3. Research method

3.1 Introduction

In this chapter the design of the present study will be outlined. First of all, the rationale is explained. Together with the conclusions from the literature reviewed in Chapter 2, this leads to the research questions that will be answered in this study. The questions have been briefly mentioned in the introduction and will be accounted for here. Any comparison between children with SLI and typically developing children employs matching criteria; these criteria will be described. The methods that were adopted to answer each of the research questions are presented as well.

3.2 Research questions

From the review of the SLI literature, presented in Chapter 2, a general picture arises of a grammatical deficit that can be profiled along modular lines. A dissociation between functional categories and lexical categories is assumed by most researchers. The prediction that follows is that functional categories are affected by SLI, while lexical categories are not. For SLI children’s control of verbs, the implication is that the tense and agreement markers will be vulnerable, but the lexical information - the thematic structure and the argument structure that is projected from it - will be available. This is the general picture; I have referred to some dissenters.

The argument structure experiments in this study are preceded by an investigation of past tense and agreement marking in a Dutch population. An important reason for including tense and agreement in this study as a dependent variable is that the grammatical symptoms of SLI differ from language to another. To quote Crago (1997): vulnerability of morphology is language-dependent. The markers of functional category problems in Dutch SLI cannot simply be inferred from the symptoms in other languages. By assembling a picture of these symptoms as they show in Dutch, we are well-prepared to review the explanatory value of current linguistic accounts for Dutch grammatical SLI (Chapters 4 and 5).

In addressing argument structure, this study challenges the view of a modular deficit that exclusively affects functional projections. One study that has been influential is the case study reported by Gopnik (1990a). The Feature Blindness explanation that she proposed has created a lot of controversy. However, most of the criticism has been pointed at her explanation of morphosyntactic symptoms of SLI (e.g. Leonard, 1992; Bishop, 1994). The claim that SLI is a modular morphosyntactic deficit, on the other hand, has been embraced by many researchers. In this study I will test the hypothesis...
that SLI is not confined to functional categories. Some recent studies (Fletcher, 1992; King & Fletcher, 1993; King, 1994) can be taken as justification for this research interest: there is by now empirical evidence that children with SLI face problems with the argument structures of lexical verbs. In this study, proof will be sought of such problems (Chapters 7 and 8).

A second reason for including measures for tense and agreement concerns the assumption that language deficit in SLI is modular and only affects functional projections. If we accept that view, we would not expect difficulties in a different language area (i.e. argument structure) to co-occur. To test that prediction, a comparison will be made between SLI children who demonstrate a solid pattern of errors in tense and agreement marking and impaired children who make fewer errors. This comparison (section 8.7) is dependent on a valid measure of morphological shortcomings that defines the errors. This measure is supplied in Chapter 4. For each of the two groups of SLI subjects, the co-occurrence of difficulties in two linguistic areas - grammatical morphology and argument structure - is probed.

Finally, one other issue will be addressed. In studies by Rice and her colleagues (Rice, 1991; Rice & Bode, 1993; Watkins, Rice & Moltz, 1993) a connection was made between argument structure and the nature of the verb lexicon in children with SLI. As these children would rely on a small verb lexicon that is dominated by a small number of general all purpose (GAP) verbs, they would fail to learn the argument structures of many lexical verbs. A prediction that can be inferred from the work of Rice and her colleagues is that, when faced with an action naming task, children with SLI will preferably use verbs that are low in semantic specificity. A complementary prediction is that, when a more specific verb is employed, the arguments will be expressed less consistently than with GAP verbs. Both predictions will be tested in Chapter 9.

To summarise, this study addresses the following research questions:

1. What are the characteristics of tense and agreement marking in Dutch children with SLI (Chapter 4)?
2. Do Dutch-speaking children with SLI differ from normals in their control of argument structure alternations and in their complementation of lexical verbs in general (Chapters 7 and 8)?
3. Do verb-morphological problems correlate with verb argument structure problems in the output of children with SLI (section 8.7)?
4. Do children with SLI differ from normals in the specificity with which they name actions, as expressed in specific versus nonspecific verb labels (Chapter 9)?
3.3 Subjects

3.3.1 Selection of the language-impaired children

There are two ways in which the children with SLI that are involved in this study must be defined for selection. On the one hand, criteria must be set to make sure that they are children with a primary disorder - criteria that follow standard guidelines. I will start by consulting a diagnostic manual that is widely used to classify children with any type of disorder, DSM-IV (American Psychiatric Association, 1994) and compare its categories to the definitions from within the SLI research field. On the other hand, there is the reality of the schools the children visit. I will briefly sketch the admission criteria used by the Dutch schools from which the subjects were recruited and specify which children were excluded.

DSM-IV is a manual that outlines types of disorder for (first of all) psychiatric use. It contains a relevant label ‘developmental language disorder’ (DLD) that has two subtypes: ‘expressive’ and ‘receptive and expressive’\(^{14}\). Criteria for DLD resemble the Stark and Tallal (1981) criteria that have been so influential in the SLI research tradition. **Exclusion** criteria apply. Also, a discrepancy between verbal and non-verbal intelligence is requisite. DSM-IV is not a resource that provides sophisticated ways of refining SLI (or DLD) diagnosis. The main use it can serve here is for differential diagnosis, to exclude all children whose profiles contain symptoms of secondary language disorders. Diagnostic labels that are part of DSM and that may overlap with DLD because language impairment is one of the symptoms (though in a different syndrome constellation) are subtypes of what is called the Autistic (or PDD: Pervasive Developmental Disorder) Spectrum: Autistic disorder and PDD-NOS (PDD not otherwise specified). Another disorder that is sometimes appealed to is AD(H)D (Attention Deficit (Hyperactivity) Disorder). Children that are identified with any of these labels should not be included in a study of specific language impairment.

The education of language-impaired children in the Netherlands takes place, provided the language impairment is serious and exclusion criteria are satisfied, in special schools for language-impaired children. The designations these schools carry are more or less the same. Historically, the names would refer to children with speech as well as language impairment. Nowadays, a disorder that exclusively affects speech (articulation) tends to be relegated for intervention to a speech therapy practitioner. Some schools now prefer to carry a label like communication disorder in their names. There is a consensus on excluding children with a secondary language disorder. Not only does this guideline follow the well-known criteria for SLI, it also reflects the fact

\(^{14}\)The DSM-IV definitions do not deviate significantly from the ICD-10 classification (WHO, 1992). I will therefore restrict myself to the DSM categories. The only difference, as Bishop (1997b) points out, is that DSM adds the requirement that “the language difficulties interfere with academic or occupational achievement or with social communication” (Bishop, 1997b:25-26). For our population, this distinction is redundant: the children’s language problems have destined them for special education because their language problems interfered (or would interfere) with their functioning in a mainstream school context.
that, in the infrastructure of education, different groups of children find a place in
different special schools or in different classrooms, like schools for the deaf and hard-
of-hearing (schools for hearing-impaired children are often under the same roof with
schools for children with a primary language disorder or the children share a school in
which they occupy different classrooms) and schools for children with a general
learning disability (children with mental retardation). Of course, and here practice
faces the same difficulty that the researcher does, the distinction between primary and
secondary disorder is not always clear-cut. Each school admits some children who do
not answer strict criteria, but who are best helped in this particular environment. On
one of the three schools that participated in this study, there was a recognised
subgroup of children with marked disorders in social interaction, not unlike children
somewhere along the autistic spectrum. Although inclusion criteria for other clinical
labels did not apply either with these children (hence the diagnostic category PDD-
NOS), they were excluded from the present study. Adding them to the research
population would have introduced an additional variable. Another group that was left
out were the children with a different language background. A considerable percentage
of the special school population (particularly in the west of Holland) consists of
children for whom Dutch is a second language. The criterion for their admission to a
language unit is that there is a complementary language deficit in their native
language. Their bilingualism was an influence that would be hard to estimate and one
that could interfere with the dependent variables themselves.

The *inclusion* criterion was deliberately broad. The children that were recruited
exhibited a marked grammatical disorder, as judged by the speech therapist(s) in the
school they attended. Grammatically-impaired, in the Dutch context, is not a label that
fully predicts the symptoms. In particular the realisation of verb argument structure is
not a well-described part of the grammatical problem (there is no subtype that
specifies it as a symptom). Argument structure is not an area that is routinely
investigated.

The rationale was as follows: if children would be entered under a broad label
‘grammatically impaired’, the resulting group would contain children who either did
or did not have difficulties with verb morphology (but probably would) as well as
children who either did or did not have difficulties with argument structure. This way,
the selection would be safeguarded against bias with respect to the research questions.
In the investigation proper, independent criteria would be set based on morphological
symptoms to form subgroups for the investigation.

Children with phonological difficulties were not excluded. Shortcomings in phonology
are correlated with syntax, a fact illustrated by the label phono-syntactic syndrome
is the most prevalent one among child language disorders (Byers Brown & Edwards,
1989; Haynes & Naidoo, 1991; Conti-Ramsden et al., 1997). It would be artificial to
select only children who show no phonological deficit whatsoever. The one proviso
that was maintained was a requirement that the child be intelligible, so the data
gathered from the child would not be impossible to interpret.
Children with SLI (n=35) were recruited from three schools for language-impaired children, located in Groningen (number of children: 22), Zwolle (n=9) and Amsterdam (n=4). The language-impaired children were on average 7;8 years old. Note that the SLI group was older than the groups commonly included in comparisons between SLI children and age or language peers. A typical research group would contain preschoolers rather than schoolchildren. Argument structure and in particular alternation are not research topics that are best explored in pre-schoolers. We will see evidence of that in the data (some of the younger children did not grasp the meaning and complement structure of all items).

3.3.2 Selection of the normally developing children

The pool of controls consisted of 60 children, from which matching groups were formed for the experiments. The normal children were recruited from a wide range of schools throughout the north-east of Holland. Children were not included if they had a known history of language delay. About two thirds of the controls were examined and their data transcribed by MA students of the Rijksuniversiteit Groningen. In order to ensure a uniform elicitation, a protocol was used that specified the way the tasks were to be carried out and that detailed the prompts to be given. The contents of the protocol are described in the sections below that outline the tasks. Before the transcripts were entered in the study, they were checked for correct administering of the experimental task. The fact that the controls came from a wide region and from several schools was an advantage, as schools for language-impaired children serve a regional function - the children attending these schools predominantly live in the region covered by the control group (the exception being that there were no controls from the Amsterdam area).

Children were not matched for sex. The SLI group consisted of 9 girls and 26 boys, in the control groups the number of boys was equal to the number of girls. In both groups it appears that the sex ratio is indicative of the population they represent (the ratio in the SLI group clearly equals ratios that are reported for the SLI population in the literature). For this age range, matching for sex requires justification. The differences in language growth between girls and boys that are sometimes claimed have levelled out by the ages the subjects have. Girls early on are said to develop more quickly than boys, and if this remained the case the control group would create high demands for the impaired children’s performance. If gender-related language differences are insignificant in this age range, it is not clear what matching on this variable would do, apart from taking a lopsided slice from the normal population. More importantly, it is not clear what relation there would be between the dependent variable(s) and the gender variable.

3.3.2.1 Measures for matching

When a potential area of dysfunctioning is explored in language-impaired children, the first comparison to be made is with children their own age (chronological age - CA - matches). This will show us first of all whether there is a discrepancy between two groups that are not, for instance, different in intelligence (by definition, that is). If
there would be no difference with peers, there would be no symptom requiring explanation. If a difference is found, the road often taken is to follow up a CA-matched comparison with one that matches the children by language level (or language age, LA). The rationale is that this will inform us on whether the identified problem is specific for SLI, in that it exceeds even the more modest resources of younger normally developing children. The LA matching tool that is unequalled in popularity is Mean Length of Utterance (MLU). In most of the present study MLU is not an adequate measure for matching. Also, one has to question whether matching beyond CA is called for anyway.

The aim of matching in this study was in line with the spirit of matching in the SLI literature. It was to establish differences between the impaired group and the control groups that were not implicit in the language delay that characterised the impaired children in the first place. At the same time, it was not yet clear that the SLI subjects would differ from CA peers in all respects. After all, problems with argument structure could not be anticipated for sure - the literature is equivocal here - and grammatical morphology is language-dependent (a morphological error pattern has yet to be pinpointed for Dutch). Nevertheless, it will become clear that matching on chronological age only is not sufficient.

I will mention the measures that are available and have relevance for this study.

**Chronological Age.** Matching on chronological age makes it possible to find out whether a language aspect shows delay in impaired children.

For grammatical morphology (Chapter 4) the prediction would be, based on the literature, that there is delay. If the literature is right - and Dutch is a language that is typologically rather similar to English, the language that strongly defines the pattern in the literature - this prediction will be confirmed by the Dutch data. In that case, it is useful to include younger children in our comparison as well, in order to find out if morphology is impaired in a disproportionate way.

For argument structure (Chapter 8), support for a difference with CA peers is less unanimous. Therefore, CA matching would serve the purpose of establishing argument structure as an area that is implicated in the language delay.

**Language Age (Mean Length of Utterance).** What makes MLU unattractive for our purposes is that the measure interferes crucially with the dependent measures in this study. Morphology is a constitutive factor in the value of the MLU-M (MLU measured in morphemes). Production of additional morphemes increases the value of MLU. A useful measure to match by should satisfy two criteria: it should be relevant with respect to the dependent variable (otherwise, why match at all?\(^{15}\)) and its value should be independent from the value of the dependent variable. The last criterion is clearly not fulfilled by MLU. Consequently, MLU will not be used in Chapter 4.

MLU is also determined by the number of verb arguments. In that sense, MLU is a circular matching measure when verb argument structure is the dependent variable. Therefore, it will not be used in Chapters 8 and 9. However, in one part of this study,

\(^{15}\)“the variable on which the subjects are matched must be substantially related to the dependent variable, or the matching is a waste of time” (Kerlinger, 1986:289).
Research method

MLU will be applied as a matching tool. The analysis of spontaneous data in Chapter 7 is based on an existing corpus (Bol & Kuiken, 1988), so matching criteria cannot be chosen \textit{ad libitum}. The SLI children in the corpus are similar in language production to the normally developing children (one criterion in the original study was that the impaired children did not exceed the language production level of the oldest normals, who were four years of age). For the analysis in Chapter 7, MLU will be used to extract a subgroup of the original population.

\textit{Vocabulary age}. Argument structure is projected from the thematic structure of the action expressed by the verb. If argument structure is the research variable, there is one variable that could cloud a CA comparison: the child’s vocabulary. If the child has a small vocabulary, its knowledge of argument structure of lexical verbs draws on limited resources. For that reason, vocabulary, as measured by a standardised test, was taken as a matching tool. This does not assure that the matched groups are similar in all relevant respects besides the aspect that is under investigation. However, checking the language-impaired children’s vocabulary will guard them from being at a disadvantage by having a small lexicon and few verb labels stored to project the arguments from. Perhaps this makes for a ‘qualified CA matching’. With respect to the dependent variable (that will be explored in production, not reception), productive vocabulary is more relevant than receptive vocabulary. Therefore the productive subtest of a vocabulary task was used for matching in the experiments reported in Chapters 8 and 9.

\subsection*{3.4 Method}

\begin{quote}
“Honey, the linguist is here.”
\end{quote}

\begin{flushright}
David Carkeet, \textit{The full catastrophe}
\end{flushright}

\section*{3.4.1 Research question 1: Tense and agreement}

\subsection*{3.4.1.1 Matching}

In Chapter 4, verb morphology is under review. An important goal will be to establish an error pattern that can be employed as a marker of ‘morphological SLI’ in Dutch. With that aim in mind, children were matched on chronological age. In order to ensure that the markers also distinguished children with SLI from the children they are habitually compared with in SLI research, the comparison was extended to include an additional control group of children who are around two years younger (n=20). One might consider this a lip service to language matching, but it is requisite to the extent that, in Chapter 5, we enter a debate in which nearly all data have been collected within an LA-matched research design and a mere CA comparison could sideline us there. The younger children were taken from the lower age range of the pool of controls that were recorded for the experiments. As I mentioned in section 3.3.2.1, it is obvious that MLU-M matching would be highly circular with respect to verb
Research method

morphology\textsuperscript{16}. Hence the arbitrary composition of the younger control group. Because these children were not matched by a language measure, they will be referred to as ‘younger children’, rather than ‘LA matches’, although they will perform a similar role in the discussion.

Table 3.1. Age; means (standard deviations between brackets) in months of the subjects in the tense and agreement task

<table>
<thead>
<tr>
<th></th>
<th>Children with SLI (n=35)</th>
<th>Younger ND\textsuperscript{17} children (n=20)</th>
<th>ND Chronological Age matches (n=35)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronological age</td>
<td>93.4 (11.9)</td>
<td>59.6 (7.4)</td>
<td>91.4 (13.8)</td>
</tr>
</tbody>
</table>

3.4.1.2 Task description

Narrative episodes were elicited by showing a video film to each child individually. The five minute animation film (Pingu and Pinga at home) was shown to the children three times in a single session:

1. The film was watched non-stop without verbal comments from the researcher.
2. The film was watched again, now accompanied by a prepared narrative, read aloud by the researcher. In this script verbs were modelled in the present tense form. Because regular verbs are less frequent than irregular verbs and require additional elicitation, the majority of the verbs that were selected for the narrative were regular verbs.
3. The film was shown a third time, this time divided in sixteen short episodes. After each of the episodes the tape was stopped and the child was asked to tell the researcher 'what happened'. By phrasing the question in the past tense, the child was encouraged to adopt the past tense as well.

Figure 3.1 shows the contents of each of the sixteen episodes. This text was read to the child during the second showing of the film. I include the version used in the English parallel project. The Dutch version contained 17 present tense forms of irregular verbs and 38 of regular verbs. The sessions were recorded on audio-cassette and transcribed orthographically. The child’s utterances were segmented in T-units\textsuperscript{18}. The utterances that contained verbs were analysed for marking of tense and agreement. The analytical categories will be detailed in sections 4.2.2 and 4.3.2.

\textsuperscript{16}To a lesser extent, the same is true for MLU-W (MLU measured in words). One grammatical element that would reflect on this measure is auxiliary use.

\textsuperscript{17}ND = normally developing.

\textsuperscript{18}The T-unit has been defined as “one main clause plus any subordinate clause or nonclausal structure that is attached to or embedded in it” (Hunt, 1970:4).
1. Daddy is telling Pingu and the baby that mummy and daddy are going out for the evening. Mummy is putting her make-up on. She puts her hat on. Mummy and daddy stroke their heads and then they wave and off they go.
2. They're crying; they're jumping on their beds.
3. The baby turns on the music and Pingu puts some wood on the fire.
4. Mummy and daddy are going to a concert to listen to music. Pingu tosses a pancake. He tosses it again and, oops!, the pancake covers his head.
5. Mummy and daddy are listening to the music. Pingu is bouncing a ball.
6. Pingu throws the ball and she heads it. They knock the picture down and they knock the shelf down.
7. Daddy has fallen asleep but mummy is listening to the music.
8. Then they dress up and Pingu pushes the baby in a box.
9. He empties the cupboard. He covers his head with a blanket and then he covers them both.
10. They look at a picture and mummy cries. The baby fills the bath.
11. Pingu jumps in. They play and the bath tips over.
12. Mummy and daddy clap. Pingu points at the clock.
13. Baby wipes up the mess. She squeezes out the water and they tidy up.
15. Mummy and daddy come home. Pingu and the baby pretend they are asleep and then the clothes fall out of the cupboard.
16. Mummy asks if they did it; they nod. They nod again. Mummy tidies up. Mummy and daddy cuddle them.

Figure 3.1. Script for the Pingu-narrative, used as elicitor in the tense and agreement task

3.4.2 Research question 2: Verb argument structure

3.4.2.1 Spontaneous data

As a first approximation of verb argument structure in Dutch children with SLI, an existing corpus of language samples was checked. The aim was to explore groupwise differences in argument realisation, using broad categories of verb complementation. The analytical categories will be defined in section 7.2.1. This set of data is also used to draw a comparison with some claims in the literature on the Type Token ratios that are typical of SLI children’s verb use (7.2.4).

3.4.2.1.1 Matching

The data in the spontaneous sample analysis are from a corpus assembled by Bol and Kuiken (1988). They adopted the English LARSP analysis for an analysis of morphosyntactic structure in Dutch children. One of the comparisons they made was between normally developing and language-impaired children. The language-impaired children were included if their language production level did not exceed that of a normal four-year-old. For the verb complementation analysis to be reported in Chapter 7 a group of 16 children with SLI were matched individually to normal controls by MLU-M (see Table 3.2).
Table 3.2. Range of chronological age, in months, and MLU-M of the subjects in the verb complementation analysis of spontaneous data (from the Bol and Kuiken, 1988, corpus)

<table>
<thead>
<tr>
<th></th>
<th>Children with SLI (n=16)</th>
<th>ND children (n=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronological age</td>
<td>56-98</td>
<td>22-41</td>
</tr>
<tr>
<td>MLU-M</td>
<td>2.1-4.8</td>
<td>2.1-4.8</td>
</tr>
</tbody>
</table>

3.4.2.1.2 Data description

The data were gathered in a naturalistic setting, either at the child’s home (the normally developing children) or in a conversation with the child’s speech therapist (the impaired children) (Bol & Kuiken, 1988:19-20). Each individual transcript contained 100 analysable utterances (analysable in the sense of the LARSP analysis; Crystal, Fletcher & Garman, 1976).

3.4.2.2 The experimental video task

3.4.2.2.1 Matching

A productive measure was selected as the matching tool for the argument structure experiments. A receptive measure would have been useful if it mirrored the productive tasks in the present study exactly. In the absence of a (receptive) measure of argument structure (or of verb specificity, for Chapter 9) a productive vocabulary test has more relevance for our purposes. The receptive vocabulary ages measured were quite close to the productive ones (Table 3.3).

Table 3.3. Chronological and vocabulary age (means, standard deviation and range) in months, of the subjects in the verb argument structure task. Vocabulary ages were only available for the SLI children.

<table>
<thead>
<tr>
<th></th>
<th>Children with SLI (n=35)</th>
<th>ND children (n=35)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronological age</td>
<td>93.20 (13.34)</td>
<td>85.54 (15.37)</td>
</tr>
<tr>
<td>(19)</td>
<td>Range: 74-110</td>
<td>Range: 54-114</td>
</tr>
<tr>
<td>Receptive vocabulary age</td>
<td>85.40 (17.42)</td>
<td></td>
</tr>
<tr>
<td>(19)</td>
<td>Range: 51-121</td>
<td></td>
</tr>
<tr>
<td>Productive vocabulary age</td>
<td>85.31 (15.34)</td>
<td></td>
</tr>
<tr>
<td>(19)</td>
<td>Range: 55-114</td>
<td></td>
</tr>
</tbody>
</table>

19Chronological age as represented in the table is not necessarily the age at which the vocabulary test was taken by the child. It is the age at which the child participated in the experimental tasks. Test results were only used if they had been collected less than six months before the task. If the data were not as recent, the test was administered again. Most available test data had been collected between one and three months before the experiment.
The standardised test that was used (the Woordenschat-produktietest - ‘Vocabulary production test’ - from the Taaltests voor Kinderen test battery; Van Bon, 1982) is divided into three parts, together covering normative groups for an age range of 4 to 10 years. ‘Vocabulary age’\textsuperscript{20} (VA; henceforth used as shorthand for productive VA) was taken as the basis for matching (the criterion measures are printed in bold type in Table 3.3). Starting from the assumption that in the normal group, vocabulary scores would show a normal spread, the SLI child’s vocabulary age was matched to a normal child’s chronological age. This does not qualify as matching in a strict sense, but it is sufficient to ‘repair’ an adverse influence from lexical deficits on the part of the impaired children. Again, this does not justify an assumption of language age matching. The VA matching will be used in Chapters 8 and 9, in which the dependent measures - argument structure (alternation and verb complementation) and verb specificity - are related to vocabulary knowledge but are not unilaterally determined by lexical skills.

The mean vocabulary scores for the children with SLI conform to the picture that arises from the literature: the vocabulary skills of the SLI children are below those of the CA matches but do not lag behind as much as grammatical skills usually do. While they are implicated in the language problem, they benefit from the children’s personal experiences. At least, this is the ‘group portrait’: there is a wide range of individual performances.

3.4.2.2.2 Considerations on the selection of experimental tasks and items

Obviously, spontaneous data have their disadvantages. The elliptical nature of speech and its low degree of specificity could blur the contrasts that are under investigation here. Also, for some aspects of argument structure spontaneous samples will be an insufficient source. In particular, alternations are expected to show not often, if at all, in the children's language. The alternations that will be the object of the experiments are not even frequently witnessed in the output of adult normals (the same is true of errors with these verbs - Pinker, 1989b:21). If alternations are targeted, the best way to collect them is to structure the experimental circumstances in ways that elicit the desired items and that enhance their production rate. Cues for selecting argument structures are, after all, heavily influenced by the input (see Ingham, 1989). It is necessary to control for the input factors in elicitation.

There are, however, other reasons for operationalising the research questions in an experimental way. On the one hand, children's utterances are the product not only of their language system, and, in the SLI children's case, of deficiencies within the language system. They are also influenced by adaptation strategies that compensate for the deficiencies. In a focused elicitation procedure the child is forced to constrain its options. This could invalidate adaptation strategies.

In the experimental procedure, verbs and verb frames were elicited by showing each child a video film that pictured various actions. There are significant advantages to the

\textsuperscript{20}Vocabulary age was found by relating the standard score to the age for which the score constituted the 50th percentile level.
The items in the film - the verbs as well as the scenes - were prepared together with my collaborators from the University of Reading\footnote{Paul Fletcher (now at the University of Hong Kong), Richard Ingham, Gabrielle King, Christina Schelletter and Indra Sinka.}. The scenes were videotaped in Reading. A cross-linguistic comparison of English and Dutch children was envisaged. While direct comparison has yet to be undertaken, the choice of items reflects the collaborative enterprise. Some items had relevance for only one of the two languages. I will restrict myself to the items that are relevant for Dutch.

The items that were selected for the elicitation of alternating verb frames had to fulfill the following criteria:

1. They must permit an experimental operationalisation (they must be depictable).
2. Their implications for both languages must be known (meaning that either its relevance for one of the languages was known or, if the item was relevant for both languages, that the similarity or contrast was identified beforehand). Alternation types that are part of only one language are not included in the study.
3. They must be compatible with the abilities and the lexicon of the younger normals.

3.4.2.2.3 Task description

In the following sections the manner of item presentation is sketched. Further discussion of issues relevant to the individual items and the children’s responses will take place in Chapters 8 and 9. In those chapters, the analytical categories will be specified as well (8.1.1, 9.2.1). All responses were transcribed orthographically. The entire protocol of the tasks described underneath took about 45 minutes. Depending on the attention span of the child, the task was sometimes administered in two sessions.

Before the videotape was started, it was introduced by the researcher. The child was told it was going to see a film. The film would not show a story, but there would be short pieces of film that showed things happening. The child would be asked after each piece to tell the experimenter ‘what happened’.

After witnessing the action on videotape, the child was asked to repeat the (infinitival) verb after the researcher (‘Please say \texttt{[target verb]}’, ‘Can you say \texttt{[target verb]}?’). Subsequently, the child was requested to tell ‘what happened in the picture’. If the child responded without using the prompted verb, the researcher would ask ‘can you say it with \texttt{[target verb]}?’ If the child responded with a bare verb only, it would be asked to ‘tell me a little bit more’. Since the subjects were all school children and were aware of what a sentence is, a paraphrase of this last prompt would sometimes be used: ‘could you say that in a sentence’?
3.4.2.2.3.1 Alternation: The causative alternation

The causative alternation involves the expression of the theme\(^{22}\) of the verb as either the subject or the object of the sentence: *the car moves / he moves the car*. The first alternant is called inchoative, the second causative. Because alternation was the desired response, each verb item was presented in two separate settings. In one segment, the action was shown in the presence of the agent (with the causative - transitive - verb frame as the target outcome); in the other, the inchoative frame was encouraged by showing the referent of the theme only (as if it performed the action by itself). For instance, the *move* alternation mentioned above was elicited by a segment in which a car was seen moving by itself (without a visible agent to cause the action) and one in which the car was visibly manipulated (moved) by an agent.

Four non-alternating items were pictured in a presentation that promoted a verb frame that was conceptually available but ungrammatical. For example, a bouquet of flowers was shown while being thrown in a bin, but in the absence of a visible agent. These items were included to find out if children would be prone to overgeneralisation of an alternation. In this example, the child would be encouraged to violate the non-alternation restriction and use the verb *throw* in an inchoative frame.

3.4.2.2.3.2 Alternation: The locative alternation

A representative example of a verb undergoing the locative alternation is ‘load’: *she loads the boxes into the car / she loads the car with boxes*. The presentation of the locative items was different from the presentation of the causative items in one aspect. It is clear from the example that the alternation involves a shift between theme as direct object and goal as direct object. Accordingly, to encourage use of both alternants, either theme or goal had to be focused on, visually as well as in verbal elicitation.

Visually, this happened by showing a still of either theme or goal (boxes, car) that preceded the filmed action. The child was asked to name the referent that was singled out visually (‘what is that?’). To encourage theme-as-object, the theme was singled out and the child was asked to label it. To encourage goal-as-object, the goal referent was focused on in a similar way. After the highlighted item was named by the child, the action was shown and the child was asked to name the action.

3.4.2.2.3.3 Alternation: The dative alternation

The dative alternation (or dative shift) involves the expression of the goal as either direct object or prepositional phrase: *he gives her a present / he gives a present to her*.

---

\(^{22}\)Throughout this book, reference is made to the thematic roles agent, theme and goal. Agent is “the conscious instigator of the action”, theme is the “entity which is in a state or a location or which is undergoing motion”, goal is “the end point of [a] motion”. The patient “expresses the entity undergoing an action”. The definitions are quotes from Trask (1993). Patient and theme are often used as near-synonyms. In this study, every action included motion, hence the use of ‘theme’.
The procedure was identical to that for the locative alternation, including the differential use of visual focus and the introductory naming by the child of one participating referent. In this case (‘give’ was the only item), either the theme or the recipient (the goal) was depicted separately (and the child was asked to label it) before the action sequence was shown and the child was asked to tell the researcher what happened.

3.4.2.2.3.4 *Clausal complementation*

Verbs like *try* require a clausal complement instead of a phrasal one. Clausal items were included to probe a complex complementation pattern that was not otherwise elicited and occurrences of which could supplement our observations of non-clausal complements.

The presentation of these items was similar to the previous items: the verb was prompted and the child was asked to name the action. Contrastive focusing, on the other hand, was not relevant: alternation is not involved here.

3.4.2.2.3.5 *Resultative secondary predication*

In this task, the aim was to monitor children’s ability to supply an argument that is not selected by the verb as part of its subcategorisation. The action of throwing something somewhere is not completely defined by the verb lemma. The location is not part of the subcategorisation. In addition, complementation may be complicated by the fact that the target direct object is not directly manipulated in the course of the action (as in: *shaking the ball from the tree*) and one has to link a ‘non-canonical theme’ to the direct object position.

Both resultative actions and the selection of a non-canonical theme were elicited in this task. The item presentation was identical to the alternation tasks. The verb was prompted and the child was then asked to name the action. No thematic role was singled out in the presentation.

3.4.3 *Research question 3: Correlation of symptom areas*

3.4.3.1 *Subjects*

As mentioned before, the correlation under review here is between grammatical morphology and argument structure. In order to assess the overlap between these symptom areas, a measure for grammatical morphology is proposed in Chapter 4. Children are included in the group of children with morphological difficulties if their production of at least three grammatical morphemes fails to meet a criterion of 75% use in obligatory context. The selection of children who failed these criteria is detailed in sections 4.2.4 and 4.3.4. In addition, a group was formed of children who did not exhibit a difficulty with morphological marking. In section 4.3.4 the selection of these children is explained. Excluding children who did not fail the 75% criterion, but still showed some signs of weak morphological performance, the comparison will involve 15 children with marked morphological difficulties (to be referred to as M+) and 9
Research method

53

children who did not exhibit appreciable morphological errors (M-).

3.4.3.2 Data description

The data that were used for this analysis are morphological errors on the one hand and argument realisation categories on the other. The morphological errors are implicated in the subject selection procedure (they define the M+ and M- groups).

The argument realisation categories that were included are the ones that showed groupwise differences between children with SLI and normally developing children. The comparison will focus on whether the patterns that are found for the SLI group throughout Chapter 8 are associated with either the M+ or the M- SLI subgroup or with both.

3.4.4 Research question 4: Verb specificity

3.4.4.1 Matching

The matching for this task is identical to that of the previous tasks (see Table 3.3). However, the rationale is slightly different. In this task, the primary focus is not on argument structure but on naming. The VA represents a global measure of naming. The task itself is a refined way of monitoring children’s naming ability for a particular class of lexical items. The implication is that the effect of matching resembles that of MLU matching in SLI research on grammatical morphology. Assuming that matching for VA is a global index of lexical skills, the issue is whether specific lexical skills are as predicted by this global index or lag behind.

3.4.4.2 Task description

The task (see Chapter 9) is aimed at children’s knowledge of action verbs specified for manner (skipping rather than going). This means that naming of the action (knowledge of the verb label itself) is the dependent variable. Consequently, the verb was not prompted with the film clip; the child was simply requested to tell ‘what happened’ after watching each clip.

The items depict specific ways of performing an action. Each item admits the substitution of a non-specific verb for a specific verb. The actions involve manners of cleaning, going, putting and cutting.

3.4.5 Statistical testing

In the samples that are compared in this study distribution cannot be expected to be normal. Non-normal distribution is expected, because an SLI sample tends to be heterogeneous. This heterogeneity cannot be restrained if the sample is small. Therefore, group comparisons in this study will usually be made using the Mann-Whitney test. Thus “the hypothesis [can be tested] that the samples come from two population with similar characteristics without making any assumptions about their distribution” (Woods, Fletcher & Hughes, 1986:188). This statistical test should
protect us against the influence of the performance of individual children that have disproportionately high or low scores. The Mann-Whitney test achieves this goal by starting from the average ranks assigned to the cases in the two groups. “If one of the groups has more than its share of small or large ranks, there is reason to suspect that the two underlying distributions are different.” (Norusis, 1988:417).