different elements are evidence for the same syntactic position. In contrast, this position is easier to classify if it is consistently filled with a particular form of the determiner, e.g., the definite determiner as in *la main*.

A question that arises is whether this observation can be confirmed for the other children. A closer look at the form of the preceding determiner in the input of Max reveals that there are indeed differences that might explain the observed discrepancies between *chien* and *voiture* in his output. Table 6 shows that *chien* occurs with the definite determiner in 39% and with the indefinite determiner in 20% of all instances in child-directed speech of the 12 recordings. The rest of the determiners that co-occurred with *chien* in the input are the definite plural determiner and partitive *de/du*. There were 29% D-A-N utterances with the definite determiner, the indefinite determiner or a numeral. In all these cases, *petit* (‘small’) was the preceding adjective.

Table 6. Forms of the determiner preceding *chien* in child-directed speech in Max

<table>
<thead>
<tr>
<th><em>chien</em></th>
<th>def</th>
<th>indef</th>
<th>pas de</th>
<th>les</th>
<th>du</th>
<th>D-petit-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>39</td>
<td>20</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>29</td>
</tr>
</tbody>
</table>

The picture looks a bit different for *queue* where a considerably larger number of instances is preceded by a definite determiner (46%) than by an indefinite determiner (8%, cf. table 7). Still, the proportion of definite determiners is comparable to those in *chien* and thus cannot explain the differences between the two items.

Table 7. Forms of the determiner preceding *queue* in child-directed speech in Max

<table>
<thead>
<tr>
<th><em>queue</em></th>
<th>def</th>
<th>indef</th>
<th>pas de</th>
<th>ma</th>
<th>sa</th>
<th>D-A-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>46</td>
<td>8</td>
<td>10</td>
<td>1</td>
<td>29</td>
<td>6</td>
</tr>
</tbody>
</table>

Two differences between *queue* and *chien* are noticeable. First, the high number of possessive *sa* (‘his/her’), which precedes *queue* in 29% of the cases, together with the 46% where *queue* is preceded by the definite determiner, makes up 75% of the cases where *queue* is either preceded by *la* or *sa*. The high probability with which these two elements precede *queue* might make it easier for the child to discover that these elements represent the same structural position. Second, another difference
between *queue* and *chien* is the high number of D-A-N contexts with *chien*. Hence, in 29% of the cases, *chien* does not occur adjacent to a determiner but to an adjective. In all these cases, the adjective is *petit*. In 10% of the D-A-N contexts, the preceding determiner was the definite determiner *le*. The other preceding determiners were *un, des, les, au, ce, du*, and the numeral *quatre*. Thus, even though the presence of the adjective *petit* is consistent, the child is confronted with a variety of determiners in these D-A-N contexts. As argued above, the presence of the adjective is necessary input for the child to discover deeper layers of the DP. However, the observation that Max produces *chien* without determiner for a longer period might indicate that first the structural position of the determiner has to be established properly in the child’s grammar before the child can rely on evidence from adjectives in the input in order to unravel a lower layer of the DP. In sum, there are certain noticeable differences in the input of the two words, but at this moment, we can only speculate about their effect on the determiner production of the child. Bear in mind that the investigation of the child-directed speech is based on the assumption that the adults’ production during the recordings is representative for the overall input the child is exposed to. However, there might be differences with respect to the input of the two items that are impossible to be traced back in the recordings.

A note with respect to nouns denoting body parts: Recall that *main* (‘hand’) and *nez* (‘nose’) occurred consistently with a determiner in Grégoire from early on in 96%. As argued above, a possible explanation for this can be found in the expletive use of the definite determiner in inalienable possessive constructions. In Max, at 2;0.28, there is still an occurrence of *main* without determiner, but very soon after that, Max also produces *main* consistently with a determiner at a stage where other words like *avion, papier, chien,* and *bouton* still occur without determiner. Unfortunately, there are only five instances of *main* in Max’s data, and there are no other nouns denoting body parts that occur in more than three recordings. All things considered, the question whether the form of the determiner plays a role in the speed of acquisition of the determiner cannot be satisfyingly answered for Max.

Finally, a look at the input in the child Tomas shows that *auto* is preceded by a greater variety of determiners and quantifiers in the input than *trein* (cf. table 8 and 9). The proportion of definite versus indefinite determiners is more or less balanced in both words even though *auto* appears slightly more often with the definite determiner. Furthermore, the proportion of occurrences as bare nouns is also comparable in the two words: *auto* occurs without determiner in 16% of all instances (7% singular + 9% plural) and *trein* in 14%. The difference between these two words lies in the great variety of different determiners and other prenominal
elements. In *trein*, only four different forms of the determiner can be distinguished (disregarding D-A-N combinations), namely the definite determiner, the indefinite determiner, the possessive *je* (*‘your’*) and the quantifier *geen* (*‘no’*). In contrast, *auto* co-occurs with different forms of possessives (*mijn* ‘my’, *jouw* je ‘your’, *zijn* ‘his’, *hun* ‘their’, here collapsed as one category with 4%), demonstratives *die* and *deze* (9% and 1%, respectively) and in 15% of all instances *auto* is preceded by different forms of quantifiers (*allemaal* ‘all’, *een* 6 ‘a’, *geen* ‘no’, *hetzelfde* ‘the same’, *hoeveel* ‘how many’, *sommige* ‘some’, *twee* ‘two’, *wat* ‘what’, *welke* ‘which’). Thus, in the input the child is confronted with a larger number of different preceding elements with *auto* than with *trein*. One might argue that the fact that *auto* occurs more often in the input than *trein* increases the probability that the former occurs with more different determiners than the latter. But this is not in contradiction with the claim made here that the more different forms are in the input, the longer it takes the child to identify the determiner position.

Table 8. *Forms of the determiner preceding auto in child-directed speech in Tomas*

<table>
<thead>
<tr>
<th>auto</th>
<th>bare sg</th>
<th>bare pl</th>
<th>def</th>
<th>indef</th>
<th>Pl</th>
<th>Poss.</th>
<th>die</th>
<th>deze</th>
<th>D-A-N</th>
<th>AN</th>
<th>QU.</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>7</td>
<td>9</td>
<td>20</td>
<td>24</td>
<td>2</td>
<td>4</td>
<td>9</td>
<td>1</td>
<td>27</td>
<td>0.3</td>
<td>15</td>
</tr>
</tbody>
</table>

Table 9. *Forms of the determiner preceding trein in child-directed speech in Tomas*

<table>
<thead>
<tr>
<th>trein</th>
<th>bare sg</th>
<th>def</th>
<th>indef</th>
<th>je</th>
<th>D-A-N</th>
<th>geen</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>14</td>
<td>38</td>
<td>24</td>
<td>5</td>
<td>14</td>
<td>5</td>
</tr>
</tbody>
</table>

To conclude, even though the investigation of the child-directed speech has been rather explorative in nature, a tentative hypothesis is that nouns preceded by a higher number of different determiners and quantifiers take longer to be produced with a determiner by the child than nouns that occur consistently with a smaller set of determiners or, as in the case of inalienable possessive constructions, with the same determiner. These kinds of input effects are to be expected in the structure

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6 In Dutch, the indefinite determiner *een* can precede plural nouns creating an emphasizing effect like in (i):

(i)  Wat een auto’s!

*What a cars

‘Look what a huge number of cars!’*
unravelling theory proposed in this thesis. If a particular item is always preceded by
the same morphological form of a determiner, it might be easier for the child to
unravel the structural D position. In contrast, a large variety of different determiners
makes it difficult for the child to infer that these are evidence for the same syntactic
position. Further research with special attention to more dense databases might
allow investigation of the effect of input frequencies in a more reliable way.
However, even though more research is necessary to understand the factors that
influence the observed differences, the main point of section 2.1 was to investigate
prediction 1, i.e., the question whether these differences between individual items do
do exist. I conclude that these differences can indeed be observed.

2.3 Differences between Romance and Germanic

Above I have argued that the syntactic acquisition of the determiner depends on
input driven mechanisms. More specifically, there are differences between
individual items: Some nouns occur as bare nouns while other nouns are already
preceded by a determiner at an early stage of acquisition. This might give us a first
indication about differences observed within a language. However, what about
differences between languages? Languages differ with respect to the presence of the
determiner. In Romance languages, the determiner is more consistently present
whereas in Germanic languages, the determiner is omitted under certain semantic
conditions. The presence of the determiner depends on aspectual properties of the
verb. Furthermore, the determiner is omitted in plural count nouns with a generic
interpretation (cf. (13)) and singular mass nouns (cf. (14)), illustrated here with
German, Dutch and English. In contrast, in French the presence of the determiner is
obligatory in most contexts (for exceptions see e.g. Roodenburg 2004). Thus, mass
nouns and plural count nouns must always be preceded by a determiner in French
(cf. (15)a and b). But also within the Romance languages, there are differences with
respect to the presence of the determiner: While in French the determiner is nearly
always obligatory, in Italian and Spanish it can be omitted in object position if the
noun has a generic reading (cf. (16)a/(17) and in the preverbal topic position of the
clause (cf. (16)c/(17)c), (Contreras 1986, Italian examples from Francesca
Gambardella and Nino Grillo, Spanish examples from Casielles 1996)).

(13)  a. Peter mag Zebras German
     b. Peter houdt van zebra’s Dutch
     c. Peter likes zebras English
Regarding these language-specific conditions with respect to the possibility of bare nouns, it is conceivable that these differences are reflected in the overall frequency of bare nouns in these languages. This is indeed the case: Kupisch (2004b) investigated the frequency of the determiner in child-directed speech in adult French, Italian and German. She found significant differences in the number of bare nouns among the three languages. French has the lowest percentage of bare nouns. Italian has significantly more bare nouns than French. Finally, German has the highest percentage of bare nouns. As Kupisch points out, there is a relation between this input frequency and the speed of determiner acquisition. And in fact, the structure unravelling theory also predicts that these input differences are reflected in the child data. As argued above in chapter 3, the child needs positive evidence for each individual noun X in the input in order to abandon the initial hypothesis that X corresponds to DP in the syntax (cf. (18)a).
(18) a. X \leftrightarrow \text{DP}  
b. X \leftrightarrow \text{NP}  
c. X \leftrightarrow \text{N}  

Only instances where X is preceded by a determiner are relevant and can change this initial setting of the correspondence rule. If the determiner is consistently present in a language, like in French, then consequently the child will always encounter a noun X in combination with an article, and the path described in (18) will be run through relatively fast. In contrast, in a language like Dutch, where the determiner can be omitted in certain contexts, the child will encounter many instances where a particular noun appears without a determiner (cf. (13) and (14)). This data, where a noun X occurs without determiner, actually reinforces the initial, non target-like hypothesis that X corresponds to a maximal projection (cf. (18)a). As a consequence, a Dutch child will maintain this initial hypothesis longer and needs to hear more instances of the same noun as a French child in order to abandon the initial hypothesis. This slows down the process of resetting the correspondence rules in the Germanic languages. Hence, the second prediction of the structure unravelling theory is in (19).

(19) Prediction 2:  
The presence of the determiner in a language has an effect on the speed of first language acquisition: The more frequent the determiner is in the input, the faster the child will converge to a target-like use.

Over the last years, several comparative studies have indeed shown cross-linguistic differences with respect to the speed of determiner acquisition. In particular, it has been shown that a target-like production of the determiner system is reached earlier in children acquiring a Romance language than in children acquiring a Germanic language. Evidence for this comes from several studies investigating longitudinal data of spontaneous speech in parent-child interaction. For instance, Chierchia, Guasti and Gualmini (1999) found that French and Italian children converge quite early to an adult-like use of determiners whereas English and Swedish children need more time to reach target-like production. Llèo and Demuth (1999) observe that children acquiring Spanish start to use the determiner earlier than their German peers. Van den Berg (2001) compared children acquiring French and children acquiring Dutch and found that the French children started to use the determiner before their Dutch peers. Similarly, Rozendaal and Baker (2007) show that French children acquire the determiner earlier than Dutch and English children.
Kupisch (2003, 2004a) confirms this discrepancy for French and Italian as opposed to German, and Guasti, De Lange, Gavarró and Caprin (2004) showed the same contrast for Catalan and Italian children as opposed to Dutch children. All these longitudinal studies focused on younger children between 1;5 and 3;11 years. Van der Velde (2004) showed that the asymmetry between Romance and Germanic languages also holds for older children. She compared the performance of 3, 4 and 6-year-old French and Dutch children in an elicitation task and found that the French children omitted fewer determiners than their Dutch peers.

The same pattern observed in these previous studies can be confirmed for the children investigated in the present study. The graphs in figures 1-4 show the development of overt determiners in the four children. In order to be able to make a better comparison, the MLU values of the children were taken into consideration. We see that the two Dutch children start to use the determiner later than the two French children. Figure 1 and 2 show that around the age of 2 years, the French children Grégoire and Max produce about 30-60% of determiners in obligatory contexts. In contrast, the Dutch child Tomas hardly produces any determiners at the age of 2 years. Figure 3 illustrates the overt production of determiner including protodeterminers (dotted line) and excluding protodeterminers (continuous line). If protodeterminers are included into the count, Tomas produces not more than 7% of overt determiners at the age of 2. In the same way, Daan only produces 3% of determiners at this age (cf. figure 4). If we include protodeterminers into the count (dotted line), Daan’s overt production of determiners reaches a value of 17%, which is more than in Tomas but is still not comparable with the level of the French children at this age.

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7 MLU calculated with CLAN function on CHILDES (MacWhinney and Snow 1990, MacWhinney 2001).
Figure 1. Overt determiners in obligatory contexts in Grégoire (French)

Figure 2. Overt determiners in obligatory contexts in Max (French)*

*Pannemann and Gijzel (2007)

* Graph accumulated from the data in Granfeldt (2000b: 67).
Figure 3. Overt determiners in obligatory contexts in Tomas (Dutch)

Figure 4. Overt determiners in obligatory contexts in Daan (Dutch)
Thus, it seems that at the age of two years, the French children are ahead of the Dutch children with respect to the production of the determiner. But note that at this point of development, the MLU values of the French children are higher (between 1.8-2.0) whereas the MLU of the two Dutch children is still around 1.5 at this stage. Therefore, the late start of the determiner production in the Dutch children could be ascribed to their slower development in general. However, with respect to the convergence to the target language, a comparison between the children shows that the French children are actually faster than the Dutch children. According to Brown’s (1973), criterion a morpheme is considered to be acquired if it is used in 90% of obligatory contexts. Grégoire and Max crossed this 90% threshold of determiner use in obligatory contexts at 2;05.01 and 2;03.06 respectively. At this point, Grégoire has an MLU of 3.3 and Max of 2.8. In contrast, the Dutch children Tomas and Daan have not yet reached 90% of overt determiners by the end of the recordings (3;01.02 and 3;03.03, respectively) even though the MLU values of the two Dutch children (between 2.7 and 2.9) are comparable or even higher than in the French child Max. Thus, with respect to the convergence to the target, the Dutch children indeed show a delay in contrast to their French peers.

In sum, Grégoire and Max, who are acquiring a Romance language, start to use the determiner earlier and converge earlier to the target than Tomas and Daan, who are acquiring a Germanic language. We thus find that the results of the present study confirm the discrepancy between Romance and Germanic languages with respect to the speed of the acquisition of the determiner observed in previous studies. Moreover, these results are in line with prediction 2 of the structure unravelling theory, here repeated as (20).

(20) Prediction 2:

The presence of the determiner in a language has an effect on the speed of first language acquisition: The more frequent the determiner is in the input, the faster the child will converge to a target-like use.

In subsection 2.2, I suggested that it is not the absolute frequency of a certain noun but rather the variety of the determiner that affects the speed of acquisition: If a lexical item co-occurs only with a restricted set of determiners, it is easier for the child to discover the prenominal position in the DP. However, the cross-linguistic differences described in the present section imply that the absolute frequency of the determiner in the input also plays a role in the speed of acquisition. Notice that these observations are do not contradict one another. As a matter of fact, the observed cross-linguistic differences in acquisition are compatible with the idea
that the form of the determiner also plays a role in the speed of acquisition. The observation that input frequency affects the overall speed of determiner acquisition shows that two factors play a role with respect to the speed of DP acquisition. First, the variety of different determiners in the prenominal position determines the speed with which the determiner system is acquired per lexical item. This accounts for differences between individual items within a language illustrated in section 2.1. Second, the overall frequency of a determiner in a specific language affects the speed with which the child acquires the determiner system in general. This explains the differences between languages discussed in the present section. To conclude, it follows from the idea that the DP structure is unravelled per item that the French children acquire the determiner faster than the Dutch children and, additionally, that items develop individually within the same language.

Avrutin and De Lange (2004) and De Lange (2004) have proposed that the complexity of the determiner paradigm is a predictor for the speed with which the determiner is acquired in a particular language: The more complex the paradigm of a language, the faster the determiner system will be acquired. This seems to be in contradiction with the idea proposed in the present thesis that the determiner is acquired faster in items that co-occur only with a restricted set of determiners (cf. section 2.2). Let us first have a look at the proposal by Avrutin and De Lange in order to evaluate the differences between the two proposals. Avrutin and De Lange argue that the observation that the determiner is acquired faster in Italian than in Dutch is related to the amount of information encoded in the determiner. Basing themselves on Shannon and Weaver’s theory of information (1949), they derive the information load of the determiner based on the number of different forms in a paradigm. The Dutch system includes only three different forms whereas the Italian system is richer (cf. (21) vs. (22)).

(21) Dutch paradigm
Definite: de, het
Indefinite: een

(22) Italian paradigm
Definite: il, lo, la, i, gli, le, l’
Indefinite: un, uno, una, un’, dei, delle
Partitive: del, dello, della, dei, degli, delle

Avrutin and De Lange argue that in a rich paradigm like in Italian, the information load encoded on an individual element is higher than in a language like Dutch. The
information load is determined by the amount of information necessary to select a particular form. This information consists of grammatical, discourse related and phonological features. As the number of features is larger on Italian determiners, more information is needed to select the appropriate form than in Dutch. At first sight it is counter-intuitive that the Dutch determiner, which has a relatively low information load, should be omitted more often by the children than the Italian determiner, which carries more information. In fact, Schriefers, Miozzo, Caramazza and their colleagues have shown in different studies that adult speakers of Romance languages need more time to select the correct article than speakers of Germanic languages. This has been concluded from a gender congruency test between objects that had to be named and a distractor. Dutch and German participants of the test named the objects with the appropriate determiner faster if the distractor had the same grammatical gender (Schriefers 1993, Schriefers and Teruel 2000). In contrast, this gender congruency effect was absent in Italian (Miozzo and Caramazza 1999) and in Catalan and Spanish (Costa, Sebastián-Gallés, Miozzo and Caramazza 1999). Miozzo and Caramazza (1999) explain this effect by the fact that in the Romance languages, not only the grammatical features but also the phonological context is important in selecting the correct determiner. This increases the information load on the determiner in Romance languages as opposed to German and Dutch, where there are no phonological conditions for the choice of the determiner. Thus, the higher information load on the determiner in Romance languages seems to constitute an extra challenge for the processing system and hence should slow down the acquisition process in these languages.

However, Avrutin and De Lange argue that it is just this high information load that helps the Italian children to produce the determiner earlier than their Dutch peers. They base this claim on research by Kostić (2004), who proposes that the cognitive system is sensitive to the information load on particular elements. More specifically, he states that there is a certain threshold of processing. Only if the amount of information reaches this threshold will the cognitive system start to process this information. As children have limited processing abilities, only elements with a relative high information load can reach the threshold. Hence, at a stage where the processing abilities of the children is still lower than for adults, a Dutch determiner does not carry enough information to activate the processing mechanism whereas the information level on an Italian article is high enough to overcome the threshold. As a consequence, Italian children are able to produce the determiner earlier than their Dutch peers, who still “struggle” with the low information load on the determiner.
Above in section 2.2, I suggested that the children produce the determiner earlier in nouns that are preceded only by a restricted set of determiners in the input. Recall for instance the example of the French inalienable possessive construction *la main* (‘the hand’), which the child Grégoire produced with a determiner from early on. This observation is not in contradiction with Avrutin and De Lange’s proposal. As a matter of fact, even though French has more forms of the determiner than Dutch, the actual size of the determiner paradigm in the language is irrelevant in this case. The acquisition of the determiner takes place per item, and it is not the complexity of the paradigm but the actual combination of this noun with a particular form of the article in the input that speeds up the determiner acquisition in this noun. Hence, the frequency with which a form is actually used has an important influence on the speed of acquisition. This frequency can depend on pragmatics or, in this case, on idiosyncratic properties of a particular construction. Thus, the two proposals do not contradict one another in this respect. However, the two approaches differ in one important assumption: In the present thesis we have seen various kinds of evidence supporting the view that the acquisition of the determiner system is a process of gradual, lexical learning, taking place item-by-item. In contrast, Avrutin and De Lange’s proposal, which ascribes determiner omission to a temporary underdeveloped processing capacity of the children, implies that the process of determiner acquisition takes place in a canonical fashion. The observed differences within and between individual items in the present study are rather unexpected in such an approach. Avrutin and De Lange’s approach offers no explanation for the observation that some items are consistently preceded by a determiner from early on while the determiner is omitted in other items. In the same way, the differences within items cannot be accounted for in this theory. Recall that in the free variation stage (Chierchia et al. 1999) the determiner is only optional and the same noun can appear with and without determiner. However, if determiner omission were a matter of maturation of the brain, then as soon as the brain of the child has reached a next developmental level of processing capacity, the child should not omit determiners any more.

Two more remarks with respect to Avrutin and De Lange’s proposal: First, if it is correct that a higher number of features encoded on a determiner leads to a higher information load on the determiner and if this higher information load indeed slows down first language acquisition, we expect that children need more time to acquire a language that has no gender distinctions like English than to acquire Dutch, which does have gender (cf. (23) vs. (21)). Hence, the Dutch children should reach a target-like use earlier than their English peers, contrary to fact. A cross-linguistic comparison by Rozendaal and Baker (2007) has shown that English
children actually acquire the determiner faster than Dutch children. The English children reached 90% of overt determiner production between 3;0 and 3;3 whereas the Dutch children did not reach this percentage at this age.

(23) English paradigm:
Definite: the
Indefinite: a

A second point to mention is that the work by Kostiç is based on perception studies. In contrast, Avrutin and De Lange’s approach is designed to explain the conditions for the production of the determiner. It is questionable whether the results for the perception studies can be adopted in a production theory, especially in light of the studies made by Schriefers, Miozzo, Caramazza and colleagues summarised above, which have shown that production is quite a different story. Furthermore, in head-turn experiments and preferential looking tasks it has been demonstrated that very young children already perceive and distinguish the determiner before they produce it. This observation holds both for children acquiring a Romance language (Christophe, Guasti, Nespor, Dupoux and Ooyen 1997, Christophe, Nespor, Guasti and Ooyen 2003, Christophe 2006) as well as for children acquiring a Germanic language (Höhle, Weissenborn, Kiefer, Schulz and Schmitz 2004) and suggests that even though the determiner in the Germanic language has a lower information load than the one in the French language (in the sense of Kostiç), it still activates some processing mechanisms, which is unexpected as the threshold is certainly not reached at this age.

2.4 S-shaped Development vs. Gradual Increase

In first language acquisition research, developmental curves that depict the number of occurrences of a particular form or construction during a certain period in time are an important source of information. The shape of such a curve can give us more insight into the nature of the underlying acquisition process. For instance, Ruhland, Wijnen and Van Geert (1995) investigated the acquisition of verb second (V2) in Dutch. Their quantitative analysis of the Dutch child Peter shows that there is an abrupt change with respect to V2 occurrences in the child’s speech. Around the age of 2 years (105 weeks), only in 10% of all sentences containing a verb is the verb in the second position of the clause. 15 weeks later, Peter produces the verb in the second position in 90% of the cases. This change is reflected in a rather steep
increase in the developmental curve. Such abrupt changes in the form of an S-shaped developmental curve have been interpreted as evidence for the acquisition of a rule or, in the tradition of the generative framework, as the setting of a parameter (Ruhland et al. 1995, Van Kampen 1997). In contrast, developmental curves that increase only gradually over a longer period of time have been interpreted as the result of a lexical learning process (see Ruhland 1998 for a discussion and also, Theakston, Lieven and Tomasello 2003).

Likewise, developmental curves can tell us more about the processes underlying the acquisition of the determiner. The structure unravelling theory presented in the previous chapter is based on the assumption that the acquisition of the determiner is not a rule-based mechanism. Hence, we expect no abrupt changes in the developmental curve of the determiner production. Rather, as the acquisition of the determiner is assumed to take place individually per lexical item, we expect that the developmental curve increases gradually (cf. (24)).

(24) Prediction 3:
The developmental curve representing the overt production of determiners increases gradually.

The graphs of the overt determiner production in obligatory contexts in figures 1-4 show a rather gradual growth rather than an abrupt increase. This observation is confirmed cross-linguistically for the acquisition of the determiner in German, Dutch, English, French and Italian (Van den Berg 2001, Kupisch 2004b, Rozendaal and Baker 2007 among others). Hence, prediction 3 can actually be confirmed. The gradual development in overt production supports the view that the acquisition of the determiner system does not follow a rule-based mechanism but takes place item-by-item. In contrast, a rule-based learning model cannot account for this gradual development. Once a certain rule is acquired or a certain parameter is set, we expect a sharp increase in the use of a grammatical construction, thus an S-shaped development in the determiner production. Similarly, an account that ascribes the omission of determiners to a temporarily underdeveloped processing system (cf. Avrutin and De Lange 2004 and also Van der Velde 2004) predicts that once the processing threshold is reached, the child should uniformly produce the correct form.

In contrast to the results presented in this section, earlier studies on determiner acquisition report such an “abrupt increase” in the overt production of determiners in Romance first language acquisition (Chierchia et al. 1999). Similarly, Van Kampen (2001) found that the overt determiner rate in the Dutch child Sarah
followed an S-shaped development. A closer look at these studies reveals a methodological difference as these studies are based on different counting criteria. Chierchia, Guasti and Gualmini (1999) did not count nouns in isolation, nouns introduced by prepositions, and copular sentences. The reason to exclude nouns in isolation was that it is not possible to decide properly whether they are predicates or arguments. Similarly, Van Kampen (2001) excluded one-word utterances and DPs in isolation. In a prototypical parent-child dialogue like: ‘What’s that?’ Child: ‘a dog’, the child’s utterance would not be included into the count. Like Van Kampen, I left out partially intelligible, incomplete or unclear sentences, imitations, immediate repetitions and formulaic routines. But in contrast to the studies above, I included nouns in isolation into the count, basing myself on previous studies of DP acquisition, like Granfeldt (2000b), Hulk (2004) and Kupisch (2004a). Furthermore, following Kupisch, I counted protodeterminers, which is another point of contrast with Van Kampen.

The question that arises is whether the different counting criteria are responsible for the discrepancy with respect to the observed shapes of the determiner development. In order to shed more light on this, I recounted Tomas’ data, applying Van Kampen’s (2001) criteria. This count included nouns introduced by a preposition (in contrast to Chierchia et al. (1999)). The effect of the methodological change is, as shown in figure 5, a slightly higher course of the developmental curve. Notice, however, that overt production of determiners does not abruptly increase. The general shape of the curve cannot be characterised as an S-curve. This indicates that the gradual development of the determiner observed in the present study and other cross-linguistic studies (Van den Berg 2001, Kupisch 2004b, Rozendaal and Baker 2007 among others) is not an artefact of the counting method but that other explanations have to be found for the observed differences between the developmental curves in the Dutch child Sarah on the one hand and Tomas on the other hand.

Note that Chierchia et al.’s (1999) counting criteria differed slightly from Van Kampen’s criteria: Chierchia et al. excluded nouns introduced by a preposition. There are only a few instances where prepositions combined with a noun in Tomas’ data, and hence the developmental curve is expected to look very similar to the dotted line in figure 5.
In sections 2.1, 2.2, 2.3 and 2.4, we have seen evidence that the determiner system is acquired individually per lexical item as predicted by the structure unravelling theory. A remark with respect to the data is necessary: The analysis here is based on longitudinal recordings of spontaneous parent-child interactions. The advantage of this data is that they make a longitudinal analysis of the child’s development possible. In addition, the recordings of spontaneous speech allow an analysis of the output of very young children whereas experiments would not be feasible at this age. However, spontaneous speech data has its limitations: As seen in the present study, it is difficult to find nouns that are produced by the child during all recordings. It would be interesting to follow the development of particular items over a longer period of time by making sure that the names of the same set of objects is elicited when recording speech data. Furthermore, we have seen some evidence that in children acquiring Romance languages a determiner precedes nouns denoting body parts earlier than other nouns. In order to verify this impression, nouns denoting body parts should be elicited during all the sessions. Another point to mention concerns the hypothesis put forward in the present thesis that the speed with which the determiner is acquired in a particular noun depends on the frequency of that
particular noun in the input. In nouns that are relatively frequent in the input, the initial setting of the correspondence rule will be retuned earlier than in less frequent nouns. The data in the present study was taken to be representative of the overall input of the child. However, there were relatively long intervals between the recordings. A dense database would allow an even more fine-grained picture of the frequency of particular determiner-noun combinations in the input.

To conclude this section, we have seen evidence supporting predictions 1-3 of the structure unravelling theory. In the next section, two more predictions of the theory will be investigated.

3. Top-down Structure Unravelling

In section 2 we have seen evidence supporting the view that the acquisition of the DP takes place item by item and can thus be characterised as a lexical learning mechanism rather than a rule-based learning mechanism. Recall from chapter 3 that the Dutch substandard pronoun *mijnes* and its English and German equivalents cannot co-occur with a pronoun and other DP internal material (here repeated as ((25)).

(25)  
a.   (*het) mijnes (*mooie) (*boek) Dutch  
b.   (*the) mine (*nice) (*book) English  
c.   (*das) meins (*schönes) (*Buch) German  

An implication of item-based learning is that we do not expect overgeneralisation. Hence, we do not expect children to “accidentally” produce a lexical item like *mijnes* with a determiner if this is not possible in the input. We will see in the present section that this can similarly be confirmed for the acquisition of proper names (3.1) and pronouns (3.2).

In terms of syntactic position and theta role assignment, proper names and pronouns behave in exactly the same way as common nouns (cf. (26)), appearing in the argument position of the verb.

(26)  
a.   The man\textsubscript{AGENT} sees the dog\textsubscript{THEME}  
b.   Peter\textsubscript{AGENT} sees Mary\textsubscript{THEME}  
c.   He\textsubscript{AGENT} sees her\textsubscript{THEME}
However, as pointed out in chapter 3, in contrast to common nouns, proper names and pronouns cannot co-occur with a determiner or an adjective in languages like English, French or Dutch (cf. (27) a and b, but see footnote 3 in chapter 3).

(27) a. *The smart Peter
b. *The smart he

The similarities between proper names, pronouns and common nouns make the production of the latter two prone to overgeneralisation. A plausible hypothesis of a child acquiring English, French or Dutch is that elements in argument position can be modified, thus not only common nouns but also proper names and pronouns. More specifically, errors of the type ‘determiner+proper name/determiner+pronoun’ are conceivable. Even though this is illicit in the target languages, the modification of proper names and pronouns by a determiner is a possible option in human languages as pointed out in chapter 3 and illustrated here again with examples from Southern German and Japanese (cf. (28) and (29), Japanese data from R. Vermeulen p.c.):

(28) Der Peter liest ein Buch    Southern German
    the Peter reads a book
(29) sono kanojo      Japanese
    this she

In this section I relate this question to two contrasting points of view of DP acquisition: the structure building approach and the structure unravelling approach advocated in the present thesis. According to the structure building hypothesis (Clahsen, Eisenbeiß and Vainikka 1994, Müller 1994, Granfeldt 2000a, Hulk 2004), the functional D-layer is absent (or not available) at the onset of acquisition and hence only a lexical N level is projected. It follows that both common nouns like tractor and proper names like John have to be hosted in the lexical N position in the initial stage of acquisition (cf. (30)).

(30) a. N
    tractor
b. N
    John
The expansion of the structure in the course of acquisition allows nouns like tractor to combine with a determiner, a prenominal modifier and a complement (cf. (31)).

(31)

```
(31)   DP
        Spec   D'
          D  NP
            the
        Spec   N'
          little
           N  complement
                  tractor [on the shelf]
```

Taking (30) as a starting point and considering the distributional and thematic overlap between common nouns and proper names illustrated in (26), one can conceive that the child overgeneralises this possibility to proper names (cf. (32)). Hence, we would expect the child to pass through a stage where he produces utterances like the little John. Likewise, this model illicitly allows for combinations of pronouns with determiners. Thus, the structure building approach allows the child to generalise over common nouns, proper names and pronouns.

(32)

```
(32)   DP
        Spec   D'
          D  NP
            the
        Spec   N'
          little
           N  John/he
```

An additional problem for the structure building approach concerns learnability. The child can abandon the initial hypothesis that a proper name or a pronoun has the category N only by encountering relevant positive evidence in the input. However, as argued in chapter 3, there is no such evidence in the input that would force the child to give up the initial hypothesis that Jean corresponds to N. One might argue
that the child “unlearns” this initial setting based on the fact that proper names never occur with a determiner in the input, but this would mean that the child has to conclude from the absence of a certain construction that this construction is not possible in the target grammar. In sum, the structure building approach predicts that pronouns and proper names can be modified by determiners and adjectives in child speech even in cases where this is not possible in the target language.

The picture looks different if the layers of the DP are unravelled in a top-down fashion as proposed in the present thesis. Recall that based on the syntactic co-occurrence restrictions like in (27) it was argued in chapter 3 that both pronouns and proper names correspond to DPs (Weerman and Evers-Vermeul 2002, Pannemann and Weerman to appear). As I have argued above, the same co-occurrence restrictions hold for nouns in an initial stage of acquisition as these do not co-occur with DP internal material in the children’s speech. This has led to the hypothesis that proper names and pronouns correspond to DP at the onset of acquisition (here repeated as (33)).

(33) Pronouns, names for individuals and names for kinds of objects and substances are DPs at the onset of acquisition.

If follows that the setting of the correspondence rules for proper names like John is target-like as proper names correspond to a DP in adult language as well. Only if there is evidence in the input that cannot be accommodated by the initial setting will the correspondence rule for a particular item be reset. This is not the case for proper names as these generally lack a determiner in the languages investigated here. If the acquisition of the DP system indeed takes place per item, then this also holds for the acquisition of proper names. As the child will not encounter evidence for determiners preceding proper names, the initial analysis of proper names as DPs will be sustained. In contrast, the setting of the correspondence rule for common nouns like tractor is not yet target-like, but it can be unlearned based on positive evidence in the input: Instances where tractor occurs with a determiner are positive evidence against the initial setting as DP and will force the child to reanalyse the setting such that tractor corresponds to a lower projection, e.g. to NP.

Bloom (1990) already investigated co-occurrence restrictions in the spontaneous speech of young English children (age range 1;6-2;10). He found that the restriction in adult language that proper names and pronouns cannot be preceded by a prenominal adjective also holds in English child language. The proposal in chapter 3 that DP structure is unravelled item by item starting out with the topmost projection predicts an even more rigid co-occurrence restriction: We do not expect
proper names and pronouns co-occurring with determiners in child language. This will be investigated in sections 3.1 and 3.2 respectively. In order to test these predictions I again investigated the longitudinal development of spontaneous speech in the French children Grégoire and Max and in the Dutch children Tomas and Daan.

3.1 The Acquisition of Proper Names

In this section we take a closer look at the acquisition of proper names. As illustrated in section 3 above, if the target language does not allow the combination of proper names with determiners and modifiers, an item-based learning model predicts that these kinds of errors do not occur in child language. This leads us to the fourth prediction investigated in this chapter:

(34) Prediction 4:
There are no errors of the type determiner+ proper name / adjective+ proper name in the children’s speech.

As mentioned in chapter 3, French and Dutch proper names neither can be preceded by a determiner nor modified by an adjective, which renders these languages suitable to investigate this prediction. I investigated whether the French and Dutch children produced errors of the type the John. Furthermore, I replicated Bloom’s research for Dutch and French and investigated whether there were errors of the type little John in the data. The count included all proper names produced by the child. Furthermore, I included nouns expressing family relations like mummy, daddy, grandmother, grandfather and others. Notice however, that these can occur with or without determiner in the target languages (cf. (35) and (36)). As we will see below, these are indeed the instances where children exceptionally use a determiner with proper names. Proper names in a vocative context were excluded. This is because in languages where proper names can be preceded by a definite article, as for instance in some Southern German variants and Hungarian, the determiner must be absent in vocative contexts (cf. (37) vs. (38), Hungarian example from Szabolcsi (1994)).
Table 10 gives an overview of the production of proper names in Grégoire: We find that proper names are never accompanied by a determiner, not even in the later files where Grégoire produces more than 80% of determiners in obligatory contexts. The only exception is pinpin (referring to lapin ‘rabbit’), which occurred with a possessive in the last two files. Above we have shown that there is an important parallel between bare nouns in child language and proper names. Proper names establish reference to particular individuals without the presence of a determiner, and in an initial phase, the same is possible for bare common nouns in child language. This unique reference for common nouns disappears as soon as the child is able to categorise among objects. The word pinpin illustrates how this process can be stretched out over a longer period. Grégoire uses this word for his toy rabbit only until age 2;3.01, and in this period, it never occurs with a determiner. As soon as he starts to use pinpin for other rabbits as well, he combines this word with a determiner. Note that the adults in Grégoire’s environment also use pinpin with and without a determiner, which is unusual for proper names.
Table 10. Proper names (PN) in Grégoire

<table>
<thead>
<tr>
<th>Age</th>
<th>MLU</th>
<th>Overt D %*</th>
<th>Total # of nouns</th>
<th>PN without detern. token/ type</th>
<th>PN with detern. token/ type</th>
<th>PN with prenom. adjective token/ type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1;09.18</td>
<td>1.8</td>
<td>15</td>
<td>33</td>
<td>49/5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1;09.28</td>
<td>1.9</td>
<td>27</td>
<td>100</td>
<td>68/6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1;10.03</td>
<td>1.7</td>
<td>47</td>
<td>210</td>
<td>23/4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1;11.21</td>
<td>1.9</td>
<td>38</td>
<td>84</td>
<td>17/6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;00.05</td>
<td>2.1</td>
<td>67</td>
<td>131</td>
<td>63/6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;01.25</td>
<td>2.3</td>
<td>88</td>
<td>60</td>
<td>9/3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;03.01</td>
<td>2.6</td>
<td>83</td>
<td>142</td>
<td>35/5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;05.01</td>
<td>3.2</td>
<td>95</td>
<td>73</td>
<td>28/9</td>
<td>3/1**</td>
<td>0</td>
</tr>
<tr>
<td>2;05.13</td>
<td>3.8</td>
<td>99</td>
<td>108</td>
<td>19/7</td>
<td>4/1**</td>
<td>0</td>
</tr>
</tbody>
</table>

*determiner omission rates from Granfeldt (2000b)

** all these determiner-proper name combinations are mon pinpin (my rabbit)

Let us now turn to the other French child, Max. Table 11 summarises the results for Max until the end of the recording at 3;02.23. The reason to include the later recordings as well is that between the age of 2;03.06 and 3;02.23, the overt determiner production in Max is higher than 90%. This period is of special interest because if the production of the determiner has increased, it might be more likely that Max “accidentally” combines a determiner with a proper name. A look at table 11 shows that generally speaking, Max does not combine proper names with determiners. There are two exceptions to this: At 2;01.16, there are two instances where Max combines the protodeterminer ə with maman (‘mummy’). Notice that the status of the protodeterminer ə is not clear. Max also uses the proform ə to substitute pronouns, e.g. ə veux (= je veux ‘I want’, cf. (39)).

(39) non e veux que # on range, parce+qu on va jouer à ça        (Max, 2;09.12)
    no e want that we tidy.up, because we go play with that

Furthermore, at the ages of 2;08.22, 2;10.10, 3;01.14 and 3;02.23, there is one instance per recording where a proper name is preceded by a determiner. All four of these instances concern the word maman, which combines with a possessive: ma/ta maman (‘my/your mummy’). As pointed out above, names like maman, which
express family relations, can actually be preceded by a determiner in adult French (cf. (35)). Therefore, it is not surprising that combinations of kinship names and determiners can also be found in child speech. The presence of the possessive indicates in fact that Max needs to disambiguate his utterance as there is more than one *maman* in the discourse context. Hence, *maman* has lost its unique reference and behaves more like a common noun rather than a proper name.

Table 11. Proper names (PN) in Max

<table>
<thead>
<tr>
<th>Age</th>
<th>MLU</th>
<th>Overt D %</th>
<th>Total # of nouns</th>
<th>PN without determiner token/ty pe</th>
<th>PN with determiner token/ty pe</th>
<th>PN with prenom. adjective token/ty pe</th>
</tr>
</thead>
<tbody>
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<td>16</td>
<td>19</td>
<td>3/2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1;10.03</td>
<td>1.0</td>
<td>20</td>
<td>15</td>
<td>4/2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1;10.17</td>
<td>1.3</td>
<td>0</td>
<td>11</td>
<td>2/1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1;11.00</td>
<td>1.6</td>
<td>23</td>
<td>39</td>
<td>19/10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;00.00</td>
<td>1.6</td>
<td>29</td>
<td>33</td>
<td>7/4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;00.14</td>
<td>1.8</td>
<td>30</td>
<td>27</td>
<td>7/5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;00.28</td>
<td>1.8</td>
<td>33</td>
<td>18</td>
<td>6/5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;01.16</td>
<td>2.1</td>
<td>71</td>
<td>28</td>
<td>7/3</td>
<td>2/1</td>
<td>0</td>
</tr>
<tr>
<td>2;01.25</td>
<td>2.3</td>
<td>71</td>
<td>17</td>
<td>7/3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;02.09</td>
<td>2.7</td>
<td>83</td>
<td>29</td>
<td>13/7</td>
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<td>0</td>
</tr>
<tr>
<td>2;02.22</td>
<td>2.5</td>
<td>89</td>
<td>36</td>
<td>5/4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;03.06</td>
<td>2.7</td>
<td>100</td>
<td>40</td>
<td>6/4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;04.18</td>
<td>3.2</td>
<td>97</td>
<td>29</td>
<td>11/3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;05.29</td>
<td>3.5</td>
<td>100</td>
<td>46</td>
<td>3/1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;07.11</td>
<td>3.0</td>
<td>100</td>
<td>18</td>
<td>5/4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2;08.22</td>
<td>3.0</td>
<td>100</td>
<td>25</td>
<td>6/3</td>
<td>1/1</td>
<td>0</td>
</tr>
<tr>
<td>2;10.10</td>
<td>3.5</td>
<td>98</td>
<td>41</td>
<td>15/8</td>
<td>1/1</td>
<td>0</td>
</tr>
<tr>
<td>2;11.24</td>
<td>3.5</td>
<td>100</td>
<td>30</td>
<td>14/6</td>
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<td>0</td>
</tr>
<tr>
<td>3;01.14</td>
<td>3.5</td>
<td>97</td>
<td>53</td>
<td>20/7</td>
<td>1/1</td>
<td>0</td>
</tr>
<tr>
<td>3;02.23</td>
<td>3.4</td>
<td>100</td>
<td>24</td>
<td>6/2</td>
<td>1/1</td>
<td>0</td>
</tr>
</tbody>
</table>

Hence, in the two French children, the occurrences of proper names modified by a determiner or an adjective cannot be confirmed. The picture is very similar for the Dutch children; Table 12 summarises the results for the Dutch child Tomas.
Notice that even though the majority of proper names is not modified, Tomas actually produces a few instances where proper names occur with a (proto)determiner. These instances are listed below in (40). Furthermore, at the age of 2;7.10 there are two instances where proper names are preceded by an adjective (cf. (41)).

<table>
<thead>
<tr>
<th>Age</th>
<th>MLU</th>
<th>Overt D</th>
<th>Total #</th>
<th>PN without det.</th>
<th>PN with det.</th>
<th>PN with prenom. adjective</th>
<th>Type</th>
<th>Type</th>
<th>Type</th>
</tr>
</thead>
<tbody>
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<td>11</td>
<td>4/2</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:08.03</td>
<td>1.1</td>
<td>16</td>
<td>19</td>
<td>1/1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:09.00</td>
<td>1.0</td>
<td>3</td>
<td>32</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:10.11</td>
<td>1.2</td>
<td>21</td>
<td>100</td>
<td>11/3</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>1.5</td>
<td>23</td>
<td>57</td>
<td>5/2</td>
<td>1/1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>14</td>
<td>79</td>
<td>8/3</td>
<td>1/1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:04.17</td>
<td>1.9</td>
<td>24</td>
<td>59</td>
<td>16/6</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>31</td>
<td>64</td>
<td>8/3</td>
<td>2/2</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:06.00</td>
<td>1.9</td>
<td>43</td>
<td>100</td>
<td>6/5</td>
<td>1/1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>2.2</td>
<td>66</td>
<td>68</td>
<td>67/14</td>
<td>3/2</td>
<td>2/2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>67</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>9/5</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:10.10</td>
<td>2.3</td>
<td>65</td>
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<td>17/10</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:10.24</td>
<td>2.8</td>
<td>71</td>
<td>100</td>
<td>25/11</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:01.02</td>
<td>2.9</td>
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<td>91</td>
<td>10/6</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(40) a.  hij die mamma  
         *he that mummy*  
         (2;02.01)

b.  doet die pappa nou?  
    *does that daddy now*  
    (2;3.06)

c.  nog pappa mamma auto  
    *another that mummy car*  
    (2;5.07)

d.  nog pappa mamma auto  
    *another daddy that mummy car*  
    (2;5.07)

e.  doet ie Momas [= Tomas]  
    *does he Tomas*  
    (2;6.00)

f.  op de oma  
    *on the grandma*  
    (2;7.10)
A closer look at these utterances reveals that none of these combinations is actually convincing evidence against prediction 4. The data in (40) allow for various interpretations: In (40)a and g, die could also be substituting for an object. In (40)b, the occurrence of the determiner die could be a transcription ambiguity. Note that in Dutch, the pronoun hij (‘he’) can be phonologically reduced to ie, which cliticizes onto the verb, as for instance in (40)e: doet ie (‘does he’). This combination occurs frequently in adult speech, e.g. in questions like wat doet ie? (‘what is he doing?’) and is therefore likely to be an unanalysed repetition of the input, as (40)e also illustrates.

Furthermore, like in Max, the status of the schwa as a protodeterminer is far from clear in Tomas’ utterances. In (40)c, the schwa could in fact modify the noun auto instead of the proper names pappa and mamma. Another possible interpretation is that the schwa in (40)c forms an unanalysed fixed unit with the preceding particle nog as this particle frequently combines with a determiner in the input in combinations like nog een (‘another one’). The schwa in (40)d could be a substitution for en ‘and’. Additionally, in the example buik oma (cf. (40)h), ι is very likely to stand for the preposition van (‘of’). Notice that in Tomas’ speech, the schwa also occurs in positions where determiners are illicit (42). This makes it more difficult to maintain the claim that the schwa in utterances like (40)e is in fact a (proto)determiner.
Another interesting observation is that the majority of the modified names in (40) and (41) express kinship relations. As pointed out earlier, this class of names can actually be modified by a determiner in adult Dutch. If this is the case, the expression loses its unique reference and behaves like a common noun. This is exactly the case in (40)f and g. Similarly, if these names are modified by an adjective as in (41), they lose their unique reference. In sum, we cannot find non-ambiguous evidence that proper names are illicitly modified by a determiner or an adjective in the speech of Tomas.

The results for the second Dutch child, Daan, are presented in table 13. Like the other children, the overwhelming majority of proper names occurred without a determiner.

Table 13. Proper names (PN) in Daan

<table>
<thead>
<tr>
<th>Age</th>
<th>MLU</th>
<th>Overt D</th>
<th>Total # of nouns</th>
<th>PN without determiner</th>
<th>PN with determiner</th>
<th>PN with prenom. adjective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>%</td>
<td></td>
<td>PN token/ty pe</td>
<td>PN token/ty pe</td>
<td>PN token/ty pe</td>
</tr>
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<td>0</td>
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<td>0</td>
</tr>
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<td>1.2</td>
<td>11</td>
<td>27</td>
<td>1/1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1:10.01</td>
<td>1.1</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
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<td>1.3</td>
<td>17</td>
<td>58</td>
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<td>0</td>
</tr>
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<td>17</td>
<td>29</td>
<td>21/2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2:01.21</td>
<td>1.5</td>
<td>43</td>
<td>68</td>
<td>32/15</td>
<td>1/1</td>
<td>0</td>
</tr>
<tr>
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<td>1.8</td>
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<td>73</td>
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<td>1/1</td>
</tr>
<tr>
<td>2:06.25</td>
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<td>1/1</td>
<td>0</td>
</tr>
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<td>2.9</td>
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<td>1/1</td>
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</tr>
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<td>1/1</td>
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<td>100</td>
<td>19/7</td>
<td>1/1</td>
<td>0</td>
</tr>
<tr>
<td>2:11.19</td>
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<td>77</td>
<td>43</td>
<td>3/2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3:00.01</td>
<td>2.8</td>
<td>76</td>
<td>63</td>
<td>19/6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3:01.00</td>
<td>2.9</td>
<td>77</td>
<td>66</td>
<td>6/4</td>
<td>2/1</td>
<td>0</td>
</tr>
<tr>
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<td>100</td>
<td>10/4</td>
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</tr>
<tr>
<td>3:02.25</td>
<td>2.6</td>
<td>84</td>
<td>74</td>
<td>14/8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3:03.30</td>
<td>2.7</td>
<td>72</td>
<td>72</td>
<td>18/14</td>
<td>3/2</td>
<td>0</td>
</tr>
</tbody>
</table>
Again, there were a few exceptions. Similarly to the observations in Tomas, the occurrence of the demonstrative *die* (‘that’) in (43)a is likely to be an instance of predication. The utterance in (43)b shows that Daan treats the proper name *Mickey Mouse* as a name referring to kinds, which is plausible and also adult-like in this context. The status of the schwa in (43)c is unclear but is possibly a placeholder for the preposition *van* (‘of’). Likewise, the schwa in (43)d seems to be a substitution for the preposition *naar*, which is supported by the suggested interpretation of the adult interlocutor. Furthermore, like in the other children, the instances where a proper name is preceded by a determiner mainly concern nouns denoting family relations (cf. (43) d-k). In nearly all cases, the context shows clearly that Daan expresses a family relation with these nouns rather than referring to the concrete person in his own family.

(43)   a.  oh oh die konsenijke [!] [= koekiemonster]    (2;01.21)
   oh oh that cookiemonster
   ‘oh, oh, that is cookiemonster’

   b.  ik moet hele grote Mickey Muis tekenen    (2;05.25)
   *I must very big Mickey Mouse draw*
   ‘I have to draw a very big Mickey Mouse’

   c.  is voor Hilda . i boek *ə* Hilda ?     (2;06.25)
   *is for Hilda, i book *ə* Hilda?*

   d.  DAAN:   gaan *ə* in *ə* auto in *ə* opa .    (2;07.24)
   PAULIEN:  en dan gaan ze *ə* in de auto naar opa ?
   *go *ə* in *ə* car in *ə* grandpa
   ‘And then they go by car to grandpa?’

   e.  nee dat is nog *ə* oma, <nog oma, nog oma, nog oma>(2;08.13)
   *no that is another *ə* grandma, another grandma, another grandma, another grandma*

   f.  <wat(ə) de pa> [//] pa(pa) gaat niet naar huis    (2;10.14)
   *what the da.. da(ddy) goes not to home*
   ‘what the da.. da(ddy) is not going home’

   g.  nee dat is moeder dit is # de # papa [/] dit is de moeder dit is de papa    (3;01.00)
   *no that is mother, this is the dad, this is the mother this is the dad*
The results in the tables 10 - 13 have shown that the overwhelming majority of proper names in the children’s speech is not modified by a determiner or an adjective. There seem to be a few exceptions to this. However, nearly all of these exceptions concern nouns expressing family relations. Recall that nouns expressing kinship relations have an exceptional status as they can also occur with a determiner in the target language. As soon as these names are modified with a determiner, they lose their unique reference and behave like common nouns. In addition, most of these cases involve the protodeterminer ə, whose status is ambiguous. Furthermore, the occurrences where the demonstratives die and dat (“that”) precede a proper name are very likely to be instances of predication where the copular is omitted (“that is grandpa’). I conclude thus that none of the above cases is convincing evidence against the hypothesis that proper names do not combine with a determiner in the child’s speech and that the occurrence of errors of the type the (little) John cannot be confirmed. Hence, the results of the investigation of the proper names support prediction 4.

3.2 The Acquisition of Pronouns

This section focuses on the question whether the co-occurrence restrictions also hold for the acquisition of pronouns. As argued in chapter 3, pronouns correspond to DPs at the onset of acquisition. This setting is only changed in the presence of positive evidence in the input. The assumption that DP structure is acquired top-down predicts that if pronouns cannot be preceded by a determiner or a prenominal adjective in the target language, the same holds for child language. Hence, a child acquiring e.g. English, French or Dutch should not pass through a stage where he
accidentally produces utterances like the he. In contrast, this construction is expected in the speech of children acquiring a language like Japanese. Furthermore, this study aims to replicate Bloom’s (1990) findings for English that there are no errors of the type big he in the data. This is summarised in prediction 5:

(44) Prediction 5:
There are no errors of the type determiner+pronoun /adjective+pronoun in the children’s speech.

Again, French and Dutch are suitable for testing this prediction as in both languages pronouns cannot be modified or preceded by a determiner. The same children as in the previous section were investigated: The French children Grégoire, and Max and the Dutch children Tomas and Daan. Using the CLAN program, all utterances of the children including the target pronoun were extracted. In addition, the three preceding utterances were included in order to learn more about the context of the utterance.¹ Unintelligible utterances of the type xxx pronoun or pronoun xxx were excluded. Furthermore, it was decided that the set of singular pronouns provides a large enough and representative sample to investigate prediction 5; therefore, only singular pronouns were included in the count. Table 14 summarises the results for all four of the children: tables 14 – 18 give the results for the individual children, including the different pronouns.

Table 14. Singular pronouns with and without modification

<table>
<thead>
<tr>
<th></th>
<th>without det</th>
<th>det-pronoun (protodet)</th>
<th>adj-pronoun</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grégoire</td>
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<td>0</td>
<td>664</td>
</tr>
<tr>
<td>Max</td>
<td>2216</td>
<td>0(+2)</td>
<td>0</td>
<td>2216</td>
</tr>
<tr>
<td>Tomas</td>
<td>1367</td>
<td>3(+5)</td>
<td>0</td>
<td>1377</td>
</tr>
<tr>
<td>Daan</td>
<td>4781</td>
<td>27(+22)</td>
<td>5</td>
<td>4833</td>
</tr>
</tbody>
</table>

¹ Used CLAN code kwal +t*CHI -w3 +s"X" *.cha +u +f where X is the form of the pronoun in each case.
<table>
<thead>
<tr>
<th></th>
<th>without det</th>
<th>det-pronoun</th>
<th>adj-pronoun</th>
<th>total</th>
</tr>
</thead>
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<td>0</td>
<td>0</td>
<td>147</td>
</tr>
<tr>
<td>me</td>
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<td>0</td>
<td>13</td>
</tr>
<tr>
<td>moi</td>
<td>162</td>
<td>0</td>
<td>0</td>
<td>162</td>
</tr>
<tr>
<td>tu</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>30</td>
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<td>te</td>
<td>1</td>
<td>0</td>
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<td>7</td>
</tr>
<tr>
<td>le</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
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<td>elle</td>
<td>87</td>
<td>0</td>
<td>0</td>
<td>87</td>
</tr>
<tr>
<td>la</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 15. Pronouns with and without modification in Grégoire

<table>
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<th>without det</th>
<th>det-pronoun</th>
<th>adj-pronoun</th>
<th>total</th>
</tr>
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<td>487</td>
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<td>35</td>
</tr>
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<td>toi</td>
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<td>162</td>
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<td>0</td>
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<tr>
<td>elle</td>
<td>53</td>
<td>0</td>
<td>0</td>
<td>53</td>
</tr>
<tr>
<td>la</td>
<td>37</td>
<td>0</td>
<td>0</td>
<td>37</td>
</tr>
</tbody>
</table>

Table 16. Pronouns with and without modification in Max
<table>
<thead>
<tr>
<th></th>
<th>without det</th>
<th>det-pronoun</th>
<th>adj-pronoun</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ik</td>
<td>153</td>
<td>0</td>
<td>0</td>
<td>153</td>
</tr>
<tr>
<td>ikke</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>‘k</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>mij</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>me</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>jij</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>je</td>
<td>67</td>
<td>0</td>
<td>0</td>
<td>67</td>
</tr>
<tr>
<td>jou</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>hij</td>
<td>19</td>
<td>0</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>ie</td>
<td>222</td>
<td>0</td>
<td>0</td>
<td>222</td>
</tr>
<tr>
<td>hem</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>‘m</td>
<td>17</td>
<td>0</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>zijn</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ze</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>haar</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>‘r</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>d’r</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>het</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>‘t</td>
<td>32</td>
<td>0</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>die</td>
<td>364</td>
<td>0</td>
<td>0</td>
<td>364</td>
</tr>
<tr>
<td>dit</td>
<td>58</td>
<td>2</td>
<td>0</td>
<td>58</td>
</tr>
<tr>
<td>dat</td>
<td>354</td>
<td>6</td>
<td>0</td>
<td>354</td>
</tr>
<tr>
<td>deze</td>
<td>17</td>
<td>0</td>
<td>0</td>
<td>17</td>
</tr>
</tbody>
</table>
Table 18. Pronouns with and without modification in Daan

<table>
<thead>
<tr>
<th></th>
<th>without det</th>
<th>det-pronoun</th>
<th>adj-pronoun</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ik</td>
<td>749</td>
<td>1</td>
<td>0</td>
<td>750</td>
</tr>
<tr>
<td>ikke</td>
<td>55</td>
<td>1</td>
<td>0</td>
<td>56</td>
</tr>
<tr>
<td>‘k</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>mij</td>
<td>226</td>
<td>0</td>
<td>0</td>
<td>226</td>
</tr>
<tr>
<td>me</td>
<td>35</td>
<td>1</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td>jij</td>
<td>236</td>
<td>0</td>
<td>0</td>
<td>236</td>
</tr>
<tr>
<td>je</td>
<td>84</td>
<td>0</td>
<td>0</td>
<td>84</td>
</tr>
<tr>
<td>jou</td>
<td>79</td>
<td>0</td>
<td>0</td>
<td>79</td>
</tr>
<tr>
<td>hij</td>
<td>78</td>
<td>2</td>
<td>0</td>
<td>80</td>
</tr>
<tr>
<td>ie</td>
<td>127</td>
<td>0</td>
<td>0</td>
<td>127</td>
</tr>
<tr>
<td>hem</td>
<td>69</td>
<td>3</td>
<td>2</td>
<td>74</td>
</tr>
<tr>
<td>‘m</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>zij</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>ze</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>haar</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>‘r</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>d’r</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>het</td>
<td>128</td>
<td>1</td>
<td>0</td>
<td>129</td>
</tr>
<tr>
<td>‘t</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>die</td>
<td>889</td>
<td>15</td>
<td>1</td>
<td>905</td>
</tr>
<tr>
<td>dit</td>
<td>450</td>
<td>3</td>
<td>0</td>
<td>452</td>
</tr>
<tr>
<td>dat</td>
<td>398</td>
<td>2</td>
<td>0</td>
<td>399</td>
</tr>
<tr>
<td>deze</td>
<td>1215</td>
<td>20</td>
<td>1</td>
<td>1236</td>
</tr>
</tbody>
</table>

The results in the tables 14 – 18 speak for themselves: The overwhelming majority of pronouns in the children’s speech is not modified by a determiner or an adjective. Only a few instances could be found where a pronoun was modified by a determiner or an adjective however, in relation to the total number of pronouns thus was less than 1% of all instances. In the two French children, there were virtually no determiners preceding pronouns. But in Tomas and especially in Daan, we find more determiners. Let us look at the data in more detail. A first point to mention is that, as we can see by the numbers between brackets in table 14, in half of the observed instances the determiner is the protodeterminer schwa. This is illustrated by the examples in (43).
As pointed out above in section 3.1, the status of the protodeterminer is unclear, as the schwa also occurs in positions atypical for determiners and could just as well be the result of a prosodic strategy to fill a break in the speech stream, which also occurs in adult speech as (60)(46) shows (example taken from the child-directed speech in Daan). Thus, the existence of protodeterminers is not strong enough evidence to conclude that in this case the pronoun was actually modified.

None of these cases is convincing counterevidence for prediction 5. (47) is very likely to be an instance of predication with a right dislocation of the demonstrative (Dit is een mooie, dit ‘This is a nice (one), this’). In the next example in (48), it might be the case that the child is correcting himself with the result that two determiners co-occur. (49) might be a transcription ambiguity similar to (40)b and e,
where the phonologically reduced pronoun *ie* ('he') has attached to the verb and has accidentally been transcribed as *die*.

Another transcription ambiguity concerns the occurrence of the pronoun *hem* ('him'). (50) is a typical example in the Dutch data where this pronoun seems to be modified by a determiner. It is very questionable whether constructions like these are actually instances of the pronoun *hem*. Notice that, in accordance with the transcription conventions in CHILDES, the part between parentheses is not pronounced by the child but is added as an interpretation of the researcher who transcribed the acoustic speech recordings. A more likely interpretation of these occurrences of the sound /m/ is that its pronunciation is an articulatory strategy to fill a pause in the speech stream, a phenomenon that is very typical also in adult language.

(50)  *die hele gro [//] grote <(he)m> [//] tuin maken*. Tomas (2;03.06)  
*that very big (hi)m garden make*

We have seen that none of the instances where a pronoun co-occurs with a determiner is straightforward evidence against prediction 5. Rather, all these examples allow for several interpretations and are very likely to be articulatory phenomena or instances of self-correction. As we can see in table 17 vs. table 18, Daan seems to produce more determiner-pronoun combinations than Tomas. An important point to mention in this context is that Daan stutters a bit, which could be a plausible explanation for the higher number of determiner-pronoun combinations in his data. Thus, the co-occurrence of determiners and demonstrative pronouns, like in (48) seems to be the result of an articulation problem rather than the modification of a pronoun.

Keep in mind that the number of modified pronouns is less than one percent of all pronouns produced by the children whereas the overwhelming majority of pronouns is not modified. As we have seen above, most of these cases are ambiguous and also allow for other interpretations. For the sake of completeness, I have decided to include these examples in the count, but I conclude here that none of these instances constitute a serious challenge for prediction 5.
3.3 Conclusions

In this section I have investigated two predictions of the structure unravelling theory concerning the modification of proper names and pronouns:

Prediction 4:
There are no errors of the type determiner+proper name / adjective+proper name in the children’s speech.

Prediction 5:
There are no errors of the type determiner+pronoun / adjective+pronoun in the children’s speech.

As illustrated in sections 3.1 and 3.2, there are a few instances in the data where proper names and pronouns seem to be modified. However, as illustrated above, most of these cases are ambiguous and allow for other interpretations as they involve protodeterminers or are likely to be instances of self-correction. I conclude that none of these instances constitutes serious evidence against predictions 4 and 5 and that the overwhelming majority of proper names and pronouns are not modified in the children’s speech. The absence of modification of proper names and pronouns is expected if the acquisition of nominal items takes place item by item, with the topmost DP-projection as the default setting for the correspondence between phonological items and their syntactic representation.

Recall that the structure building model based on the assumption that the D-layer is not available from the onset of acquisition (cf. chapter 1) cannot account for this observation. In fact, this model predicts errors of the type determiner + proper name as soon as the child starts to produce determiners with common nouns more frequently. In contrast, the absence of these kinds of errors is expected if the DP structure is unravelled per item in a top-down fashion.

An option that comes to mind to account for the absence of the determiner within the structure building framework is the idea that proper names move from the N-position to the D head (Longobardi, 1994). This would account for the referential properties of the proper name and at the same time explain the absence of the determiner (cf. (51)).
This implies that as soon as the DP-structure expands, all proper names must raise to the D position without exception. Second, an N-D raising approach for proper names predicts errors of the type *proper name - adjective* like *John little* (see also Matushansky, 2006). A look at the French and Dutch data reveals that this kind of error is not found. For instance, none of the 578 proper names produced by Max is followed by an adjective. Tomas produces 215 proper names during the recordings, and none of them occur with a postnominal adjective. The observation that there were no errors where a proper name preceded an adjective weakens the hypothesis of N to D raising in the child’s grammar. This hypothesis can only be rescued by stipulating an additional rule prohibiting N-D raising in the presence of an adjective, which makes the analysis less attractive.

Another point to mention concerns the absence of modifications of pronouns and proper names in the input. One could argue that it is not a surprise that children never make errors of the type *the Peter and the he* as these never occur in their language input. However, two remarks are necessary here: First, this argument would imply that children conclude from the absence of a construction that this particular construction is not possible in the input. Second, children actually do produce utterances that deviate from the input. Take for instance overgeneralisations of other types, for example with irregular verbs or plural markers. In (52), the the irregular Dutch past participle for the verb *schrijven* (‘to write’) is illicitly produced with the regular *-t* suffix. Furthermore, Dutch has two plural suffixes, *-s* and *-en*, and children acquiring Dutch generalise these suffixes in both directions. So for instance, in (53) the Dutch child Katelijn incorrectly uses the *-s* suffix (Frijn and De Haan 1990: 146).

(52) ik heb naam geschreft [= geschreven]    Daan (3;1.28)

*I have name writted

‘I have written (the) name’
The forms produced by the children in (52) and (53) are very unlikely to occur in the input. Note that in the end the fine-tuning of the irregular forms in the verbal paradigm and the plural marking is an item-based process. But the fact that children pass through a stage where they produce target deviant utterances show that at this stage, other strategies, like probabilistic mechanisms, can overrule the item-based production of the correct form.

To conclude this section, we have seen that children do not modify proper names and pronouns if this is not possible in their target language. This observation is expected if the DP structure is unravelled in a top-down fashion, driven by positive evidence in the input.

4. Agreement Errors in an Item-Based Model

Up to now in the present chapter we have seen evidence supporting the idea of item-based learning of the syntactic properties of the DP. An aspect that has received little attention so far is the acquisition of agreement within the determiner system. If the acquisition of the syntactic D-position is acquired per item, does it also hold for the acquisition of the morphological form of the determiner? As pointed out earlier, many acquisition studies have illustrated that children make agreement errors on the determiner. A common error concerns the agreement in grammatical gender between the determiner and the noun. For instance, Dutch has two grammatical genders, coded on the definite singular determiner: The common gender, expressed by *de*, and the neuter gender, expressed by *het*. A number of studies have shown that children acquiring Dutch pass through a stage where they overgeneralise the common gender determiner *de* to neuter gender nouns (Schaerlaekens 1977, Zonneveld 1992, Johnson 2004, Van der Velde 2004 among others). Similarly, gender errors have been observed in children acquiring Romance languages (cf. Müller 1994, Palmer 2001, Van der Velde 2004 among others).

The grammatical gender is one of the idiosyncratic properties of a word and must be acquired for each item separately. How can the presence of gender errors be
accommodated in a model based on the assumption that the presence of the determiner is acquired per item as proposed in chapter 3? Apparently, the acquisition of the syntactic position of the determiner and the acquisition of the correct morphological form of the determiner are two separate mechanisms. The acquisition of the syntactic properties of the determiner seems to be item-based. This is illustrated by the fact that there is no overgeneralisation with respect to the position of the determiner. Children do not accidentally modify nominal elements with a determiner or an adjective that cannot be modified in the target language (cf. section 3). In contrast, the gender errors reported from numerous acquisition studies, as for instance the overgeneralisation of the common gender determiner de in Dutch, indicate the effect of a different underlying mechanism, e.g. a probabilistic strategy of the child to choose a morphological form of the determiner.

The structure unravelling approach is actually compatible with the observation that syntactic and morphological acquisition are separate mechanisms: The acquisition of the syntactic position takes place earlier. Thus, at a certain point in the development, the child ‘knows’ that the syntactic D position must be filled, but he does not have knowledge about the correct morphological form. The child has different candidates at his disposal in order to fill the D position. It seems that the initial strategy guiding the choice between these candidates relies on the probability of the occurrence of a particular form. About 75% of the nouns in Dutch are common gender and are hence preceded by de. Furthermore, de is the only form of the definite plural article for both common gender and neuter nouns. Thus the determiner de is more frequent in the language input than het. This frequency might lead to a stronger representation of the morphological form de in the child’s early grammar and renders it a more attractive candidate to be inserted in the prenominal position. Notice that in the end, the acquisition of gender and the insertion of the correct determiner are the result of an item-based learning process. The gender errors occurring in the child’s speech show, however, that the child passes through a stage where he makes use of a more economical rule or strategy in choosing the determiner.

In an elicitation task with 38 Dutch children in three age groups between three and six, Van der Velde (2004) showed that children overgeneralise the common gender determiner, as pointed out above. Another interesting observation is that the percentages of these agreement errors depended on the experimental task. Van der Velde used two different elicitation tasks. In the first task, children produced DPs in an isolated context, for instance as an answer to the question: ‘Who drinks the milk?’ The expected answer was ‘[The cat]op’. In a second task, children were asked: ‘What is the boy doing in this picture?’ where the expected response in
the context was ‘He is reading [the blue book]or’. Tables 19 and 20 show the number of agreements errors in the three age groups. The tables not only illustrate that the common gender determiner *de* is overgeneralised whereas the determiner for neuter gender, *het*, is virtually never used in *de*-contexts. Furthermore, we see that the number of agreement errors is higher in the sentence contexts than in the isolated DPs. This observation supports the idea that children rely on different strategies. When the child has to produce a full sentence, the processing load is higher and hence capacity can be saved by relying on a probabilistic strategy in order to choose the correct form of the determiner.

**Table 19. Agreement errors in isolated DPs**

<table>
<thead>
<tr>
<th>Mean age</th>
<th>3 years</th>
<th>4 years</th>
<th>6 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>de</em> instead of <em>het</em></td>
<td>16%</td>
<td>25%</td>
<td>8%</td>
</tr>
<tr>
<td><em>het</em> instead of <em>de</em></td>
<td>2%</td>
<td>8%</td>
<td>2%</td>
</tr>
</tbody>
</table>

**Table 20. Agreement errors in sentence context**

<table>
<thead>
<tr>
<th>Mean age</th>
<th>3 years</th>
<th>4 years</th>
<th>6 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>de</em> instead of <em>het</em></td>
<td>21%</td>
<td>39%</td>
<td>41%</td>
</tr>
<tr>
<td><em>het</em> instead of <em>de</em></td>
<td>0%</td>
<td>2%</td>
<td>1%</td>
</tr>
</tbody>
</table>

In conclusion, there is evidence supporting the hypothesis that the unravelling of the syntactic layers of the DP on the one hand and the acquisition of DP internal agreement on the other hand are independent mechanisms. Consequently the presence of agreement errors in the children’s speech is not in contradiction with the position advocated here that DP unravelling is an item-based process.

**5. Conclusions**

This chapter investigated five predictions of the structure unravelling theory of DP acquisition introduced in chapter 3 and listed below. The evidence presented in sections 2 and 3 supports these predictions.

---

1 The percentages in table 19 and 20 are estimated from graph 4 and 5 in Van der Velde (2004: 30).
1. There is a difference in the syntactic development of individual nouns. Some nouns still occur as bare nouns whereas other nouns have already started to combine with a determiner.

2. The presence of the determiner in a language has an effect on the speed of first language acquisition: The more frequent the determiner is in the input, the faster the child will converge to a target-like use.

3. The shape of the developmental curve representing the overt production of determiners increases gradually.

4. There are no errors of the type "determiner+proper name / adjective+proper name" in the children’s speech.

5. There are no errors of the type "determiner+pronoun / adjective+pronomns" in the children’s speech.

The most important conclusions can be summarised as follows: First, there are differences between items in the acquisition of the determiner (cf. prediction 1). These differences are unexpected in the structure building model. In the same way, as argued in section 2.3, approaches that ascribe the determiner omission of the children to a temporarily underdeveloped processing system (cf. Avrutin and De Lange 2004, Van der Velde 2004) cannot explain why some nouns are preceded by a determiner while others are not. An explorative study of child-directed speech has indicated that a possible factor affecting differences between particular items is the variety of different morphological forms of the determiner. The more restricted the set of determiners that co-occur with a particular noun, the easier it is for the child to discover that these elements are evidence for the same structural position, and the earlier the child will combine this particular item with a determiner.

Not only the frequency of a particular form of the determiner in prenominal position but also the overall frequency of the determiner affects the speed with which children reach a target-like use of determiners in general. This leads to cross-linguistic differences between determiner acquisition in Romance and Germanic languages observed in earlier studies, which could be confirmed in the present study (cf. prediction 2). The observation that the shape of the developmental curve increases gradually (cf. prediction 3) is additional evidence that the acquisition of the determiner system takes place item-by-item. These results support the structure unravelling approach. However, even though the structure unravelling theory implies that DP structure is acquired as a result of item-based learning, it is important to stress that in contrast to constructivist approaches (cf. Braine 1976, Tomasello 1992, Tomasello 1998, Tomasello 2000, Theakston, Lieven and Tomasello 2003 among others). The structure unravelling theory is based on the
assumption that the child disposes of innate abstract grammatical knowledge. I will come back to this issue in the next chapter.

Furthermore, co-occurrence restrictions in child language with respect to the modification of proper names and pronouns (cf. prediction 4 and 5) suggest that the child acquires the DP structure in a top-down fashion. As argued in chapter 3, this follows directly from principle guiding language acquisition, in particular the subset principle. The structure building model in contrast cannot account for this observation. I conclude thus that the evidence presented in this chapter supports the structure unravelling theory advocated in the present thesis.
5 CONCLUSIONS

1. General Summary

In this last chapter I give a summary of the present study, briefly list the empirical results and present the conclusions. Section 2 embeds this study in current research.

In this thesis I have investigated the non-adult like omission of the determiner in the speech of young children, illustrated here by the examples in (1).

(1) a. box gone [= the box is gone] English, Anne (1;11.04)
   ‘The box is gone’

b. mets savon bain [=je mets du savon dans le bain] French, Daniel (1;09.21)
   put soap bathtub
   ‘I am putting some soap into the bathtub’

c. da auch Buch [= da ist auch ein Buch] German, Kerstin (2;0.10)
   there also book
   ‘There is a book, too’

Before going into the theoretical discussion, I first gave an overview of the empirical aspects of determiner omission in chapter 2. Based on this survey, I have derived six empirical requirements (cf. A-F). In addition, I have made an inventory of the theoretical requirements for a DP acquisition theory (cf. G-J).

A. Account for the fact that very young children have a grammatical representation of the determiner before they start to produce it.
B. Account for the occurrence of protodeterminers.
C. Account for the systematic order in the emergence of DP elements:
   Nouns > determiners > prenominal adjectives > postnominal adjectives (in French).
E. Account for the observation that early determiners are not parts of unanalysed units.
F. Account for the occurrence of agreement errors in determiners.
G. Account for the fact that determiners and adjectives are different syntactic categories.
H. Account for the observation that in the absence of an overt determiner, bare nouns in child language have the same semantic properties as DPs in adult language (type-shifting, reference to particular instances, definite reference).

I. Account for the observation that determiner omission is not exclusively a discourse phenomenon but that it involves more underlying mechanisms.

J. Account for the observation that bare nouns in child speech can occur in ungoverned positions.

Two competing theoretical viewpoints with respect to the omission of the determiner were compared in the present study. Some researchers account for the missing determiner in early child speech by arguing that the functional D-layer is not yet present in the child’s grammar. This position has been referred to as the DP structure building hypothesis (Clahsen, Eisenbeiß and Vainikka 1994, Müller 1994, Granfeldt 2000a, Hulk 2004). The other point of view is that functional categories, including the D-layer, are operative from the onset of acquisition (Poeppel and Wexler 1993, Hoekstra, Hyams and Becker 1999). I have argued in the present study that the latter is the most promising. This position is motivated in chapter 3, where I propose a new approach of DP acquisition, the structure unravelling theory.

The structure unravelling theory is based on the tripartite architecture of grammar (Jackendoff 1997, cf. figure 1). Jackendoff proposes that the grammar consists of three sub-modules, containing phonological, syntactic and semantic/conceptual information. These sub-modules are truly independent, but they are connected by correspondence rules.

**Figure 1. Tripartite parallel architecture (Jackendoff 1997)**

<table>
<thead>
<tr>
<th>Phonological formation rules</th>
<th>Syntactic formation rules</th>
<th>Conceptual formation rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonological structures</td>
<td>Syntactic structures</td>
<td>Conceptual structures</td>
</tr>
</tbody>
</table>

The assumption that correspondence rules map phonological units onto syntactic structures and semantic information makes it possible that phonological units are smaller or larger than terminal nodes at the syntax. In fact, several authors have shown that co-occurrence restrictions in adult speech can be accounted for by the assumption that phonological words correspond to non-terminal nodes (Radford
1988, Weerman and Evers-Vermeul 2002, Neeleman and Szendrői to appear). I argue that this is also the case in the bare nouns in child speech. Hence, I subscribe to the point of view that phonological items are mapped onto syntactic representations rather than being inserted into syntactic nodes. In all other respects the new theory is based on standard assumptions of the generative framework.

The main ideas of the structure unravelling approach to DP acquisition can be summarised as follows: At the onset of acquisition, the child has a default setting where phonological words denoting objects correspond to the maximal projection DP (cf. (2)). This setting does not imply that the child has access to a full-fledged DP structure from the onset of acquisition. Rather, the child has access to semantic properties of nominal items, such as the presence of a type-shifting operator, specific reference and definiteness.

(2) Initial state of acquisition:
\( /X_{\text{object}} \leftrightarrow \text{DP} \)

In this way, the omission of the determiner in (1) can be accounted for. A noun like box corresponds to a DP at this early stage of acquisition (cf. (3)). This initial setting of the correspondence rule will be reset if and only if the child encounters evidence in the input that a phonological word like box can be modified. Guided by innate X'-principles, the DP structure in unravelled top-down, layer-by-layer (cf. (4)).

(3) \( \text{box}_w \leftrightarrow \text{DP} \)

(4) \( \text{box}_w \leftrightarrow \text{DP} \)
\( \text{box}_w \leftrightarrow \text{D}' \)
\( \text{box}_w \leftrightarrow \text{NP} \)
\( \text{box}_w \leftrightarrow \text{N}' \)
\( \text{box}_w \leftrightarrow \text{N} \)

As I have shown in chapter 3, the structure unravelling theory is in perfect line with the requirements A-J for a DP acquisition theory. In addition, this theory allows us to generalise over child and adult language. Furthermore, the idea of structure unravelling has a number of important advantages over theories that are based on the assumption that the functional D-layer is not available. The first point to mention is that bare nouns in child language (cf. (1)) actually behave like full DPs in adult language. They have the same referential properties as full DPs. This follows from the default setting in (3). In contrast, a theory assuming that the
functional D-layer is not yet available cannot account for this observation. Second, the theory generalises over co-occurrence restrictions in child and adult language. And third, the structure unravelling theory is in accordance with learnability theory because the initial default setting in (3) can only be reset in the presence of positive evidence. In contrast, the structure building hypothesis is in conflict with the assumption that the acquisition of linguistic structure is driven by positive evidence. The idea of bottom-up structure building implies that the child has to “unlearn” that proper names correspond to the lexical N position, and it predicts that children pass through a stage were they modify pronouns and proper names.

This issue leads us to the empirical results of this thesis that are presented in chapter 4 where I investigated the five predictions listed below. These predictions are derived from two important implications of the new proposal. First, the structure unravelling theory implies that the child acquires for each item individually whether it is preceded by a determiner or not. This leads to predictions 1-3. Second, according to the new theory, the DP structure is acquired in a top-down fashion: The child unravels the layers of the DP starting out with the topmost projection. As discussed in chapter 4, this view is supported by considerations about learnability, i.e., the subset principle. This leads to predictions 4 and 5.

1. There is a difference in the syntactic development of individual nouns. Some nouns still occur as bare nouns whereas other nouns have already started to combine with a determiner.
2. The presence of the determiner in a language has an effect on the speed of first language acquisition: The more frequent the determiner is in the input, the faster the child will converge to a target-like use.
3. The developmental curve representing the overt production of determiners increases gradually.
4. There are no errors of the type determiner+proper name / adjective+proper name in the children’s speech.
5. There are no errors of the type determiner+pronoun / adjective+pronoun in the children’s speech.

These five predictions have been investigated in longitudinal recordings of spontaneous parent-child interaction in four children: The two monolingual French children Grégoire (1;09.18 - 2;05.13) and Max (1;09.19 - 3;01.14) and the two monolingual Dutch children Daan (1;08.21 - 3;03.30) and Tomas (1;07.05 - 3;01.02). The outcome of this investigation confirms all five predictions. I conclude
that the empirical results support the structure unravelling theory and are a challenge for the structure building hypothesis.

2. Embedding in Current Research

When the generative school of research started to develop in the 1970s, researchers focussed especially on adult language. The aim was to find linguistic universals either by describing typological differences between languages or by in-depth studies of one particular language. However, there was a missing link between the innate knowledge of UG and the target stage: the question how the abstract and unspecified principles of UG could be transformed into the target grammar of an adult speaker. The theory of innate knowledge that leads the way to an adult grammar is incomplete without taking into account the intermediate steps in the course of language acquisition. Only in the last 20 years has first language acquisition received more attention within the generative framework. The structure building hypothesis is one example of an approach that brings together linguistic theory and acquisition data. However, as argued in chapter 4 of the present thesis, this approach is challenged by considerations about learnability, more specifically the subset principle (Berwick 1985, Wexler and Manzini 1987). In contrast the structure unravelling theory accounts for the transition from child grammar to adult grammar while considering the principles of learnability at the same time.

The focus of the present study, the acquisition of the determiner phrase, has become an important topic in first language acquisition research. Many cross-linguistic studies have investigated determiner acquisition (Bloom 1990, Clahsen et al. 1994, Müller 1994, Hulk and Van der Linden 1996, Christophe, Guasti, Nespor, Dupoux and Ooyen 1997, Chierchia, Guasti and Gualmini 1999, Eisenbeiß 2000, Granfeldt 2000b, Baauw 2001, Van den Berg 2001, Kupisch 2004, Rozendaal and Baker 2007 among many others). The empirical results of the present study contribute to this research. Moreover, the structure unravelling theory proposed here offers a unified account for determiner omission that can be applied cross-linguistically.

Another point of intersection with current research concerns the idea proposed here that children acquire the presence of the determiner item-by-item. Actually, the idea that item-based learning mechanisms plays a role in language acquisition is not new but has been advocated in terms of a constructivist model of language acquisition (cf. Braine 1976, Tomasello 1992, Lieven, Pine and Baldwin 1997, Pine and Lieven 1997, Tomasello 2000, Theakston, Lieven and Tomasello
According to these usage-based approaches to language acquisition, children pass through an initial stage where they imitate linguistic patterns they hear in the input. In this way, children acquire particular linguistic constructions in an item-based fashion. In a subsequent developmental step, children generalise over these expressions by using their cognitive skills. At this point of development, they start to creatively use these constructions with new words as well.

The structure unravelling theory proposed in the present thesis and the usage-based approaches to language acquisition share an important assumption: Both approaches are based on the idea that linguistic representations are linked to individual lexical items. Consequently, both models account for the observed variation in child speech in a very similar way. Recall from chapter 3 that in terms of the structure unravelling theory two correspondence rules for the same noun can co-exist which leads to the observed optionality of the determiner in the free variation stage. Similarly, it has been argued within usage-based models that children can have two different representations for verbs like *to jump*. Hearing the word in a declarative context (e.g., ‘he jumps’) and in questions (e.g., ‘Can he jump?’) leads to the two representations *he jumps/he jump* (Theakston et al. 2003: 865). In this way, the optional infinitive use in child language has been accounted for. However, there is an important contrast between the constructivist view and the structure unravelling theory. According to the constructivist position, children do not dispose of abstract linguistic knowledge in early stages of language acquisition. The initial stage of acquisition is characterised by learning linguistic knowledge individually per lexical item, and only later is this knowledge used to generalise over the same forms. In contrast, in the structure unravelling view, children dispose of abstract knowledge about the DP structure at the onset of acquisition.

These different assumptions lead to a number of differences: One prediction of lexical learning approaches is that familiarity with lexical items has an effect on the child’s linguistic performance. More specifically, the constructivist approach predicts differences between familiar items and novel items (cf. Tomasello 1992, Theakston et al. 2003). However, as illustrated in chapter 4, some words occur without determiner even though they are produced frequently by the children. For instance, Tomas uses the word *auto* quite frequently throughout all the recordings (from 1;9.00 - 3;1.02). This implies that the word must be more than familiar to the child. However, Tomas still omits the determiner in this word. In the same way, I have shown that input frequency is not a predictor for the speed of acquisition of the determiner in a particular item. These observations are unexpected in the constructivist model. In contrast, the structure unravelling theory does not a priori relate the input frequency of a particular word to the speed of acquisition. In
principle, many different factors can influence the speed of the structure unravelling process. As suggested in chapter 4, one of these potential factors is the input variety of different forms of the determiners in prenominal position but other factors are also conceivable.

Another difference between the constructivist point of view and the structure unravelling theory concerns the restrictiveness of their predictions. According to usage based approaches (cf. e.g. Tomasello 1992, Mintz 2003), the child memorises frequent constructions in the form of frames. These frames consist of a fixed element and an open slot. In order to identify these frames, the output of the child is investigated. For instance, Mintz (2003) investigated the production of six English children and found that about 50% of the constructions in the children’s output could be traced back to 45 frequent frames. However, this point of view faces two problems: First, it implies that there is a large number of utterances in the children’s output that cannot be accounted for in terms of frames. And second, the usage based approach describes the production of the child in terms of frames, but it does not predict what kinds of constructions are possible. In this way the model lacks restrictiveness. In contrast, the structure unravelling theory has the important advantage that it is restrictive: The theory predicts that constructions where a proper name or a pronoun are modified by a determiner or an adjective are absent in the children’s output. In fact, this aspect renders the structure unravelling theory falsifiable: The claim that DP structure is unravelled in a top-down fashion can be falsified if we encounter non-target like utterances of the type determiner+proper name/pronoun, or adjective+proper name/pronoun in the data of children targeting a language like Dutch or (Standard) French, where modification of proper names and pronouns is not possible.

The last point to mention here concerns the proposal put forward by Jackendoff (1997) that phonological units can be smaller or larger than terminal nodes. In previous studies this idea has been proven successful in order to account for co-occurrence restrictions in adult language (Radford 1988, Weerman and Evers-Vermeul 2002, Neeleman and Szendröi to appear). The present study contributes to these findings by adding the dimension of first language acquisition.
REFERENCES


BLOM, ELMA. 2006. L1 and L2 acquisition of Dutch Gender. University of Amsterdam


REFERENCES


—. 1999b. Nouns and articles in child grammar and the syntax/semanics map, unpublished manuscript, University of Milan, University of Siena and University of Maryland.


REFERENCES


REFERENCES


HALLÉ, PIERRE, DURAND, CATHERINE and DE BOYSSON-BARDIES, BÉNÉDICTE. 2006. Articles are used by 11-months olds to parse noun phrases. Paper presented at LATSIS Colloquium, Early Language Development and Disorders, Geneva, Switzerland.


HOEKSTRA, TEUN, HYAMS, NINA and BECKER, MISHA. 1999. The role of the specifier and finiteness in early grammar. Specifiers: Minimalist Approaches, ed. by David Adger, Susan Pintzuk, Bernadette Plunkett and George Tsoukas, 251-70: Oxford University Press.


HUMBOLDT, WILHELM VON. 1836. Über die Verschiedenheit des menschlichen Sprachbaues und ihren Einfluss auf die geistige Entwicklung des Menschengeschlechts. Berlin: Dummler.


KOSTić, ALEKSANDAR. 2004. The effect of the amount of information on processing of inflected morphology. Ms., University of Belgrade


REFERENCES


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**ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-N</td>
<td>adjective-noun combination</td>
</tr>
<tr>
<td>AP</td>
<td>adjective phrase</td>
</tr>
<tr>
<td>BN</td>
<td>bare nouns</td>
</tr>
<tr>
<td>compl.</td>
<td>complement</td>
</tr>
<tr>
<td>D-N</td>
<td>determiner-noun combination</td>
</tr>
<tr>
<td>D-A-N</td>
<td>determiner-adjective-noun combination</td>
</tr>
<tr>
<td>D-N-A</td>
<td>determiner-noun-adjective combination</td>
</tr>
<tr>
<td>DP</td>
<td>determiner phrase</td>
</tr>
<tr>
<td>FEM</td>
<td>feminine</td>
</tr>
<tr>
<td>MASC</td>
<td>masculine</td>
</tr>
<tr>
<td>MLU</td>
<td>mean length of utterance</td>
</tr>
<tr>
<td>N</td>
<td>noun</td>
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<tr>
<td>N-A</td>
<td>noun-adjective combination</td>
</tr>
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<td>NEUT</td>
<td>neuter</td>
</tr>
<tr>
<td>NP</td>
<td>noun phrase</td>
</tr>
<tr>
<td>PP</td>
<td>prepositional phrase</td>
</tr>
<tr>
<td>PS</td>
<td>phonological structure</td>
</tr>
<tr>
<td>SS</td>
<td>syntactic structure</td>
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SAMENVATTING

Kinderen laten aan het begin van de verwerving van hun moedertaal een tijd lang het lidwoord weg in contexten waarin het verplicht is in volwassenen taal. Dit proefschrift beschrijft dit fenomeen en presenteert een nieuwe theorie voor de verwerving van de determiner phrase (DP).

Het eerste deel van het proefschrift bevat een inventarisatie van crosslinguïstische empirische observaties omtrent de eerste taalverwerving van het lidwoord. Daarnaast worden een antaal analyses van dit fenomeen kritisch besproken. Deze inventarisatie leidt tot tien eisen waaraan elke theorie van DP verwerving zou moeten voldoen.

In het tweede gedeelte wordt er een nieuwe theorie voorgesteld die aan deze eisen voldoet. Uitgaand van de theorie van *tripartite paralell architecture* (Jackendoff 1997) wordt beargumenteerd dat het weglaten van het lidwoord kan worden gezien als een effect van het doorbreken van de één-op-één relatie tussen fonologische eenheden en syntactische elementen. Op deze manier wordt een parallel getrokken tussen de taal van volwassen en kindertaal. De centrale gedachte van de nieuwe *Structure Unravelling*-theorie is dat aan het begin van het taalverwervingsproces fonologische woorden kunnen corresponderen met de maximale DP projecties. Deze *default setting* kan alleen worden opgegeven als het kind positieve evidentie in de input tegenkomt. Als dit het geval is gaat het kind – uitgaand van de maximale projectie- stapsgewijs de lagere posities van de DP ontrafelen.

In het derde gedeelte van dit boek worden vijf voorspellingen van de *Structure Unravelling*-theorie geformuleerd en vervolgens getoetst aan de hand van Franse en Nederlandse kinderen. Deze voorspellingen kunnen inderdaad worden bevestigd. Een belangrijke observatie is hierbij dat de verwerving van het lidwoord plaatsvindt per individueel *lexical item*, maar tegelijkertijd wordt dit proces gestuurd door een onderliggend taalverwervingsmechanisme.
Maren Pannemann was born on the 13th December 1976 in Oldenburg, Germany. After graduating from the Graf-Anton-Günther Gymnasium, Oldenburg in 1996, she studied German language and literature, Dutch language and literature and sociology at the Carl-von-Ossietzky Universität Oldenburg, where she passed her Magisterzwischenprüfung cum laude in 1998. Subsequently she studied general linguistics at the Rijksuniversiteit Groningen (RuG) where her major was Theory of Grammar. During the first year of this program she was funded by a Socrates grant. Furthermore, in 2000 she received a second grant for a seven-month stay at the University College London. In 2002, she completed her Master’s degree cum laude at the RuG with a thesis titled Is Icelandic split-ergative? In the same year, she started her PhD project at the Amsterdam Center for Language and Communication, at the University of Amsterdam. This dissertation is the result of the research carried out during this time. Currently Maren Pannemann is an instructor at the University of Amsterdam and at the Hogeschool van Amsterdam.