

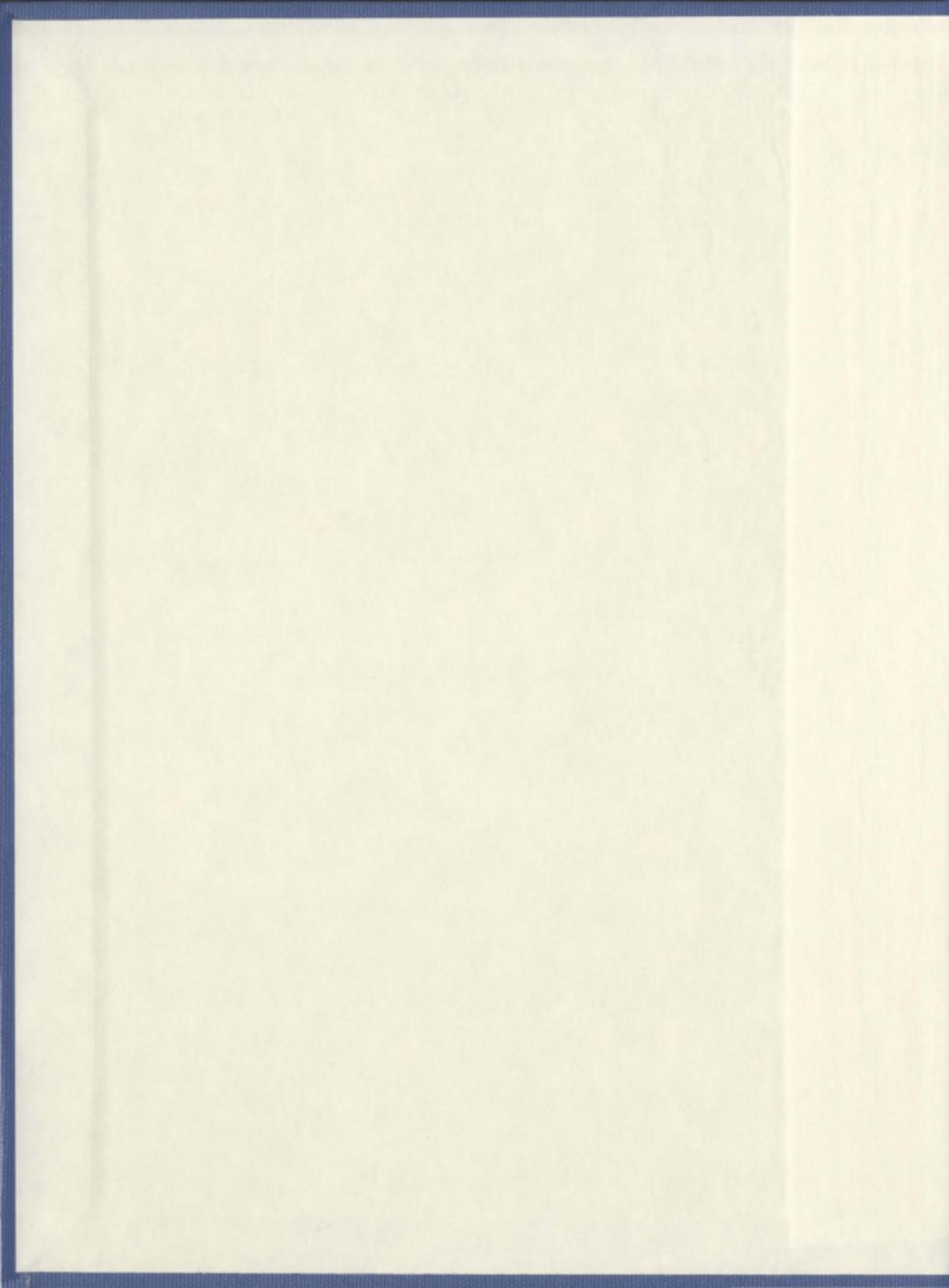
ACQUISITION OF WH-MOVEMENT IN GERMAN

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ANGELINA BURSEY



ACQUISITION OF WH-MOVEMENT IN GERMAN

by

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School of Graduate Studies
in partial fulfilment of the
requirements for the degree of
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Abstract

Acquisition of wh-movement has been extensively examined in English, French, Chinese, and other languages (de Villers, Roeper, and Vainikka 1990, Guasti 2000, Hamann 2000, Lee 1992). However, there has been little acquisitional study of wh-movement in the German language. The purpose of this thesis is to examine the acquisition process of wh-movement in L1 German learners and provide a complete view of the acquisition process: acquisitional data coinciding with theoretical issues.

This thesis examines three areas of wh-acquisition to give a more complete picture of wh-movement in L1 German learners. These areas of acquisition are: wh-words, short distance wh-movement (root questions, embedded clauses), and long distance wh-movement (this includes the language particular partial wh-movement). The CHILDES database is used to examine child data from the Nijmegen and Wagner corpora in search of these wh-phenomena.

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I wish to thank Dr. Philip Branigan for the encouragement and support, not only throughout the thesis process, but also throughout the years as a teacher. Without his wit and enthusiasm in teaching Syntax, I would not have caught 'the bug'. Thank you for your patience and for providing me with endless advice from A-Z in order to make both my thesis and graduate experience a wonderful one.

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Transcripts	P&P – Principles and Parameters
CHILDES – Child Language Data Exchange	Q – Question affix
System	SCH – Strong Continuity Hypothesis
CP – Complementizer Phrase	SES – Socio-economic Status
D – Determiner	SD – Short Distance movement
DP – Determiner Phrase (noun phrase)	Spec-C – Specifier to Complementizer
FCH – Full Competence Hypothesis	TP – Tense Phrase
GG – Generative Grammar	UG – Universal Grammar
I – Inflection (inf)	V – Verb
IP – Inflectional Phrase (sentence)	VP – Verb Phrase
LD – Long Distance movement	XP – any phrase (NP, VP, AdvP...)
LF – Logical Form	

List of Abbreviations

Adv – Adverb	MH – Maturational Hypothesis
AdvP – Adverb Phrase	P – Preposition
C- Complementizer	PF – Phonetic Form
CHAT – Codes for the Human Analysis of Transcripts	PP – Prepositional Phrase
CHILDES – Child Language Data Exchange System	P&P – Principles and Parameters
CP – Complementizer Phrase	Q – Question affix
D – Determiner	SCH – Strong Continuity Hypothesis
DP – Determiner Phrase (noun phrase)	SES – Socio-economic Status
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LD – Long Distance movement	V - Verb
LF – Logical Form	VP – Verb Phrase
	XP – any phrase (NP, PP, AdvP...)

Chapter 1

1.1 Intent of Thesis

‘Natural languages are extraordinarily rich and complex systems of knowledge; still, children acquire them early in life, with considerable ease and rapidity, without explicit instruction, and on the basis of limited exposure to linguistic data’ (Friedemann and Rizzi 2000:1). The purpose of this thesis is to investigate how children acquire certain properties of the complex syntactic structure of *wh*-words and *wh*-questions in German. This is extensively covered in English (Guasti 2002; de Villers, Roeper and Vainikka 1990), however, there is little data available on German. Available German studies cover a minimal amount of topics such as *wh*-drop (Yamakoshi 1999), the structure of the Complementizer Phrase (CP) in German child language (Clahsen, Kursawe, and Penke 1995), and acquisition of word order in High German (Tracy 1991). This thesis examines how *wh*-movement is acquired in German, including both acquisition of words and the acquisition of movement. The thesis also focuses on the competence of the speaker. Competence is ‘the inner, largely unconscious, knowledge of the [syntactic] rules’ (Gleason 2005:19). These language-specific questions are then brought to bear on larger current theoretical questions including the Full Competence Hypothesis (FCH) and the Strong Continuity Hypothesis (SCH).

1.2 Theoretical Background

The theoretical framework adopted is Generative Grammar (GG). Within this framework, the data will be examined according to the Minimalist syntactic theory as formulated by Chomsky (1995). Children acquire a vast amount of grammatical

knowledge. This is done without explicit instruction, without negative evidence and within a very limited amount of time. Children acquire language within the same time period, no matter which language they speak. Syntactic items such as wh-movement are learned across languages (English and German) within very similar time periods.

Universal Grammar (UG) as formulated by Chomsky (1986) states that some form of language acquisition is innate.

The kind of knowledge involved seems to be largely underdetermined by the data, i.e. humans apparently have access to a substantial body of knowledge about language, which cannot be 'learned', since the relevant information is not present in the empirical basis for such learning, neither in the primary linguistic data nor in the context. Because of this discrepancy between experience and knowledge, termed 'Plato's Problem', the implicit knowledge constituting the initial state of the language faculty is claimed to be genetically transmitted. The theory of UG formulates this *a priori* knowledge in terms of principles and parameters which determine the set of possible human languages.

(Meisel 1995:11)

Thus, children have the ability to acquire very complex structures across languages.

Environment also plays a role in language acquisition. Children in an English-speaking environment learn the rules of English in the same way as a German child learns the rules in his/her environment. Cross-linguistic differences between languages are treated as 'parameters' in the Principles and Parameters (P&P) framework formulated by Chomsky and Lasnik (1993). Within the P&P theory, principles are identified as universal properties of a language (innate). The properties of principles occur across all languages. 'Principles encode the invariant properties of languages, that is, the universal properties that make languages similar' (Guasti 2002:18).

An example of a principle, for the purposes of this thesis, is feature checking (e.g. wh-checking). Chomsky's (1995) *checking theory* states that 'words carry grammatical

features, which have to be checked in the course of a derivation' (Radford 1997:497). An example of feature checking would be a wh- checking. A [+wh] feature is checked when the wh-word moves into the Specifier position of the Complementizer Phrase (Spec-CP) and checks the [+wh] feature in the Complementizer (C) position. 'Wh-questions appear to be universal to all languages' (Stromswold 1995:6). All languages appear to have wh-checking for questions. This principle of wh- checking, however, shows some variation among languages. Variation among languages can be defined as the dimensions in which they vary (i.e. parameters). Parameters are language-particular settings of universal grammatical choices. 'Parameters encode the properties that vary from one language to another; they can be thought of as switches that must be turned on or off' (Guasti 2002:18). 'Since UG, in generative theory, is conceived of as a set of principles and parameters representing the innately specified initial state of the language faculty, it is also understood as a crucial component of the language acquisition device' (Meisel 1995:13). An example of a wh-checking parameter is whether a language uses overt (English/German) or covert movement (Chinese/Zongtong). Compare the English and German to the Zongtong example below. The wh-word moves to the front of the matrix clause in English and German (i.e. overt movement) to check the +wh-feature but remains *in-situ* in the Zongtong example (i.e. covert movement of an empty category to CP to show wh-movement/question).

- (1) English: **Who** will Barbara Walters meet?
 German **Wer** wird Barbara Walters kennenlernen?
 Zongtong: Barbara Walters jiang jian **shui**
 Barbara Walters will meet **who?** (Stromswold 1995:7)

The acquisitional framework used in this thesis falls under the UG and P&P models described above. The P&P model is widely accepted in acquisitional theory and provides, to date, the best method of describing the way in which children learn complex syntactic structures with such ease. Studies in acquisition also bring in theories of how grammar with the Principles and Parameters progress through language learning. One such theory is the Strong Continuity Hypothesis (SCH). This is defended here against the Maturation Hypothesis (MH).

1.2.1 Maturation Hypothesis (MH)

The MH proposes that UG is acquired gradually according to a maturational schedule, which reformulates UG over time. There are two versions of the MH. Each version maintains that UG, under the control of biology, changes over time and changes independently of the adult model (i.e. target language). They also propose that a complete UG is gradually attained over time. 'Felix (1984, 1987, 1992) claims that UG principles emerge according to an innately specified maturational schedule' (quoted in Meisel 1995:23). Principles of UG are accessible to the child upon her/his biological maturation. Thus, early grammars may contradict the as yet inactive UG principles (and those assumed in the SCH). Upon learning new principles, the interim grammar is then reorganized to account for the newly developed principles.

Borer and Wexler (1987) propose a slightly different version of MH. They state that 'certain principles mature. The principles are not available at certain stages of the child's development, and they are available at a later stage' (Borer and Wexler 1987:124). Both versions of the MH suggest that it is the UG itself that changes and matures with the

child. This means that new parameter learning cannot occur until the brain matures enough. One cannot learn a parameter until all previous relevant parameters are already set. For example, movement of a *wh*-word cannot be overt until the parameter for overt movement becomes available. Principles are adapting and changing over time to accomplish a target grammar (UG). 'Under this hypothesis, learning constraints are responsible for restricting the availability of UG principles; these restrictions are successively removed as a result of physical maturation, thus giving the child access to more principles' (Meisel 1995: 24).

The MH predicts that intermediate grammars (modified principles) are consistent with UG at every developmental stage. A UG principle is not acquired until the principle has reached its maturational stage. Developmental stages are consistent with UG at every parameter setting. If UG states that Long Distance (LD) rules are acquired at 3;05, the MH developmental stage will be available at this time, thus it is consistent with UG. This is where theoretical problems arise for the MH in its relation to UG.

'On the MH, UG (defined independently by the science of theoretical linguistics on the basis of adult language) arises only gradually, culminating when language acquisition is completed. Therefore, in the MH, the full theory of UG (which is the core of linguistic science today) characterizes the final state, not the initial state (prior to experience)'.

(Lust in Ritchie & Bhatia 1999:125)

The MH predicts that principles of UG are the final result of parameter learning, after full maturation: all re-ordering and principle learning is complete. Theoretically, UG consists of innate principles; those that occur prior to experience, not after. Thus, theoretically, the MH challenges UG as an initial state, which contradicts the full theory of UG. This is because the MH states that principles of UG arise in a maturational

schedule, therefore, final UG is not available until full maturation (or at the final state). This contradicts the theory of UG as an 'initial state'. A stronger argument follows for the Strong Continuity Hypothesis (SCH), which works theoretically with UG.

1.2.2 Strong Continuity Hypothesis (SCH)

The SCH states that the changes in a child's grammar are developmental and are not a result of changes in the UG. This hypothesis is ideal to describe how there is variation in language learning without abandoning the innateness of UG. The SCH is also strong theoretically. 'It is supported by extensive empirical studies now. No empirical evidence has conclusively disconfirmed it' (Lust in Ritchie & Bhatia 1999:137). The SCH works with the UG to recognize language development in the maturation of UG. The definition of the SCH is found below.

When the parameters of UG are fixed in one of the permitted ways, a particular grammar is determined (core grammar) . . . UG is taken to be a characterization of the child's pre-linguistic initial state. Experience –in part, a construct based on internal state given or already attained – serves to fix the parameters of UG, providing a core grammar, guided perhaps by a structure of preferences and implicational relations among parameters of the core theory.

(Chomsky 1981:7)

Children proceed through a sequence of cognitive states S_0, S_1, \dots, S_f , where S_0 is the 'initial state', prior to any language learning, and the S_f is the 'final state', a 'steady state' attained fairly early in life and not changing in significant respects from that point on. When the child has attained this steady state, we say that he has learned the language.

(Chomsky 1975:119)

Chomsky states above that UG remains continuously available throughout the time course of first language acquisition. UG does not itself change during this time course. The SCH of UG provides a continuous mapping which guides a child to his/her

language specific grammar. Penner and Weissenborn (1995:163) state the main claim of the SCH is that 'the early grammar obeys the parametrically- determined wellformedness conditions of the target language as defined in (a) or (b)'. According to Penner and Weissenborn (1995) the two conditions of how early grammar follow a continuous mapping according to the SCH are shown below.

- (a) In some cases parameter setting can be fully target-consistent from the beginning. That is, certain parameter values can be fixed very early, e.g., at the pre-linguistic or the one-to-two-word stage.
- (b) In some cases a given parameter can be set stepwise (or gradually). This will result in an early grammar, which is only partially consistent with the target.

(Penner & Weissenborn 1995:163)

These conditions display how the continuous mapping which the SCH provides guides a child to his/her language specific grammar. 'One critical consequence of this result is that the study of linguistic theory and the study of first language acquisition can be interpreted as providing converging evidence on the true nature of UG and on the true nature of language faculty' (Lust in Ritchie & Bhatia 1999:144).

1.2.3 Full Competence Hypothesis (FCH)

Another important theoretical construct for the purpose of this thesis is the Full Competence Hypothesis (FCH). The FCH is a strong form of the SCH. Poeppel and Wexler (1993) propose the FCH. They present data from a young German child to show that children have access to major lexical categories, their projections, and functional categories and projections including Inflectional Phrase (IP) and Complementizer Phrase (CP) (Ingram & Thompson 1996). They argue that children have, very early in their syntactic development, grammars with access to these syntactic elements. Although the

FCH is debated in literature (Ingram & Thompson 1996), adopting the FCH will help to explain the presence of CP in the German children's productions in this thesis. The FCH is needed to explain syntactic descriptions of the wh-elements that appear in the speech of the children. It is also used to explain the presence of the CP in the syntactic structure of German in both question and statement formation.

Although it is much debated in current acquisitional literature (e.g. Ingram & Thompson 1996), the FCH is consistent with recent developments in syntactic theory. In syntactic theory, derivations progress bottom up and not by the top down representation that appears lexically and phonologically. This assumption is used in the *Multiple Spell-out Hypothesis* (Uriagereka 1999). The *Spell-out* hypothesis is used to describe how syntactic structures are built. It states that at the end of each phase, spell-out must occur in order for the phrase to be produced (Chomsky 2001). This spell-out occurs with the use of CP's and VP's. *Multiple Spell-out Hypothesis* suggests that the inaccessible portion of a phase is subject to Spell-Out as soon as the phase is complete. The accessible edge can only be subjected to Spell-Out when the next phase is complete (Chomsky 2001). Therefore, Spell-Out can occur once a phase, a CP, is completed. As all CP's are phases, root clauses are therefore complete phases (i.e. CP's) as they must have spell-out to appear at the Logical Form (LF) and Phonetic Form (PF) interface. Logical Form (LF) captures the meaning of a sentence while the Phonetic Form (PF) is the actual sound structure. The 'Phase Impenetrability Condition (PIC) requires only that the *edge* of a phase is accessible to operations outside the phase' (Branigan 2004). Since only the domain of a phase is subject to Spell-Out before the next phase is complete, Root C,

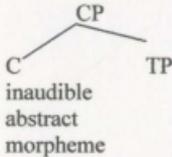
therefore, must always be immune to Spell-Out (i.e. inaudible) (Branigan 2004).

Examples of Spell-Out are shown below with examples of the appropriate structure.

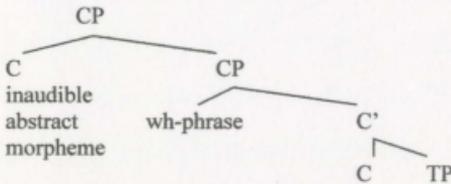
(2) Spell-Out of a sentence

- a. [CP that Cindy likes dogs] (phase completed)
- b. [CP that Cindy likes dogs] (Spell-Out phase domain)
- c. [CP why Jim knows *t* [CP that Cindy likes dogs]] (2nd phase completed)
- d. [CP why Jim knows that Cindy likes dogs] (Spell-Out of 2nd phase domain including the edge of 1st phase)
- e. [CP that Bob wonders [CP why Jim knows that Cindy likes dogs]] (3rd phase)
... etc.

(3) Root Clauses, Multiple Spell-Out Hypothesis



(4) Root Wh-interrogatives, Multiple Spell-Out Hypothesis



According to Branigan (2004), root questions are multiple CP structures, however, the higher C is inaudible, but necessary for Spell-Out to occur. Thus all constructions end in CP structures in order to undergo Spell-Out and reach the PF and LF interface. Spell-Out entails the FCH in assuming CP as maximal projections, and thus assuming children have access to CP's in order to complete Spell-Out.

Researchers such as Radford (1990; 1994a; 1994b) and Lebeaux (1988) hypothesize that 'children's grammars initially consist of small clauses that lack functional categories such as I and C. If children's grammar's initially lack I and C, children should begin asking wh-questions relatively late' (Stromswold 1995:13). Stromswold (1995:13) also states that this *Small Clause Hypothesis* makes a further prediction of the acquisition of subject over object questions. Stromswold (1995) finds that there is no significant difference in the acquisition of subject versus object questions. This combined with the no-failure-report of wh-movement below, weakens the *Small Clause Hypothesis*. Therefore, this thesis takes a position that children do initially have CP clauses, i.e. in favour of the FCH.

1.3 CHILDES

The data examined in this thesis is supplied through the CHILDES (Child Language Data Exchange System) database. The CHILDES database was initialized between 1984-1986 by 16 child language researchers with Brian MacWhinney and Catherine Snow as co-directors (MacWhinney 1999:458). This database is found online at <http://CHILDES.psy.cmu.edu/data/germanic/german> and is, therefore, easily accessible. When child language research uses naturalistic data, the CHILDES database allows access to such data without having to spend the time to do the research and transcriptions oneself.

CHILDES provides a variety of data including English data, non-English data, Bilingual Acquisition data, Narrative data, Language Impairments as well as book references. This allows researchers access to data, to which they would not normally

have access. The non-English data has a few German corpora. As there was no other L1 German data found elsewhere, I rely on the CHILDES database for my data research.

Within the CHILDES database, there are two German corpora used: the Nijmegen corpus and the Wagner corpus. The data was selected based on the ages of the children.

Between the age of 1;05 and 3;05 years, children acquire the major syntactic properties of their native languages. At about 1;05 years they start to produce two- and three-word utterances, and by the age of 3;05 years they produce complex sentences, such as subordinate clauses and interrogatives.

(Clahsen, Kursawe & Penke 1995:5)

The children's ages were selected in two groups. The age group of 1-4 is chosen to examine the time frame in which *wh*-words and Short Distance (SD) *wh*-movement occurs. The age group 5-8 is chosen because this age group is more likely to find partial or LD *wh*-movement. This is due to the fact that the children are older and have acquired the basics. Each corpus with appropriate age group is described in sections 1.3.1 and 1.3.2.

1.3.1 Nijmegen corpus

There were three children within the Nijmegen corpus: Simone, Kerstin, and Caroline. The children from the Nijmegen corpus were chosen because the L1 German children were recorded between the ages of one and four. The preparation of the corpus was supported by the Max-Planck Institut für Psycholinguistik in Nijmegen and Jürgen Weissenborn at the University of Potsdam. Each child was recorded in a naturalistic environment (playing with parents) three times a month for four years starting at approximately 1 year and ending at approximately 4 years. This provides a vast amount of data. The data was extracted and examined using the GREP program.

1.3.2 Wagner corpus

The Wagner corpus offers data on two children between the ages of five and eight and one child at 3;06. Klaus R. Wagner (University of Dortmund), his students and coworkers collected the data for this corpus. These data samples were recorded in a naturalistic environment in a one-time session for about 3 hours each. Although each child is recorded in one session only, for the purpose of this thesis, there is enough information supplied. These L1 German children are: Frederik (8;07), Gabi (5;04), and Carsten (3;06).

Although not within the ages of five to eight, Carsten offers additional data for the one to four years age group. Her data is included to show the variation, which can occur in the acquisition of *wh*-words. In fact, as seen below, Carsten uses a different *wh*-word (*worum* 'which/that, what for/about?') than the children of the Nijmegen corpus. This is a word that is produced frequently (705 times) within the data sample by the child but only twice by the parent.

Frederik and Gabi offer the additional information that is needed to determine what *wh*-formations occur after the age of four.

1.3.3 CHAT

The CHILDES database uses a standard form of transcription. The rules of this standard transcription are found in the Codes for the Human Analysis of Transcripts (CHAT) system. 'This system is designed to accommodate a large variety of levels of analysis, while still permitting a barebones form of transcription...' (MacWhinney 1996:9). The CHAT system has three principles. First, 'each utterance is transcribed as a separate entry in the system.... [Second], coding information is separated from basic

transcription and put on a separate tier' (MacWhinney 1996:9). The CHILDES manual includes the coding system. Third, 'on the main line, the main goal of the transcription is to enter a set of standard language word forms that correspond as directly as possible to the forms produced by the learner' (MacWhinney 1996:9). An example of the coding system is shown below in (5). Codes such as *CHI allow the researcher to know that it is a child production. The %com tag indicates a comment by the researcher. CHAT coding enables easy searching of databases with the GREP program.

1.4 GREP

The GREP program allows searches for a single-word or pattern throughout all data of a single child. It searches without having to scan through each entry manually. This program allows for faster and more accurate searches. This is very beneficial considering the sample size of 90, 229 utterances. I used GREP under MS-DOS to search for words with typed commands. An example of the command and the data found is shown below.

(5) Search for wozu 'what for/why' in Frederik's data in Wagner corpus:

Command: C:\WINDOWS>grep wozu -n e:\german\wagner\frederik.cha

Data found: 3116:*CHI: wozu ist der denn gut, der Punktstrich ?

4173:%com: fragt, wozu die Stoppuhr gebraucht wird

The numbers shown above (3116 and 4173) are the tagged line numbers of the conversation. Each line in the data sample for a child is numbered this way. The *CHI symbol states that it is the utterance of the child which is displayed. The %com tag from

CHAT indicates a comment to the situation from the researcher. This is used to clarify any actions that cannot be seen or any references by the child that may not be understood.

1.5 Wh-movement

A description of wh-movement is necessary to explain the elements that will be focused on and searched for within the data. The syntactic structure of wh-movement will be explained including the different types of movement. Specific German wh-words are then outlined with their respective translation in English.

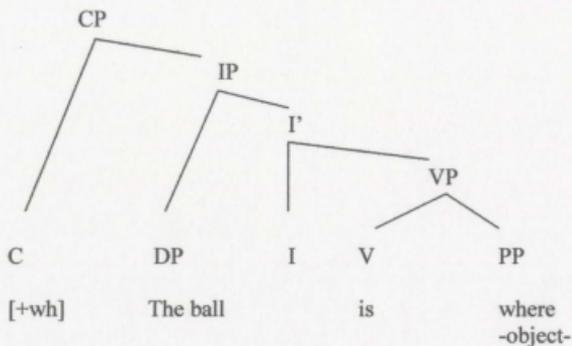
1.5.1 Definition

Wh-movement is the movement of a wh-word/phrase to the Specifier position of C (Spec-C) of a Complementizer Phrase (CP) to form a question. Movement occurs to check a +wh-feature in C (Chomsky & Lasnik 1993). All questions, matrix or embedded, have a +wh-feature that must be checked.

1.5.2 Structure

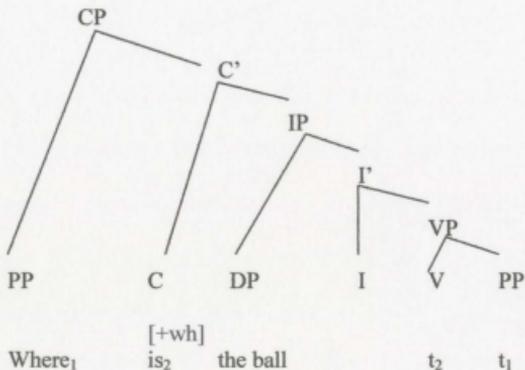
There are two significant positions in which a wh-expression is found in a derivation: the original position and the overt movement or wh-movement position. Before movement takes place, a wh-phrase appears embedded within the Inflectional Phrase (IP) or *in-situ*. The wh-word is in its originating position before movement has occurred. A wh-phrase moves (wh-checking) to check a [+wh] feature. To do this it moves from its position within the IP to Specifier position of the Complementizer Phrase (Spec-CP). The structure in (6) below shows the wh-phrase [pp where] in its originating position. Notice also the [+wh] feature in C, which needs to be checked. This results in the movement of [pp where].

(6)



When (overt) wh-movement occurs, however, the wh-word/phrase always appears at the beginning of the Complementizer Phrase (CP) in the specifier position (Spec-CP). Note in example (7) below that the wh-word *where* is now in Spec-CP leaving a trace behind in the complement position. The [+wh] feature is now checked by the wh-word. It is shown in deleted/checked position below.

(7)



1.5.3 Types of wh-movement

Just as there are two structures for wh-movement, there are also two types of movement. There will be a distinction between Short Distance wh-movement (SD) and long distance wh-movement (LD).

SD- this involves short distance movement of a wh-phrase from a position in a root sentence or embedded clause to the next Spec-CP position. SD movement is shown in the examples above.

Examples (8) and (9) show root and embedded clauses from a child within the data sample. The wh-word is shown with its corresponding trace from the originating position (*in-situ* position).

(8) SD – Root Question: [_{CP} *Wo_i isse_j* (ist) [_{IP} Mami *t_i* *t_j*]]?
Kerstin (2;03) [_{CP} **Where_i** is_j [_{IP} Mommy *t_i* *t_j*]]??

(9) SD –Embedded Clause: [_{IP} Verstehe ich nicht [_{CP} *was_i* [_{IP} du *t_i* gesagt hat]]].
Simone (3;07) [_{IP} I understand not [_{CP} **what_i** [_{IP} you had said *t_i*]]].
I don't understand what you said.

German Long distance (LD) wh-movement has both normal LD as well as partial wh-movement. Examples (10) and (11) show LD and partial wh-movement respectively.

LD - the long distance movement of a wh-phrase from a position in an embedded clause to the Spec-CP of the matrix clause, via an intermediate position. German also has partial wh-movement. This is where the wh-phrase moves to the Spec-CP position of the embedded clause and the CP of the matrix clause is filled with a 'dummy' wh-phrase.

Two examples of LD are given below. This is due to dialectal variation in German.

Some would consider (10a) to be ungrammatical, others would accept as grammatical.

(10) LD -

a. [CP *Welches Bild_i glaubte_j* [IP *Mario t_j* [CP *dass* [IP *Picasso t_i gemalt hatte*]]]]?

[CP **Which picture_i** believed [IP M. $t_{i,j}$ [CP that [IP P. t_i painted had]]]]?
Which picture did Mario believe that Picasso had painted?

b. [CP *Welches Bild_i glaubte_j* [IP *Mario t_j* [CP *dass* [IP *habe Picasso t_i gemalt*]]]]?

[CP **Which picture_i** believed [IP M. $t_{i,j}$ [CP that [IP had P. t_i painted]]]]?
Which picture did Mario believe that Picasso had painted?

(Klepp 2003:2)

(11) Partial movement-

[CP *Was_i glaubt_j* [IP *Hans* [CP *mit wem_i* [IP *Hansel jetzt t_i spricht*]]]]?

[CP **What_i** think [IP Hans [CP with whom [IP Hansel now t_i talks]]]]?
What does Hans believe with whom Hansel is now talking?
(What=dummy)

(McDaniel 1989:569)

1.5.4 Wh-words

Wh-movement occurs using the following German words. These are the primary

German question words and, therefore, those searched for within the data samples.

- | | | | | |
|------|-------------|-------|----------------|-------|
| (12) | <i>*wo</i> | where | <i>*wem</i> | whom |
| | <i>*was</i> | what | <i>*wann</i> | when |
| | <i>*wie</i> | how | <i>*welche</i> | which |
| | <i>*wer</i> | who | <i>*warum</i> | why |

In the head position of C in an interrogative CP, I assume there is a question affix

Q that carries an interrogative specifier-feature (+wh-feature). It is the wh-operators

(who, what, where, etc), which move to Spec-CP in order to check this +wh-feature

(Chomsky & Lasnik 1993). All wh-words have a head-feature [+wh]. This feature is

what checks the wh-feature carried in Q. The feature [+wh] carried by wh-words is not

erased and is later used to identify wh-words as interrogative operators (Radford 1997). The question affix Q triggers inversion. It also carries the [+wh] feature, which needs to be checked. Thus, wh-movement occurs in order to arrive at a grammatical result at LF.

1.5.5 Wh-movement in acquisition

The Wh-criterion is considered to be a universal constraint (thus a part of UG) on question formation. This constraint can be satisfied overtly (English or German) or covertly (Japanese). It states that a wh-operator must be in a specifier-head relation with a head carrying the wh-feature (Rizzi 1996 in Guasti 2002:189). This means that the wh-word must appear in the Spec-C position where the head C carries the [+wh] feature.

Guasti (2002:187) states that 'for most early languages that have been studied (e.g., German, Italian, Swedish); from the beginning, wh-questions are target consistent'. This states that in a language like German, where wh-movement is overt, earliest productions satisfy the wh-criterion. Thus, the children are producing adult-like (i.e. target) utterances. This also allows for a continuous view of child and adult grammar. Both matrix and embedded clauses show evidence of overt wh-movement in German. Guasti (2002:192) noted that other studies, which looked at wh-questions, do not report failures of wh-movement (Clahsen, Kursawe, and Penke 1995 for German). This means that in all instances of wh-movement, all children produced target-like utterances and thus the Wh-criterion was met. Thus, this *innate* capability for children to produce wh-questions supports the FCH described in 1.2.3 above. Acquisition of wh-movement may also go through a templatic stage. Evidence of templates were found in the Nijmegen corpus. The following section explains the template productions found and supporting evidence for templates from other languages.

1.5.6 Template productions

Evidence of templates are found in Courtney and Saville-Troike (2002). ‘Quite remarkably none of the Navajo children ever made any errors in the sequencing of prefixes within the verb complex. There is not a single instance of inverted order among prefixes in the production of any of the children...’ (Courtney & Saville-Troike 2002:649). This seems to maintain the FCH discussed in section 1.2.3 above. Courtney and Saville-Troike (2002) also state that this is evidence of stored templates. Peters (1983; 1995) proposes that children produce novel ‘place holder affixes because of a phonological template without fully analyzing the individual affixes in the string’ (Courtney & Saville-Troike 2002:639). ‘Young Quechua speakers also appear to start off with a ‘template’ comprising suffixes ordered more rigidly than those observed in adult complex verbs. Sequencing errors in the verbs produced by competent Quechua speakers provide further evidence of stored partial templates’ (Courtney & Saville-Troike 2002: 651-2). An example of ‘stored unanalysed amalgams’ comes from Ines (3;02-3;05). No target forms are produced in the first example below. The ‘-a-a-’ placeholder affix could be filled by ‘many possible suffix combinations’ (Courtney & Saville-Troike 2002: 639).

(13) *Chura -a-a -wa-n-mi*

Put-?-?-IOBJ-3SUBJ-AF

‘She has put it on me.’

(Courtney & Saville-Troike 2002: 639)

What is interesting is that Ines already produces adult-like complex verbs with up to five affixes appended to the root.

(14) *Puklla -chi -wa-rqa-n.*

Play-CAUS-IOBJ-PAST-3SUBJ

‘He let me play.’

(Courtney & Saville-Troike 2002: 640)

So although Ines is capable of producing grammatical complex verbs, she still has some unanalysed chunks. 'Children do produce amalgams that they have not yet fully analysed' (Courtney & Saville-Troike 2002: 640).

The examples above show morphological templates, which are a common phenomenon. However, there is no relationship between morphological templates and syntactic templates. Syntactic templates are not as common and thus there is little literature available on the topic. While there is no relationship between morphological and syntactic templates, the evidence of the templates existence in morphology lends support to the existence of those in syntax. Children use templates to aid the acquisition of complex morphological forms. It is not a stretch to assume that children also use templates in their syntactic acquisitions. Evidence of the syntactic template is found in the Nijmegen corpus.

Templates in German are comparable also to those found in English. 'A striking fact about children's early wh-questions is that they tend to follow a formulaic pattern consisting of the wh-word itself, an optional contracted copula [German *ist*], and a DP' (Brown 1968, L. Bloom, Merkin & Wooten 1982, Radford 1990 in O'Grady 1997:130). This template is *Wh's DP?* as in 'Where's doggy?'. This is directly comparable to the German example found in Simone's data. She uses *Wo ist DP?* (or *Wo's DP?*).

'The fact that children, who are otherwise in control of agreement, fail to select the appropriate form of the copula verb in these patterns suggest that their wh-questions are not subject general grammatical rules – the hallmark of formulaic pattern' (O'Grady 1997:131). This is comparable to Simone's failure to use proper agreement of the copula

in the examples below, which, according to O'Grady (1997), shows that she has a formulaic pattern.

1.6 German language

Under the UG and P&P framework, wh-elements such as wh-words and wh-criterion apply cross linguistically. Thus, the principles of wh-elements, as a part of UG, appear in all languages. German and English both have similar principles and parameter settings for overt wh-movement. This being the case, it is possible to compare the acquisition rate of wh-words and wh-movement in studies already completed in English to the German data found here. German and English follow the same rules (i.e. the same wh-criterion) with wh-acquisition. All wh-phrases must appear in a CP, which results in wh-movement to check the wh-feature. Although many elements of English and German are the same, differences in the languages must be discussed.

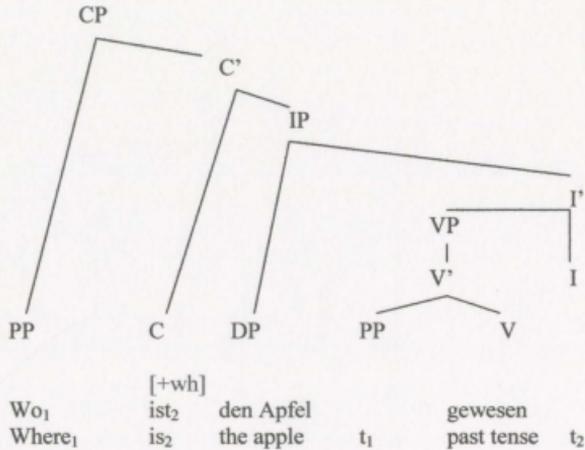
1.6.1 Structure

The structure of German differs from that of English, because German has head final V and I phrases. Thus, in embedded clauses, because C-to-I movement of the verb cannot exist (the C is filled with a complementizer), the V appears at the end of the structure. Because of this, German is said to be a V-final language. This means that, structurally, all V and I structures are head final. Because matrix clauses are V2 in modern German, it is generally accepted that the finite verb raises to C.

In stating that German is a verb-final language, we also state that all questions and all statements have a CP structure. This is necessary to obtain wh-movement (i.e. questions) and also to obtain a verb second (V2) word order. Thus, the structure differs

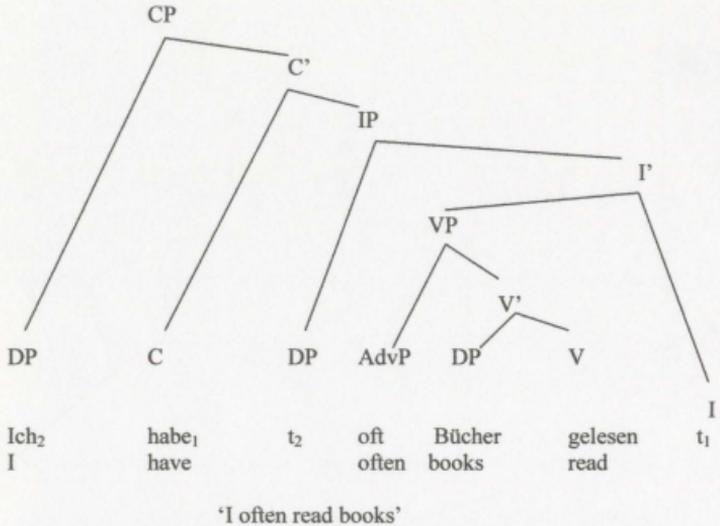
from that of the English language. English declarative sentences maximally project to an IP before Spell-out.

(15) Question: CP form:



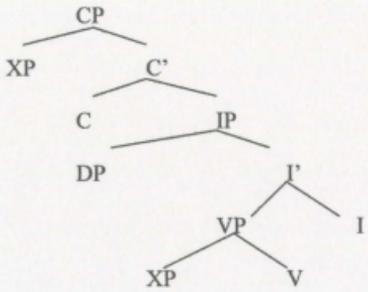
Example (15) shows the question formation in German. As with all questions, the structure must project to CP. The movement of the wh-phrase [_{PP} Wo] is successful in checking the +wh-feature. Notice there are head final V and I phrases. I to C movement (inversion-also found in English) then makes a grammatical question.

(16) Declarative CP form:



Example (16) is the declarative German CP form. The argument for head final V and I discussed above is demonstrated here. Again, here like in (15) there are head final V and I phrases. There is also I to C movement with the topicalization of the subject DP. This obtains the correct word order for German declarative sentences while using a minimal projection. Aside from the words of both (15) and (16), the structures are essentially the same. This is shown in (17) below.

(17)



German is not only distinct from English in structure; there is also a distinction in wh-pronouns.

1.6.2 Interrogative Pronouns

German has the interrogative pronouns listed in 1.5.4 above. Unlike English, German interrogative pronouns have variation in case. This variation distinguishes between subject (nominative), object (accusative), and possessor (genitive). The case system is outlined below.

Table 1.1
Wh-Pronouns in German

	Persons		Things	
Nominative	wer	who	was	what
Accusative	wen	whom	was	what
Dative	wem	(to) whom	—	—
Genitive	wessen	whose	—	—

German is a regular system in its case marking, thus making subject/object distinctions easier for the wh-words.

1.7 Summary

Covered within this thesis under both syntactic and acquisitional approaches are many theoretical hypotheses such as FCH and SCH. The FCH aids the claim that CP's are evident in child German utterances (declaratives and questions). This is debated with support from Spell-out and the derivation of underlying German word order. The FCH is also in favour of CP's with support from the wh-criterion, more specifically from researchers' observations in examining the wh-criterion.

Thus, the thesis progresses to the examination of the German data from the CHILDES database in an effort to provide support to the theoretical claims made and vice versa. Evidence found in Chapter 3, for example, provides support for the SCH and FCH hypotheses. As Chapter 1 has discussed the theoretical background and structure of wh-movement in German, the next chapters focus on the words and movement themselves. In Chapter 2, the thesis progresses to the description of wh-word patterns found in the children's data. This includes the data for the acquisitional ages of wh-words. Each word is explained in detail for each child. Chapter 3 examines the data patterns found. The analysis of the data samples from the Nijmegen and Wagner corpora provided the criterion for the acquisition of words and movement. The final results are compared to other studies in English.

Chapter 2

Chapter 2 focuses on describing and explaining the patterns found in the production of each wh-word for each child. This is done to identify any interesting patterns that may arise and to give a general overview of all the wh-words for each child. Each child has unique productions that are displayed in this chapter. The children are examined from the Nijmegen corpus first. The Wagner corpus is examined second. In this latter corpus, Carsten is examined first because she falls within the same age range as those of the Nijmegen corpus. Gabi and Frederik are examined last. These children are older and were assumed to have acquired all of the wh-words and movement. However, the data samples for each word revealed interesting results. The focus is on the competence of the speaker. Competence is 'the inner, largely unconscious, knowledge of the [syntactic] rules' (Gleason 2005:19). Simple repetition was excluded. All forms must be consciously used in productions, that is, the children must comprehend their meaning and use them in novel situations. For words that had a small number of productions, for example one to four utterances, needed a special condition. The special condition states that for those wh-words with a small production sample, single occurrence of wh-word in combination with movement of the wh-word (SD questions or embedded clauses) is evidence for a wh-word movement to be deemed acquired.

2.1 Simone

Simone's data comes from the Nijmegen corpus. Her data collection occurred between 1;09 to 4;06. Simone's data is searched for the wh-words *who*, *what*, *where*, *whom*, etc. using the GREP program and manual searches. Wh-searches occurred first for

occurrence and second for movement. In total, Simone had 35,500 utterances.

Preliminary searches found early acquisition of *wo* at the age of 1;10. Kerstin and Caroline, however, did not acquire this word until 2;05 and 2;00 respectively.

2.1.1 *Wo* 'Where'

Manual searches discovering the use of *wo* revealed the use of templates for the acquisition of *wo* and *wer*. Kerstin and Caroline display one-word utterances of *wo* 'where' before having acquired the full sentence. Simone does not produce these one-word-utterances, but produces full wh-questions. Simone uses the template of '*wo ist DP?*'. This template enables Simone to produce functional questions without analysis of the words. Simone asks full questions without understanding the meaning of each word (i.e. wh-word, verb, DP). She understands only that there is a [+wh] form (wh-word) and a DP. This is shown later in her data when she becomes aware of her constructions and begins to make errors in 'already grammatical productions'. An example of this data is shown below.

(18)

<u>DATA</u>	<u>Age</u>
<i>Butter -_ wo is(t) Butter -_</i>	1;09.11
<i>wo (i)s de Mofa .</i>	1;10.20
<i>wo is(t) wo is(t) ein Kugel -'</i>	1;10.20
<i>wo is(t) der Lala -_ .</i>	1;10.20
<i>wo is(t) der xxx .</i>	A. 1;10.20
<i>wo is(t) der Male -_ .</i>	B. 1;10.20

The data shown above displays a syntactic template. Templates are discussed in section 1.5.6 above. Simone is able to produce wh-questions with the word *wo*. These are full wh-questions unlike those first produced by Kerstin or Caroline, who have one-word-utterances in the first stage. The data labelled A and B above show that even

though there is some unintelligible xxx in production A, it is a DP which is corrected in her production of B (DP-Male). Simone uses the 'wo ist DP?' template without analysing all syntactic forms. The *wo ist* is one syntactic chunk representing a question word.

What is interesting about the use of these templates, and support for the idea of a template in syntax, are the mistakes found in Simone's *wo* data as she became aware of her productions. These mistakes evolve into, again, correct productions of the wh-word *wo* 'where'. Examples of the data with errors are shown below. Errors such as missing verb or object are observed in Simone's data. Errors, however, still do not occur with the 'wo ist DP?' template. This new 'template' view places Simone's acquisition of *wo* in a similar time frame as the other children. Simone, now at 2;02.3, like the other children, begins to use single utterances of *wo*.

(19)

Correct use of 'Wo ist DP?'

<i>ander - wo i(st) denn de ander Buch</i>	2;02.03
<i>wo ist der Kaefer -'</i>	2;02.03
<i>wo is(t) denn der Ding -'</i>	2;02.04

Missing parts/Single wo-questions

<i>wo denn</i>	2;02.03
<i>Wo sind 's - _ .</i>	2;02.03
<i>wo se - _ .</i>	2;02.03
<i>wo</i>	2;02.03
<i>wo</i>	2;02.03
<i>wo sind denn noch mehr - _</i>	2;02.04
<i>wo sind .</i>	2;02.04
<i>wo sind se -</i>	2;02.04
<i>wo sind (den)n die xxx</i>	2;02.04
<i>wo sind die . [Nudlen]</i>	2;02.20
<i>wo is(t) die - _ xxx .</i>	A. 2;05.13
<i>wo is(t) die - _ # da -' .</i>	2;05.13
<i>das wo die Leute einsteigen muessen</i>	B. 2;05.13

hier -' wo die Leute . [missing sind]

C. 2;05.13

The data samples above show difficulty with person. The plural conjugation *sind* provides difficulty for Simone as they do not fit into her question template. This is surprising as Simone has the ability to produce *sind* declaratives. Some examples of these declaratives are shown below. This demonstrates that Simone has difficulty with the question formation using *sind* and, thus, lending more support for template learning. At 2;05 years above, Simone has difficulty with producing *sind* in her questions, however, at 2;05 below, on the same day, in fact, she produces not only *sind* in a declarative but also the past tense *war*. Her examples in (20) below are grammatical, novel productions

(20)

die sind fertig

2;02.03

gucke gucke Kaefer sind -

Fenster ist nicht (ka)putt

weil die weg sind -'

2;05.13

de Mama war nich(t) im Bett

die sind unten xxx .

The examples in (21) seem to contradict the statement that Simone has the 'wo ist DP' template and that it varies little throughout her productions. Here she is trying to produce a DP 'Aua', of which she is unable. This is a phonological problem for her in this example. When Simone is able to get the verb conjugation correct, she does not produce a verb, however, like in C, if there is a plural subject present, she neglects the verb. Data sample in B above is used for a comparison to C. Simone seems able to produce a grammatical wh-embedded clause without the plural error. This utterance is produced before the data in C, however, it does not discredit the claim made above or the

data in C below. It is an embedded clause, which all three children produce correctly (this will be discussed further in Chapter 3). It also raises another interesting question. Why is Simone able to produce a correct embedded clause with the correct plural conjugation and unable to produce a correct matrix wh-question with the same conjugation?

The following examples show the correct productions of *wo* questions from Simone's data sample. These correct productions include tense, which produced some difficulty before.

(21)

Correct use of wo-questions (not a template)

<i>wo sind de Bretter</i>	2;02.21
<i>wo anders Haeschen Mone nich(t) sieht</i>	2;02.21
[embedded clause]	
<i>wo sind die Apfel -'</i>	2;04.19
<i>wo gibt n sowas -</i>	2;05.16
<i>wo muss das -</i>	2;06.23
<i>wo muss des drauf</i>	2;06.23
<i>in dem Bauch wo de Mone Aua hat da hat Mone</i>	2;07.04
<i>bisschen Steine essen</i>	

While *was* 'what' is the next word acquired by Simone, it is necessary to discuss the wh-word *wer* 'who'. This is necessary because Simone also uses a template for its acquisition.

2.1.2 Was 'What'

Simone has very few single-word utterances of *was* in her data sample. At 2;02, Simone produces her first *was* utterances. A pattern found in Simone's wh-utterances is that there are few single-word utterances. Simone's first utterances of *was* can be seen in the examples below. At 2;02, Simone produces three *was* utterances. All three utterances

shown below are also grammatical SD productions. The third example given is even a grammatical embedded clause. It is determined, as a result, that Simone has acquired both her *wh*-word *was* and its SD movement at the age of 2;02. Perhaps the simultaneous acquisition periods are influenced by the fact that Simone uses very little single-word utterances to aid her *wh*-movement acquisition.

- (22)
- | | |
|----------------------------|---------|
| <i>was is(t) auch was-</i> | 2;02.03 |
| <i>was gibt da</i> | 2;02.20 |
| <i>was Mone macht?</i> | 2;02.20 |

From the age of 2;02, Simone is consistent in producing grammatical *was* SD questions. This offers additional support that Simone has acquired both her *was* *wh*-word and SD movement acquisition at the age of 2;02.

2.1.3 *Wie* 'How', *Wieviel* 'How many/much'

The word *wie* is used both in the combination of *wieviel* and with *wie* alone. The *wieviel* is used mostly without a verb, however, Simone produces novel sentences with the correct word order (verb included).

- (23)
- | | |
|------------------------------------|---------|
| <i>wieviel Augen-</i> | 2;01.12 |
| <i>wieviel Mone-</i> | 2;01.16 |
| <i>wieviel Beine hat de Puppa-</i> | 2;01.16 |
| <i>wieviel Beine had die Pupe-</i> | 2;01.16 |

Wie is not used, again like the other words, in single-word utterances. It is used in broken questions as well as grammatical *wh*-questions. An example of each is shown below.

- (24)
- | | |
|--|---------|
| <i>weisste wie – weisste wie – weisste wie</i> | 2;08.09 |
| <i>mal gucken, wie man den da rauskreigt –</i> | 2;08.15 |

hat gesehen wie Mone gemacht hat. 2;09.26
wie heisst (den)n die Farbe -' 2;09.26

2.1.4 *Wer* 'Who'

Simone also has an early appearance of the wh-word *wer*. It shows up at 1;10 using the expression *Wer ist das?* 'Who is that?'. The expressions also show *wer will xxx?*. Simone uses the wh-word with a copula verb and an unintelligible DP. Simone also utters an adult like embedded clause at 2;01. This is an adult-like production. At 2;02 there are more examples of *wer* produced. Single-word utterances such as *wer* and *wer denn* appear as well as full wh-questions. Examples of these are shown below. From these examples, it is apparent that Simone has acquired *wer*.

- (25)
- | | |
|--|---------|
| <i>am Fenster gucke - _ wer kommt denn da</i> | 2;02.20 |
| <i>wer war das</i> | 2;02.20 |
| <i>wer kauft ein Eis -' ?</i> | 2;02.20 |
| <i>die Eisenbahn - _ wer will mit xxx fahr(e)n .</i> | 2;02.21 |

At the age of 2;07, however, it is interesting to notice that Simone reverts to almost a templatic pattern. This is interesting because her earlier productions were adult-like. This form persists from the age of 2;07 until the end of her productions at 2;09. Manual searches of *wer* showed a template pattern for Simone's acquisition. Again, here Kerstin and Caroline progress from one-word-utterances to the production of *wer*-questions. *Wer* patterns like the *wo* data explained above. Examples of *wer* 'template' productions are shown below.

- (26)
- | | |
|---------------------------------------|---------|
| <i>wer hat das - _ wer hat das -'</i> | 2;07.19 |
| <i>wer hat das -</i> | 2;07.19 |
| <i>wer hat die Eisenbahn - _</i> | 2;07.19 |

<i>wer hat den Teddy -'</i>	2;07.23
<i>wer will -'wer will das -</i>	2;07.23
<i>wer hat den hisklammklamm -'</i>	2;07.23
<i>wer hat den Radio -'</i>	2;07.23
<i>wer hat denn die Enten -'</i>	2;07.23

The template '*wer hat DP?*' is similar to the *wo* template in that Simone just has to 'plug in' any DP that she is inquiring about. There is also the correct production of '*wer will DP?*'

As we move on to the other wh-words and patterns, one question arises: Why does Simone use templates for *wer* and *wo* only? The other wh-words are acquired in a similar fashion among all three children. What distinguishes these two wh-words from the others? Perhaps that is a question for future research. It is also interesting to find a 'template' in syntax, not in your typical poly-morphophonemic language or within the topic of syllable acquisition.

2.1.5 *Warum* 'Why'

Simone's data show *warum* 'Why' is used mostly in one-word word utterances. In the data sample *warum* is produced 17 times by Simone. This is not a high number of productions, however, some wh-questions were produced in novel situations. This shows a comprehension of the wh-word and its context.

(27)

<i>warum -'</i>	2;02.04
<i>warum das Fenster is(t) nich(t) (ka)putt -</i>	2;02.04
<i>warum -'</i>	2;02.07
<i>warum -'</i>	2;02.07
<i>warum -'</i>	2;02.07
<i>warum xxx weil Kekse -</i>	2;05.19

The high number of one-word utterances may be due to context and not comprehension or production abilities.

2.1.6 Wem 'Whom'

The data on Simone's production of *wem* 'whom' is very limited. In fact, there is only one production on her part. This being the case, one would assume that Simone has yet to acquire this wh-word. However, Simone uses this word in a novel sentence with evidence of comprehension. This data sample is shown below.

(28) *mit wem red(e)st (den)n du -* 2;11.18

2.1.7 Welche 'Which'

The word *welche* is also used infrequently. Simone uses it appropriately at the age of 1;10 as a determiner. Its use in a question formation, however, does not arise age 2;07 where full movement is produced. An example of each respectively is shown below.

(29) *welche Hand* 1;10.28
welche Tommy- 'welche willst du haben- 2;07.19

2.1.8 Wann 'When'

Simone has very few productions of *wann* for her sample size. However, when she does use this wh-word, she uses it grammatically. All utterances are shown below. Notice at 2;10 Simone produces both an embedded clause and a SD question. Thus at 2;10, Simone uses grammatical and novel productions of *wann*, therefore, deeming it to be acquired.

(30) *wann wir essen -'* 2;10.11
wann essen wir ? 2;10.11
Tommy wann gibst du mir s endlich -' 3;07.11
ja -'xxx # wann gibst du mir das xxx . 3;07.11
wann kommt wieder mal der Vater -' 4;00.06

2.1.9 Wieso 'Why'

Simone has no productions of *wieso* in her data sample. The adults also have very few productions considering the sample size. Simone has very few productions of any word meaning 'why'. This includes the few productions of *warum* and the zero productions of *wieso* and *worum*. Perhaps it is the context of the conversations that do not produce high numbers of this wh-word keeping in mind also that the adults, too, have few productions.

2.1.10 Summary

Simone differs from the expected course of acquisition, which the other children follow. This includes the production, first of the wh-word, second of the wh-word in a wh-question. Simone uses the method of templates and even when there are no templates, there are still very little single wh-word utterances. Questions are usually attempted regardless of missing elements. Generally, Simone produces wh-questions with a high rate of grammaticality.

2.2 Caroline

Caroline's data comes from the Nijmegen corpus. Data collection occurred between 0;10 to 4;03. Caroline's data is searched for the wh-words *who*, *what*, *where*, *whom*, etc. All wh-words were searched first for occurrence and second for movement. Both the GREP program and manual searches extracted Caroline's data. Caroline has a total of 26,000 utterances. Her first wh-productions are recorded at 2;00. Caroline has wh-patterns unlike that of Simone. Her wh-patterns are more similar to those of Kerstin.

2.2.1 *Wo* 'Where'

Wo is the first wh-word acquired by Simone and Kerstin in the Nijmegen corpus. However, although her productions are numerous, Caroline does not follow this pattern. Contrastively, the first wh-word acquired is *was* 'what'. This wh-word is discussed in the next section 2.2.2. Caroline's pattern of wh-word and question acquisition differs from Simone's. Caroline produces a high number of *wo* utterances in her wh-word acquisition. Usually these are produced in isolation. These single-word utterances are quite frequent. At the age 2;01 this pattern emerges. At this age, for example, there are 41 single utterances of *wo*. Some data examples are shown below. Occasionally, Caroline will use a larger wh-production. This 'larger' production consists of the '*wo DP*' combination without the verb. It is interesting that with her new wh-word productions that her verbs are missing. Namely, it is the auxiliary verb that is missing and usually this consists of *haben* 'to have' and *sein* 'to be'.

Compared to Simone, however, this may mirror Simone's earlier productions where '*wo ist*' is understood as one word. Caroline, on the other hand, does not use complete *wo* wh-questions as early as Simone. Caroline is persistent in her '*wo DP*' usage. Examples of single *wo* productions and *wo DP* are shown below.

(31)

<u>Age:</u> 2;01	
<i>wo</i> .	89-11-07
<i>wo datze</i> .	89-11-09
<i>wo datze</i>	89-11-09
<i>wo #</i> .	89-11-11
<i>wo #</i> .	89-11-15

<i>wo # .</i>	89-11-21
<u>Wo+DP productions</u>	
<i>wo # Baum #</i>	89-11-14
<i>Papi # wo Papi</i>	89-11-14
<i>wo Hund wo #</i>	89-11-23
<i>eische # wo Eisebahn</i>	89-11-23
<i>wo alte .</i>	89-11-23
<i>wo Wasser .</i>	89-11-23

Even at the age of 2;03, although a verb appears sometimes, Caroline is not consistent. There are examples of 'wo DP' and 'wo ist DP'. The missing verb in Caroline's productions extend into her embedded clause productions. Caroline uses non-finite verbs, however, finite verbs are still missing from her utterances. Caroline uses, in the example below, the non-finite verb *angeklichen*. The finite verb (which could be *haben* or *sein* or any other auxiliary) is missing from all of her embedded clauses at this age and is seen in this example.

(32) Age: 2;03

wo #2 ein Krankenwagen # angeklichen . 90-01-09

Angeklichen is used in the Present Perfect (i.e. *you have learned that well*), which is marked by the *ge* in between the verb *anklichen*. German always uses the Past Participle for the second verb (i.e. *learned*). This is different from English, which prefers the construction 'you learned that well' instead of 'you have learned that well', minus the finite verb to have. In German, *haben* 'to have' or *sein* 'to be' must accompany this Past Participle to form a grammatical Present Perfect. In Caroline's productions, the *haben* or *sein* is mostly not produced, resulting in an incomplete wh-production.

(33)

<i>wo ein Krankenwagen # angeklichen</i>	Age 2;03	90-01-09
<i>wo Meise piept</i>	Age 2;04	90-02-01

Caroline does not produce complete *wo*+verb+subject until the age of 2;04. At 2;04, she is still displaying the above missing finite verb pattern. However, by the end of the month, Caroline is able to produce questions and embedded clauses with finite verbs included (i.e. grammatical wh-question). Examples of full wh-movement are shown below.

(34)

Age: 2;04

wo ist der Junge ?

90-02-20

wo # is der Roller ?

90-02-23

wo kann man de reinstecken ?

90-02-23

However, although she is able to produce grammatical wh-movement, at the age of 2;06, Caroline is still missing the V/I or finite verb.

(35)

wo gehoert des hin # ?

90-04-02

This data example is very interesting in that not only does Caroline not use a finite verb; she also has an unusual and ungrammatical word order. Caroline places the non-finite verb before the object. This is uncommon. In all of the utterances examined, the children have correct word order (regardless of missing grammatical parts).

Although Caroline produces grammatical wh-productions by the age of 2;04, there still seems to be some confusion. Caroline asks *wo ist blau* 'where is blue'. Caroline asks this question several times using the *wo* instead of the *was* 'what' wh-word.

Although she uses *was* in appropriate contexts before, she shows confusion and uses the wrong wh-word. The mother in the example below is unclear about what Caroline is trying to say and repeats the phrase. Caroline is unable to correct her utterance and does not understand what is wrong with the question.

2.2.2 *Was* 'What'

As noted above, Caroline does not follow the same acquisitional order of *was* as Simone and Kerstin do. It is the first word that Caroline acquires. The examples shown below show the occurrence of *was* in many productions at the age of 1;12. This occurs two months earlier than her productions of *wo*. Also, there are much more single-word utterances in the *wo* data sample.

(36)

<i>was #I</i>	Age 1;12	89-09-07
<i>was #I</i>		89-09-07
<i>was # Wolf</i>		89-09-19
<i>was sagt #</i>	Age 2;01	89-11-26

As there are three grammatical productions of *was* at 1;12, it is deemed that Caroline has acquired this wh-word. Her first productions above are simple single-word utterances or *was DP?*. This patterns like her other wh-words where the verb comes later and the finite verb shows up around 2;07.

At 2;04 in the examples below, Caroline produces grammatical SD questions. Notice in the examples below, that Caroline does not use her finite verb with the participle. Although this is not a grammatical production, it is not determined that Caroline's SD are ungrammatical. This is because these examples are simply due to performance difficulties. Caroline is unable to produce finite verbs in conjunction with a participle until the age of 2;07. Thus, it is determined that at the age of 2;04, Caroline has acquired her SD movement because her simple SD questions and embedded clauses have a grammatical result.

(37)

<i>was sagt Wolf?</i>	Age 2;04	90-02-06
-----------------------	----------	----------

was sing?
was ist das?

90-02-06
90-02-22

In the examples above, notice that Caroline uses a variety of verbs (*sagen* 'to speak', *singen* 'to sing', and *sein* 'to be'). Interestingly, although Caroline is able to produce grammatical SD questions, she is still persistent in using single-word utterances and *was+DP?*. It is not until 2;06 that she is more consistent in using SD questions for most of her productions.

(38)

was sagt die Mami?
und was wollten die?
was is dis?
was ist denn?

Age 2;06

90-04-24
90-04-18
90-04-01
90-04-02

2.2.3 Wie 'How'

Caroline has very few productions of *wie*. Her productions consist of *wie DP?*, embedded clauses and questions without finite verbs. Examples are given below.

(39)

Wie DP

wie die Myrte ?
wie Geld?

Age 2;05

90-03-30
90-03-09

Grammatical production-embedded clause

guck mal # wie ich mache ?

90-03-30

Productions without finite verb

auf auf wie ich gemacht # ?
wie den Anork ausgezogen du ?
zeig dir mal wie ich Finger [?]
ein Haus zeige mal wie ich # der Arm
wie das zu dick

Age 2;06

90-03-24
90-03-30
90-04-01
90-04-01
90-04-01

The examples above without the finite verb pattern like other wh-words in Caroline's data sample. Caroline has acquired her *wie* productions. They are used in embedded clauses as well as full wh-questions. They may appear ungrammatical simply because Caroline is missing her finite verb. There are also very few productions of *wie* taking into account sample size and number of other wh-word productions.

2.2.4 Wer 'Who'

Caroline uses single-word utterances of *wer* also. However her use of *wer* in single utterances occurs after her production of 'complete' and novel productions of a full wh-question. So, unlike *wo*, there seems to be no single-word stage for *wer*. The single-word productions of *wer* occur after the productions of grammatical questions and can be simply attributed to context. Caroline uses *Wer VP DP* and *Wer DP*. Some examples of *wer* are shown below.

(40)

Wer productions in single utterances, wer ist DP 'who is DP', or wer DP

<i>wer is das ?</i>	Age 2;03	89-12-30
<i>wer is das # ?</i>		89-12-30
<i>wer is das ?</i>		89-12-30
<i>wer is das wer is das ?</i>		89-12-30
<i>wer hat Auto ?</i>	Age 2;04	90-02-16
<i>aeh # aehm m aufm wer is der groesste ?</i>		90-02-22
<i>wer is des ?</i>		90-02-23
<i>wer da lange arbeit ?</i>		90-02-23
<i>wer ?</i>	Age 2;06	90-04-16
<i>wer ?</i>	Age 2;07	90-04-30
<i>wer piekt ?</i>		90-05-01
<i>und die wer krabbelt ?</i>		90-05-01
<u>Grammatical productions</u>		
<i>wer hat mich gebissen ?</i>	Age 2;08	90-06-13
<i>weisst du noch wer Kritziggel war ?</i>	Age 3;03	91-01-22

2.2.5 Warum 'Why'

Caroline has a high number of productions of the wh-word *warum*. Caroline, in a similar pattern to her *wo* productions, uses an extremely high number of single-word utterances of *warum*. Out of 705 productions of *warum*, Caroline mostly produces single-word utterances. Other phrases consist of *warum + DP?*. The high number of *warum + DP?* productions is attested until 2;05. Caroline also has *warum* question productions without the finite verb. Up until the age of 2;08, Caroline's ungrammatical productions (those without finite verb) highly outnumber those grammatical productions. It is in conjunction with the participle, that Caroline is missing the finite verb. Utterances without participles, surprisingly, result in grammatical productions. Grammatical SD questions without participles are also shown below.

(41)

Single-word utterances produced throughout data sample

<i>warum .</i>	Age 2;02	89-12-10
<i>warum ?</i>	2;03	90-01-12
<i>warum ?</i>	2;05	90-03-30
<i>warum # warum ?</i>	2;07	90-05-01
<i>warum ?</i>	2;08	90-06-21
<i>warum ?</i>		90-06-21
<i>warum ?</i>		90-06-21
<i>warum ?</i>	2;09	90-07-23

Examples of *worum + DP?*

<i>warum Schabel #1?</i>	Age 2;02	89-12-29
<i>warum dis Licht</i>	2;03	90-01-09
<i>warum Obacht ?</i>		90-01-18
<i>warumm # warum unsere Tasche ?</i>	2;05	90-03-21
<i>warum Mami?</i>		90-03-31

Ungrammatical missing finite verb with participle

<i>warum bravo gesagt ?</i> (missing finite verb)	Age 2;06	90-04-02
<i>warum du geweint # ?</i>		90-04-14.a
<u>Grammatical SD productions with finite verb (without participles)</u>		
<i>warum weinst # du ## ?</i>	Age 2;06	90-04-14.b

The ungrammatical production 90-04-14.a shown above was produced directly before the SD grammatical counterpart 90-04-14.b. Caroline is clearly capable of producing grammatical SD questions without participles. However, once participles are used (*geweint*), ungrammatical productions result. An interesting question for further exploration is that if Caroline is capable of producing grammatical questions, why does she produce the majority of her questions without the finite verb?

It is also interesting to note that Caroline has two instances of mixed word order. These are the only two occurrences in the data sample and appear at an age where word order has been acquired and should not be a problem. Both of these productions have the same word order. Each is shown in the examples below.

- (42)
- | | | |
|---|----------|----------|
| <i>warum <u>dis</u> (subject) [//] <u>ist</u> der Baum (object) <u>dis</u> ?</i> | Age 2;04 | 90-02-24 |
| MOT: <i>warum dis der Baum ist # ?</i> | | |
| <i>warum <u>du</u> (subject) <u>machst</u> das ## Hexentreppe (object) <u>ich</u> #2.</i> | Age 2;07 | 90-05-10 |
| MOT: <i>warum ich eine Hexentreppe mache # ?</i> | | |

Notice that Caroline places her **verb** between the subject and the *object* in both instances. This is grammatical in root clauses, however, if it is intended for either an embedded clause or a SD question in German; the word order is an ungrammatical production. The verb should appear either after the wh-word *warum* in C or finally as it would appear in an embedded clause (v-final). Notice also that the mother attempts to

correct Caroline. Possible correct word order is found in the mother's utterances. Depending on the context of the situation, the child could intend to produce either an embedded clause or a SD question.

2.2.6 *Wem* 'Whom'

Caroline only has one production of *wem*. The adults in the data sample also use it infrequently. Caroline at the age of 2;06 has the one production below. The production is translated as 'or from whom thinks Miriam?'. It is a grammatical adult-like production. Despite a target-like production, considering the sample size, it is difficult to assume that Caroline has acquired *wem*. Perhaps the use of a finite verb may lead to the assumption that Caroline is able to produce *wem*-questions. However, all of this depends on speculation.

(43) *oder von wem glaub mi Miriam* Age 2;06 90-04-18

2.2.7 *Welche* 'Which'

Caroline has many productions with the *wh*-word *welche*. These productions are mostly single-word utterance and *welche DP* utterances. *Welche DP* is used in English in certain conversational contexts. Ellipsis occurs with the VP obtaining a grammatical question of 'what hat' for example. The VP for example 'is blue' undergoes ellipsis. Some of Caroline's single-word utterance and *welche DP* utterances are shown below. Notice that in the last examples, Caroline also uses a prepositional phrase *in welchen* 'in which' and *mit welchem* 'with which'.

(44) *welcher Eis?* Age 2;02 89-12-29
welche Mami? 89-12-29

<i>welcher</i>		89-12-29
<i>welchen</i>	Age 2;03	89-12-30
<i>welche</i>		90-01-10
<i>welcher xx Strom ?</i>		90-01-21
<i>welche ?</i>		90-01-22
<i>in welchen Kinderzoo ?</i>	Age 2;05	90-03-25
<i>mit welchem # xx</i>	Age 2;08	90-06-14

The example below has no wh-movement of the word *welche*.

- (45) *wo is dis welche ?* Age 2;05 90-03-21

Caroline is asking 'where is which?'. It is unclear what Caroline is asking with this question. It is also evident that Caroline is still unclear about how to use the word *welche* at the age of 2;03 which is not surprising.

Caroline also has some grammatical productions of *welche* questions. These occur at the age of 2;10 and are used with a finite verb. Some examples are shown below.

- (46) *welche Zaubergeschichte soll ich soll ich erzaehlen ?* Age 2;10 90-08-13
und wel # welche Zahl muss ich ? Age 3;04 91-01-30
nie soll mir sagen welche Zahl da malen m malen muss? 91-01-31

2.2.8 Wann 'When'

Caroline's productions of *wann* begin with a few phrases of *wann + DP* and *wann + v*. this is not surprising as Caroline shows this patterns with many wh-words until wh-movement is fully acquired. Notice that at 2;05-06, Caroline uses grammatical productions. In fact, all productions after this age are grammatical SD questions or embedded clauses. She uses a finite verb the last example even shows a combination of finite verb plus participle. Some of her productions are shown below.

- (47) *wann waffen # waffen #1* Age 1;11 89-08-26
wann ## Katze #2 Hunger # Katze #1 Age 2;03 90-01-10

<i>und wann denn # Hunde Haare waescht #1?</i>	Age 2;05	90-03-09
<i>wann kommt die Sylvia #1?</i>	Age 2;08	90-06-16
<i>wann wann # wird die auch aufgefressen # ?</i>	Age 2;09	90-07-23

2.2.9 Wieso 'Why'

Caroline also has two productions of the wh-word *wieso* 'why'. Both are grammatical productions. The first shown below is an embedded clause. The second is a SD question with the elusive participle and finite verb combination. At the age of 2;07 it is clear that Caroline has the ability to use *wieso* grammatically. *Wieso* has the same definition as the wh-word *warum*. The Langenscheidt's dictionary (1993:337) refers the word *wieso* to *warum* for meaning. This may explain the very few productions of *wieso* in Caroline's data sample as she has a very high production of *warum*. By this age of 2;09 Caroline has a finite verb in her production.

(48)

<i>wieso denn des hier rauf</i>	Age 2;07	90-05-10
<i>wieso macht der deinen Trick aussuchen ?</i>	Age 2;09	90-07-03

2.3 Kerstin

Kerstin's data comes from the Nijmegen corpus. Data collected occurs from 1;03 to 3;04. Kerstin's data was searched for the wh-words *who*, *what*, *where*, *whom*, etc. using the GREP program and manual searches. All wh-words were searched first for occurrence and second for movement. Kerstin has a total of 25,899 utterances. Her first wh-productions are recorded at 1;08. Kerstin has wh-patterns unlike that of Simone.

2.3.1 *Wo* 'Where'

Wo is the first wh- word acquired by all children in the data samples. Kerstin seems to follow Simone's template pattern, as she uses '*Wo ist DP*' in her early productions.

(49)

<i>wo 's den Nina -'</i>	1;10.03
<i>wo 's de Mama -</i>	1;10.05
<i>wo 's de Maxe -</i>	1;10.05
<i>wo isse Kuli -'</i>	2;01.01
<i>wo is(t) de Balla [: Ball] -'</i>	2;01.02
<i>wo 's Ball ?</i>	2;02.20
<i>wo isse Mami ?</i>	2;03.01

Kerstin's data patterns change, however, at the age of 2;05. From this age forward, Kerstin produces a high number of single-word utterance of *wo*. These make up most of her *wo* productions. There are some productions of full wh-questions (later using '*wo ist DP*' without being a template). However, the rest of her productions revolve around either a *wo* or a *wo denn* utterance. *Denn* in the *wo denn* utterance is used for emphasis.

(50)

<i>wo denn ?</i>	2;05.12
<i>wo ?</i>	2;05.12
<i>wo ?</i>	2;05.14
<i>wo ?</i>	2;05.14
<i>wo denn ?</i>	2;05.14
<i>wo ?</i>	2;05.14
<i>wo ?</i>	2;05.12

Single-word utterances still make up most of *wo* productions, even later in data samples.

(51)

<i>wo denn ?</i>	2;10.27
<i>wo denn ?</i>	2;10.27
<i>wo ?</i>	3;02.08

Later in her data sample, Kerstin does produce grammatical *wo* wh-questions.

These productions are limited, in fact, all of her full *wo* questions are given below.

Notice that all of these full productions occur at the age of three. It is expected that she should have acquired full wh-questions for *wo* at this time. Although she produces one example (ke030208.cha:1338 - #1) with a non-finite verb and finite verb combination, the rest of her productions have only a finite verb.

(52)

<i>wo kann man dann xxx was malen ?</i>	3;02.08
<i>wo gehen wir dann ?</i>	3;02.08
<i>wo ist mein Popone [: Portemonnaie] ?</i>	3;02.08
<i>wo ist sie die rot # Ampel ?</i>	3;02.08
<i>wo is(t) des Ball -</i>	3;04.06
<i>wo is(t) die Puppä [: Puppe] - da</i>	3;04.06
<i>wo gehst du jetzt hin -'.</i>	3;04.06

Kerstin does use a high number of single-word utterances. This does not diminish the value of her data. Although single-word utterances are predominant, it is clear from the context of the conversations that Kerstin understands and can use the wh-word *wo*.

2.3.2 Was 'What'

Was is the second wh-word acquired by all of the children in this study. It is also a common early wh-word in English speakers (L. Bloom, Merkin and Wootten 1982:1086). Interestingly, Kerstin does not produce many one-word-utterances for the

wh-word *was*. This contrasts highly with the previously discussed word *wo*. Until the age of 2;10, there are only seven productions of the single-word utterance of *was*.

(53)

<i>was</i> .	1;04.13
<i>was</i> -'	1;07.09
<i>was de</i> -'	1;07.09
<i>was</i> -'	1;10.03
<i>was</i> -	2;01.02
<i>was</i> ?	2;03.02
<i>was</i> ?	2;04.14

Although there are some productions of *was* in full question formation, most utterances are found after 2;06. Some examples before 2;06 are shown below. Notice that in number 3, the embedded clause is correctly formed with 'Wh-phrase DP VP'.

Unlike Caroline, Kerstin has correct word order. Kerstin also uses finite verbs. It is not until age 3;02 that we see a combination of finite and non-finite verbs.

(54)

<i>was soll ich denn ?</i>	2;03.02
<i>Kerstin, gucke mal, was die Kerstin da isst</i>	2;05.14
<i>was is(t) des -'</i>	2;06.02
<i>was du hole da ?</i>	2;07.23
<i>guck, was sie macht .</i>	2;10.27
<i>wo kann man dann xxx was malen ?</i>	3;02.08

2.3.3 Wie 'How'

The production of *warum* above seems similar in production to Kerstin's productions of *wie*. There are very few *wie* productions. However, when Kerstin does use *wie*, the context of conversation indicates she understands her productions. Her first grammatical production (and only her second production overall) is a novel embedded clause. There are no elements missing or incorrect, that is, she achieves full adult-like production. Again, the entirety of her productions is shown below.

(55)

<i>na@o, wie xxx ge(ll)@o xxx .</i>	2;03.02
<i>guck mal, wie schwer das ist .</i>	2;04.16
<i>wie heisst denn des ?</i>	2;07.23
<i>wie (*2) ?</i>	2;10.27

At the age 2;03, Kerstin attempts to produce *wie* in a question or embedded clause. Her attempt was unsuccessful, however, at 2;04 there is an adult-like production. Her other full wh-production is also grammatical and adult-like. Kerstin's use of a single-word utterance appears only once in this wh-word. This production is similar to her other one-word word productions. She understands the meaning of *wie*, which can be shown here in her production of full wh-questions and embedded clauses.

2.3.4 *Wer* 'Who'

Along with the wh-words previously discussed, there are also very few productions of the word *wer*. The entirety of her productions is shown below.

(56)

<i>wer ma(l) halte wer .</i>	2;02.21
<i>das xx gleich, wer das ist .</i>	2;09.11
<i>wer hat schon eine (ge)gessen ?</i>	3;02.08
<i>wer hat dir das (er)laubt -' .</i>	3;04.06
<i>wer hat dir das (er)laubt -_ .</i>	3;04.06

Kerstin's first attempt at 2;02 does not produce a grammatical result. However, *wer* is a wh-word that is usually acquired later. The data end date for Kerstin is 3;04. This may play a role in the limited productions of her wh-words that are acquired late. Extended information or further data collection may have yielded different results. Although there are few productions of *wer*, Kerstin (except for the first example above) uses full adult-like questions and embedded clauses.

2.3.5 Warum 'Why'

Kerstin has very few productions of the wh-word *warum*. Again, most of her productions are single-word utterances. The entirety of her *warum* productions is shown below. Notice that there is only one full wh-question, which is the last utterance in the examples.

(57)

<i>warum nicht ?</i>	2;10.27
<i>warum ?</i>	3;02.08
<i>warum -'.</i>	3;04.06
<i>warum -'.</i>	3;04.06
<i>warum -'.</i>	3;04.06
<i>warum [?] nich(t) [?]</i>	3;04.06
<i>warum -'.</i>	3;04.06
<i>warum -'.</i>	3;04.06
<i>warum # is(t) das Quark -' xxx</i>	3;04.06

The largest volume of Kerstin's one-word word *warum* utterances are attested at the age of 3;02. However, at the age of 2;10 there are two productions of '*warum nicht*'. These are novel productions, which within the context of the conversation, can be deemed acquired. Kerstin's high volume of one-word-utterances may be attributed to context of the conversation, but they may also be attributed to the quantity of data compared to Caroline and Simone. *Warum* appears late in Kerstin's productions, unfortunately there is no further data from this stage (3;02.04) to examine if she progresses to use more full wh-questions or embedded clauses.

2.3.6 Wem 'Whom'

Kerstin does not produce the wh-word *wem*. Her parents use it, but there are no occurrences in her data sample. Because the data sample is large enough, one can assume that Kerstin has not acquired the wh-word *wem*.

2.3.7 Welche 'Which'

Kerstin's whole sample of *welche* productions are show below. These utterances of *welche* are not in a grammatical context for a wh-word. They do not appear as single-word utterances nor as SD questions. There is no interrogative meaning associated with the *welche* productions below. The meaning of the phrases below is 'some more (of something)' with *welche* meaning 'some, any'. There are also a low number of occurrences of *welche* in the adult productions.

(58)

<i>noch welche -</i>	1;07.24
<i>da auch welche, da auch xxx Luftballon</i>	2;04.14
<i>nochmal welche</i>	3;04.06

2.3.8 Wann 'When'

Kerstin had only one production of *wann*. However, Kerstin utters a novel expression in a grammatical embedded clause. It is, therefore, deemed as acquired. Her production is shown below.

(59)

wann de Pueppi bade

2.3.9 Wieso 'Why'

Kerstin also has very few productions of *wieso*. Adult productions are also low. All of Kerstin's *wieso* productions are shown below. Although there are so few

utterances, Kerstin at 3;02 does use single-word utterances and a grammatical SD question in novel situations. This demonstrates that she does know how to use the wh-word. However, it is not surprising that this is the case at the late age of 3;02.

(60)

<i>wieso alla@c -'.</i>	1;07.09
<i>wieso xxx -'.</i>	1;07.09
<i>wieso ?</i>	2;06.02
<i>wieso stinkt das ?</i>	3;02.08

2.4 Carsten

Carsten's data sample comes from the Wagner corpus. She is recorded at 3;06 for a length of 189 minutes. Carsten has a total of 2065 utterances. Although a Socio-economic Status (SES) description is not available for the Nijmegen corpus, a description is available for the Wagner corpus. This detail is shown for each child. As with all the children examined for the purpose of this thesis, Carsten was examined in a naturalistic environment. Carsten's mother, a researcher, was a trainee teacher and her father was a salesman. Their SES was middle class. Although there is large amount of data for the Nijmegen corpus, Carsten's sample is used to show how the usage of wh-words can vary.

At the age of 3;06, Carsten should have most of her wh-words acquired. We would also expect more target-like productions in her full wh-utterances.

2.4.1 Wo 'Where'

A very interesting pattern emerges in searching for Carsten's *wo* wh-productions. Carsten uses very few single-word utterances. This is expected as, at this time, it is assumed that she patterns as a normally developing child and has, therefore, already

acquired *wo*. Although the '*Wo ist DP*' seems to prevail throughout her utterances, Carsten does use the verb *sollen* 'shall'.

(61)

*herrmm und wo soll der herfahrn ?
wo soll der herfahrn # ?
wo die, die, kreide hergekriegt habn ?
und wo war das in Schule ?*

The examples above also show other verbs such as *haben* 'to have' and *war* 'were = the imperfect of *sein* -to be'. Her use of *haben* above is also in an embedded clause. These show Carsten's ability to produce novel questions with the wh-word *wo*. This supports the assumption that Carsten has acquired the wh- *wo* word and question formation.

Carsten is unique in her productions compared to the children from the Nijmegen corpus. It is these unique productions that established a reason to include her data sample. Carsten uses *wo*+ preposition constructions. This is grammatical in adult speech, however, it very few productions were observed in the Nijmegen corpus. Carsten uses the constructions *woher* 'where from', *wohin* 'where to' and *wofür* 'for which/what'. As her data sample is very small compared to Caroline, Kerstin and Simone, it is surprising to find the *wo*+ preposition productions in her sample.

(62)

*und, wo woher & s hast & e den denn & gehö geholt ?
woher is der [% 'das'] Auto da vorne ?
klips # dipt # dip dip dip # woher is das Eichenschale?
aber woher & s [% 'sind'] !
wo woher habn, die denn die Wannier die #
wo wohin denn ?
wofür ?*

All of Carsten *wo*+ preposition are shown above. There are six productions in the 189 minutes. This is a high number comparing sample size and productions to the children in the Nijmegen sample.

Carsten also has a high production of '*wo denn*'. This is a phrase without the verb, however, it is also used persistently in the adult productions of both the Wagner and Nijmegen corpus. So, although there is a verb missing, *wo denn* is a grammatical idiomatic expression that is used frequently in the target language. *Denn* is used in both adult and children utterances as emphasis. The mother (63) uses *wo denn* with a PP or for emphasis after the DP. Carsten, however, uses *denn* before DP's. This may occur because Carsten has not yet learned where it should appear.

(63)

wo denn zu Hause?
wo denn in Essen ?
wo denn vor mir ?
wo denn ?
wo denn ?

*MUT: *wo denn ?*
wo denn drunter ?
wo ist die denn ?
wo hat die Oma die denn ?
wo hast dich denn gestoßen?

The examples above show both the Carsten's and her mother's productions. The mother uses PP's with the '*wo denn*' production. Although Carsten uses this production; she also uses *wo denn* with DP's. The use of DP's with the *wo denn* productions does not occur in any adult productions.

Carsten's data sample also revealed, when searching for the wh-word *wo*, a new wh-word not previously encountered in the Nijmegen corpus. Any other children chosen

for the purpose of this thesis do not produce this wh-word. This was another reason for including Carsten's data sample. There are a high number of productions of this wh-word *worum* 'what...about/round'. Single-word utterances are also high for this wh-word. As well, Carsten uses them in grammatical wh-questions. *Worum* is also used with many different verbs such as *haben* 'to have', *können* 'to be able to/can', *sind* 'to be', *schwimmen* 'to swim', *sehen* 'to see', etc. The ability to use the wh-word *worum* with such a variety of verbs and in target-like utterances shows that Carsten has acquired this wh-word. Knowing this, her productions without verbs are seen as a factor of context. Carsten is capable of producing full wh-questions, however, context of the conversation produces a single-word utterance. Thus, the single-word utterances are deemed grammatical. They are just questions that incorporate ellipsis. Examples of both single-word utterances and full wh-questions for *worum* are shown below.

(64)

*worum +
 worum ?
 worum kann i mitgehn ?
 worum nich ?
 worum nich ?
 worum Blumen ?
 worum geht deiner auch ?
 worum darf ich nich schreiben ?
 worum, is das Buch schon zu Ende ?*

Notice *worum den* is used here. This is comparable to the *wo denn* example discussed above. Carsten also uses questions with just *worum +DP*. These examples are also determined to be due to context and undergoing ellipsis.

2.4.2 Was 'What'

It is also expected that Carsten has acquired the wh-word *was* and its movement. Thus, it is not surprising to find many grammatical productions of *was* questions and embedded clauses.

(65)

weil ich da & jetzt was auf & e Erde geschnibbelt & hab .
& guck mal was die Oma macht!
was war das denn für & n Schreiber ?
was der Junge da macht !
was macht der Junge hier ?

There are also a high number of *was* single-word utterances. It is not expected at this stage, however, that Carsten does not understand her productions. It is unlike the first productions of the Nijmegen corpus. These single-word utterances are due to ellipsis or to the context of the conversation, not to competence. Carsten's productions are target-like.

2.4.3 Wie 'How'

Carsten produces both single-word utterances and SD questions grammatically and in novel situations. At 3;06 it is clear from her usage of the word that Carsten has acquired the wh-word *wie*. Some examples of her productions are shown below. The first two examples are of single-word utterances using the *denn* emphasis.

(66)

und wie denn ?
aber wie denn ?
wie soll ich denn offen [% 'auf'] machen ?
wie kommt der denn wieder raus ?
wie is er denn mit & n [% 'dem'] Kopf reingekommen ?

2.4.4 Wer 'Who'

Carsten has few productions of *wer*. All productions are shown below.

Productions involve either embedded clauses or SD questions and all are grammatical.

Thus at 3;06, Carsten has acquired *wer*.

(67)

wer hat das wohl gemalt ## ?
was is das für &n Auto was wer da &v vorne steht
wer da is #
wer hat sich denn # oben reingebarkt ##

2.4.5 Warum 'Why'

Carsten uses a high number of single-word utterances compared to her total number of productions. Examples of these productions are shown below.

(68)

warum ?
warum nich ?
warum ?
warum ## ?
warum ?

Although Carsten does use many single-word utterances, she produces full *wh-warum* questions. Correct word order is observed. The finite verb appears in the correct position as well as the participle appearing at the end of the structure. The entirety of her full *wh-warum* question productions is shown below. These productions are target-like.

(69)

warum hast du meine Buchse offen gemacht?
und warum habn die Leute keine drangebaut ?
warum sitzt er denn nicht ?
warum wollte der einen Kopfsprung machen ?
warum brauchen wir kein Brot mehr ?
warum hast &e so lange nich mehr mit mir geschmust ?
warum brauchst &e wenn du nich mehr das brauchst ?

There are not many productions of *warum*. Sample size and context of conversation are taken as potential factors to explain the small number of *warum* utterances.

2.4.6 Wem 'Whom'

Carsten has no productions of *wem*. The data sample is small and acquisition from the Nijmegen corpus and English studies show late acquisition of this wh-word (L. Bloom, Merkin and Wootten 1982: 1086). Although a late word in acquisition, Carsten should have acquired *wem* by the age of 3;06. Even though the data sample is small, it is assumed that Carsten has not acquired this wh-word.

2.4.7 Welche 'Which'

Carsten has acquired the word *welche*. Short DP's are used as questions using ellipsis such as 'which car?'

(70)

welches meinst &e denn ?
welchen Anspitzer?
in welchem Zimmer ?

Carsten's data sample reveals some very interesting examples. It is important to keep in mind, however, that this is a one-time recording and thus a small data sample size compared to the Nijmegen corpus. Context of conversation may also explain small samples of wh-words and the patterns found.

2.4.8 Wann 'When'

Carsten has some productions of *wann*. Considering the Nijmegen children's use of *wann* appears earlier than 3;06, it is assumed that Carsten would also have acquired

this word. This assumption is correct as Carsten uses grammatical SD questions with *wann*. Her productions are shown below.

(71)

*Mama wann &könn ## wir solln
wann &has # hast &e &jetz neues [% endbetont] Geld geholt ?
wann darf i denn wieder # schreiben ?
wann nimmst &e mich denn wieder auf ?*

2.4.9 Wieso 'Why'

Based upon Carsten's data sample, it is not surprising that she does not use the wh-word *wieso*. There are no productions of *wieso* found in either child or adult productions. This may be due to the fact that the wh-words *worum* and *warum* are used instead.

2.5 Gabi

Gabi's data sample is also from the Wagner corpus. She is recorded at the age of 5;04 for a length of 152 minutes. Gabi has a total of 1437 utterances. Again, although a SES description of the children is not available for the Nijmegen corpus, it is available for Gabi in the Wagner corpus. Gabi's mother is a domestic engineer (housewife) and her father is a lawyer. Their SES is middle class. It is expected that at the age of 5;04 Gabi has acquired all of her wh-words. Her data sample is used for this thesis to extend the scope of wh-words, especially those that are late acquisitions. Gabi's data sample is also examined for partial and long distance wh-movement, which will be discussed in chapter 3.

Gabi produces few wh-phrases/questions in her data sample. This is attributed to the small sample size and not on competence. Some of the utterances found are shown below.

2.5.1 Wo 'Where'

Gabi uses target-like phrases. Tense and person is used grammatically in both questions and embedded clauses. *Wo* was the first wh-word acquired in the Nijmegen corpus, therefore, it is not surprising that Gabi at 5;04 has grammatical productions. Some examples are shown below. The last example shows Gabi's use of the wh-word *woher* 'where from'.

(72)

*ich weiss nicht mehr , wo weisst du
Nora wo war &n ich &n da geschlafen
irgendwelchen wo keine Blum drauf sind .
woher hast du des ?*

2.5.2 Was 'What'

There are a high number of wh-*was* utterances compared to other wh-utterances and sample size. There are a high number of single-word utterances. Examples of these are show below.

(73)

*was ?
was ?*

As expected for this age, all of Gabi's *was* productions are grammatical. This is correct with the exception of one example, which will be examined below. Some examples of grammatical, adult-like productions are shown below.

(74)

*was muessen wir jetzt legen ?
was soll &n des bedeuten da ?*

*Nora was & solln wir denn mit & n Kind machen ?
was brauchen wir denn jetzt ?*

The example shown below (75) does not pattern with target-like speech. Here, Gabi uses SVO word order in her embedded clause. This is the only embedded clause, which appears this way. This may be a result of the PP, which appears at the end of the utterance. This is called preposition stranding and is grammatical in English. An example in English is 'Who are you giving the book *to*?'. While this form is not used in adult German, it is used in child German. According to the target language the word order of (75) is ungrammatical, however, it is an accepted production of child German. It is similar to the overgeneralizations found in the English language. English children, for example, may produce an incorrect form such as 'eated' when learning the past tense morphological form. An example of the preposition stranding is shown from Gabi's data sample in (75).

(75)
was brauchen wir denn jetzt ?

2.5.3 Wie 'How'

Gabi has very few productions of *wie*. The same reasoning used for the limited number of other wh-words is used here. The data sample is small and limited. Her production is shown below.

(76)
darf ich auch & mal riechen wie & s riecht ?

The example above shows 'wie es riecht' is translated to 'how to hold it out?'. It is a grammatical embedded clause. Gabi also uses the wh-word *wieviel* 'how much'. These are grammatical productions of full wh-questions. However, the questions are

asking 'what time is it?' which is a common phrase. It is possible that this is an unanalysed question. It is difficult to tell if Gabi has acquired *wieviel* as the data sample is small and the examples in (77) below are her only productions. The questions are assumed to be unanalysed here because the question 'what time is it?' is a common expression and *wieviel* is not used in any other context. For example, Gabi does not ask *wieviel Bonbons hast du?* 'how many candies do you have?'

- (77)
wieviel Uhr &is es jetzt ?
wieviel Uhr &is es jetzt ?

The example below is interesting because the wh-word is still *in-situ*. I to C movement has occurred (inversion), however, wh-movement has yet to occur. It is unclear why Gabi at 5:04 would not use wh-movement. *Wie* is a wh-word that is acquired late. Perhaps Gabi is just unable to provide grammatical movement. Note, though, that this contradicts the embedded clause given in the first *wie* example above.

- (78)
kann man wie machen ?

Clearly, from the data given, it is difficult to determine if Gabi has acquired the wh-word *wie*. Conclusions concerning *wie* would need a larger sample size.

2.5.4 Wer 'Who'

Gabi uses grammatical productions of *wer*. They are produced in SD questions with the exception of one single-word utterance. All of her productions are shown below.

- (79)
wer hat mein Ei aufgegessen ?
wer will &n das alleine essen ?
wer am schnellsten fertig ist , der kann
wer ?
also wer keine hinle +...

wer kommt & jetzt dran ?

2.5.5 Warum 'Why'

There are no instances of *warum* in her data sample. Small data sample may account for lack of wh-words/questions as well as context of conversation. However, Gabi does use the wh-word *wieso* 'why'. Both *warum* and *wieso* are adverbs with the meaning 'why'.

2.5.6 Wem 'Whom'

Gabi had only one production of *wem*. She uses it in the production below which has a 'with whom' meaning. It is an example of a grammatical question that has undergone ellipsis.

(80)

we, bei wem ?

2.5.7 Welche 'Which'

Gabi's produces adult-like utterances of *welche*. Some examples of her productions are shown below. The first example has no verb, however, it is a grammatical question as the IP undergoes ellipsis. The second example shows a target-like utterance.

(81)

*welcher Claus ?
mit welchen Zug bist du & n gekommen mit welcher Farb ?*

The example below does not show wh-movement. The utterance does not make grammatical sense from the data given. It could mean *was für welche?* 'what for which?' or *was fuhr welche?* 'what drives which?'.

(82)

we was fuer welche ?

2.5.8 Wann 'When'

Gabi also had only one utterance of *wann*. However, it is used as a novel production in a single-word utterance. It is not surprising to assume that Gabi has, by the age of 5;06, acquired this wh-word. Her production is shown below.

(83)
wann ?

2.5.9 Wieso 'Why'

Single-word utterances prevail in Gabi's productions. There are also very few productions of *wieso*. Some examples are shown below. Although there is evidence of single-word utterances, from the context of conversation, it is assumed that these utterances include ellipsis. Assuming this, Gabi has full grammatical productions.

(84)
wieso nich ?
wieso !
wieso ?

Single-word utterances are also frequently used in adult productions. This patterns like English in asking 'why not?' or 'why?' which are the translations of the above examples.

Although Gabi only uses single-word utterances, the adults use *wieso* frequently in the conversation. Adults use both single-word utterances and full wh-questions. Examples of adult data are shown below.

(85)
wieso ?
wieso denn ?
wieso hast du zwei Loeffel ?
wieso brauchst du das nicht ?

2.6 Frederik

Frederik's data sample is also from the Wagner corpus. He is recorded at the age of 8;07. Frederik has a total of 1393 utterances. Again, although a SES description of the children is not available for the Nijmegen corpus, it is available for Frederik in the Wagner corpus. Frederik's mother is a researcher and a trainee teacher. The household SES is middle class. It is expected that at the age of 8;07 Frederik has acquired all of his wh-words. Thus, each wh-word is not described into detail. It is simply enough to state that for the wh-words, Frederik uses both single-word utterances and full grammatical wh-questions.

Frederik does use a wh-word that is not used by the other children. It is also a rarely used form of *wo+ preposition*. At 8;07, it is not surprising, though, that he is able to produce these combinations. Frederik uses the *wo+ zu* 'what for/why?' combination. An example of his *wozu* production is shown below.

(86)

wozu ist der denn gut
what is it good for

Frederik's data sample is primarily examined for partial and long distance wh-movement, which will be discussed in chapter 3.

Chapter 3

Chapter 3 focuses on the analysis of the wh-words examined in chapter 2. Uses of wh-words are examined to determine order of acquisition. These, in turn, will be compared to the acquisition of wh-words in English. The similarity in structure allowing comparison of German and English is discussed in section 1.6.

This thesis focuses on the competence of the speaker. Competence is 'the inner, largely unconscious, knowledge of the [syntactic] rules' (Gleason 2005:19). This is in contrast to the performance, which is the 'expression of the rules in everyday speech' (Gleason 2005:19). Simple repetition was excluded. All forms must be consciously used in productions, that is, the children must comprehend their meaning and use them in novel situations. For words that had a small number of productions of less than one percent of all wh-productions, for example, needed a special condition. The special condition states that for those wh-words with a small production sample, single occurrence of wh-word in combination with movement of the wh-word (SD questions or embedded clauses) is evidence for a wh-word movement to be deemed acquired.

The order of wh-word acquisition is also examined to determine if there is an underlying reasoning for their acquisition pattern. This will be discussed drawing on results from studies completed on the English language.

Acquisition of movement of the wh-words will also be examined. Acquisition of wh-words occurs before acquisition of movement in most cases. It is interesting to compare the differences in acquisition date of wh-words and correct movement as well as study those examples in which acquisition and wh-word movement occur simultaneously.

Two types of movement are also examined. SD and LD movement are examined in all data samples. It is expected that the children Gabi and Frederik should both have ability to use LD movement. Studies by DeVilliers, Roeper, and Vainikka (1990) and Thornton and Crain (1994) show that children may have access to LD movement from at least 3;05 (in Guasti 2002:210). Searches for partial wh-movement are also included in this section. Because the acquisition time of the wh-words and wh-movement occurs in such a short period of time (between ages 2 and 4), a difference of one or two months can be significant. Section 3.3 examines the movement of the wh-words explored in section 3.2. Both sections examine the data samples from Simone, Caroline, and Kerstin in the Nijmegen corpus. The Nijmegen corpus is the focus because the children were examined on a longitudinal basis, thus allowing access to evidence of word acquisition and movement acquisition.

Because there is no evidence of LD wh-movement in the Nijmegen corpus, the productions of the older children, Gabi and Frederik, are examined in this chapter for more complex types of wh-movement: more specifically LD and partial wh-movement. English data shows that children have access to LD wh-movement from about the age of 3;05 (DeVilliers, Roeper, & Vainikka 1990; Thornton & Crain 1994 in Guasti 2002:210). Since the Nijmegen corpus has no evidence of this within the age group of 2 to 4 years, Gabi and Frederik, in the 5 to 8 year age group, are, therefore, examined. It is assumed that by the age of 8;00, children have full competence with wh-productions. It is then probable that there will be evidence of LD in either Gabi's or Frederik's data sample.

3.1 Wh-drop

There are examples of wh-drop that occur in the Nijmegen data samples. This is a phenomenon recorded in second language acquisition of German, as well as child German. 'Tracy (1991) proposes that the initial acquisitional stage of wh-questions of children acquiring German language produce 'zero questions [wh-drop] with a verb in 'V-end [final] position' (cited in Penner 1994:186). 'This suggests that V to C movement has not occurred' (Yamakoshi 1999:724). An example of this is shown below.

(87)

' ___ *der Flöte is?* (1;11)
(Where) is the flute?

(Tracy (1991) cited in Penner 1994:186)

Simone's examples show more samples of the questions with matrix wh-drop and V-final positions. However, to be seen from Caroline and Kerstin's data, this is not a regular phenomenon as claimed in Tracy (1991). While there are examples from the data in Tracy (1991) as shown above and in Simone's data sample below, the different V2 word order (as opposed to V-final word order in Tracey (1991) and Simone's sample) found in Caroline and Kerstin's data perhaps demonstrate that this is not a regular phenomenon of the process of wh-acquisition in German. However, this is speculation as Simone produces these wh-drop questions at the age of 1;11, which is the same age as Tracy's (1991) data, while Caroline and Kerstin show a later age of production (2;05 and 2;00). While there is only a difference of six months in age, Simone uses the V-final word order wh-drop when Kerstin and Caroline use wh-drop in V2 questions.

All children within the data sample use wh-drop in their initial question productions. This is observed for in English as well as German data. Wh-drop is

documented in L1 acquisition of English, French, Spanish, Swedish, Dutch and German in Yamakoshi (1999). The English examples given from spontaneous speech were extracted from Radford (1990). Some examples of wh-drop found in English are shown below.

(88)

Bow-wow go? ('Where did the bow-wow go?' Louise 1;03)

Mummy doing? ('What is mummy doing?' Daniel 1;09)

My shoes gone? ('Where have my shoes gone? Jenny 1;10)

(Yamakoshi 1999:724)

Examples of the wh-drop productions in the Nijmegen corpus are shown below.

(89)

Simone: (V-final)		
<i>Auto ging?</i> (missing <i>wo</i>)	1;10.20	
<i>hat geklingelt?</i> (missing <i>was</i>)	1;10.20	
<i>Maxe fruehstuecken?</i> (missing <i>was</i>)		
Caroline: (V2)		
<i>geht der Mami?</i> (missing <i>wo</i>)	Age 2;05	90-03-25
Kerstin: (V2)		
<i>Auto?</i> (missing <i>wo</i>)	1;07.10	
<i>geht's der?</i> (missing <i>wo</i>)	2;00.05	
<i>isse Ball? isse Mami?</i> (missing <i>wo</i>)	2;03.02	

As children were recorded in a naturalistic environment, it is noted here that caution is used in choosing wh-drop questions. Direct elicitation is not used as in Brown and Fraser (1963). Their study on English demonstrated wh-drop in sentence-initial positions in direct elicitation tasks. The children aged 2;01-2;06 produced single-word questions such as 'Go?' for 'Where shall I go?' (Eve 2;01) (Yamakoshi 1999:725). As one cannot compare the direct elicitation tasks of Brown and Fraser (1963) to the naturalistic data in the Nijmegen corpus, it was prudent to be conservative in treating

questions as wh-drop questions. Wh-drop was determined according to context of conversation and the assumption of a question without the appropriate wh-word. Due to naturalistic environment and difficulty of determining the context in which the small children spoke, single-word productions were not always deemed to be wh-drop.

Caroline uses wh-drop consistently in many productions. What is interesting about these productions is that they mostly involve the verb *sagt* or *sagen* 'to speak/say'. It is used in all of her *sagen* questions with a DP. Caroline, interestingly, is persistent in using the wh-drop with the *sagen* questions. She uses them, even at an age where she is capable of grammatical productions. She also uses wh-drop at late stages like in the example above, where at 2;05 there is wh-drop of *wo* 'where'. There is also one example with the verb *sein* 'to be'. Examples of Caroline's wh-drop are shown below.

(90)

<i>is dis?</i> (is 'sein 2 nd person)	(<i>was</i> is missing)	Age 2;04	90-02-17
<i>sagt # die?</i>	"	"	"
<i>sagt die Malina?</i>	"	"	"
<i>und sagt die Ute?</i>	"	"	"
<i>sagt der Kaefer?</i> (x3)	"	"	"
<i>sagt der Krebs?</i>	"	Age 2;07	90-05-10
<i>machst du?</i>	"	"	"
<i>sagst dis Baby?</i>	"	Age 2;08	90-06-01
<i>sagt der Marienkaefer?</i>	"	Age 2;09	90-07-03

One hypothesis could be that Caroline has difficulty co-producing the *was* with an *-s* in the beginning of the next word. In other words, she may have difficulty phonologically. Therefore, Caroline's data samples were searched for any *was +s* productions. Although there were few, the productions found were enough to support that there is no phonological rule preventing the production. Caroline's *was +s*

productions are shown below. Notice that she is able to produce *was sagt DP?* before and during the age of her missing wh-productions above.

(91)

<i>was sagt # da wassa</i>	Age 2;01	89-11-26
<i>was sagen</i>	Age 2;02	89-12-09
<i>und was sagt ## Baer ?</i>	Age 2;03	90-01-18
<i>was sagt Wolf</i>	Age 2;04	90-02-06
<i>was sing ?</i>	"	90-02-06
<i>was sagt die Mami?</i>	Age 2;06	90-04-24
<i>was sagt der Junge?</i>	"	90-04-24

This leads to the conclusion that Caroline is using wh-drop that is also evidenced in other German data. Yamakoshi (1999:723) draws from Felix's (1980) longitudinal speech data from a child aged 2;07 to 2;11. Wh-drop occurs in many contexts, though Caroline is persistent in using it mostly with *sagt DP?*, where the *was* is dropped before the verb *sagen*. The child in Felix's (1980) study has wh-drop using a variety of verbs (*sitzen* 'to sit', *kommen* 'to come'). Examples of this child's productions are shown below.

(92)

<u> </u> <i>sitz du denn?</i>	Missing <i>wo</i> 'where'
<u> </u> <i>do you sit?</i>	
<u> </u> <i>kommt der Pappi denn?</i>	Missing <i>wann</i> 'when'
<u> </u> <i>does daddy come?</i>	

Yamakoshi (1999:723)

Notice that there is wh-drop of different wh-words. This is also different than Caroline's data. Caroline only drops the wh-word *was* 'what'. What is interesting about Caroline's wh-drop is that unlike the children above, she is capable of producing

grammatical *was* questions. However, she ‘chooses’ to drop her *wh*-word in these questions.

Yamakoshi (1999:727) has an explanation for this *wh*-drop. ‘The other possibility is that UG is available to children as well as adults, but children make errors due to some performance factors when they produce *wh*-drop questions’. Yamakoshi (1999) proposes that in producing *wh*-drop questions, children make an error of using a null operator instead of an overt *wh*-word.

(93)

The null operator which children use as a [+*wh*]-feature, and that null operator moves from base-generated position to CP specifier position like overt *wh*-movement:

Wh-drop question in child speech
[_{CP} OP_i [_{IP} . . . t_i . . .]]]

↑ ← ← ← ↓

(Yamakoshi 1999:727)

Thus, the null operator appears in the same position as the *wh*-word would appear *in situ* and undergoes movement like an overt *wh*-word would. Null operators are also used to explain other syntactic operations such as yes-no questions. An empty question operator is found in yes-no questions. Larson (1985:243) states that there is a phonologically null *O* (operator), which has the movement privileges of the overt [+*wh*] *whether*. It is this operator with a [+*wh*] feature that the children are replacing the overt *wh*-word with. Yamakoshi (1999:728) states that the performance constraint is that children are opting to use the covert null element over the overt *wh*-word. ‘In languages where *wh*-movement occurs overtly, a *wh*-word in itself involves an operator. Thus, children make an error of using a null operator rather than a *wh*-word, and *wh*-drop occurs’ (Yamakoshi 1999:729).

3.2 Wh-words

Wh-words are examined in the Nijmegen corpus for occurrence. All wh-words were examined using the criterion shown in 3.2.1 below. Because the children were unique in their productions, special criterion was considered for wh-words that had a small number of productions. Each wh-word is examined in Simone's, Caroline's and Kerstin's data sample respectively. Once individually examined, the wh-words are then compared to each other; firstly by the words themselves, secondly by the children's productions, and thirdly by the adult's productions.

3.2.1 Criterion

In order to determine if a wh-word can be deemed to be acquired a criterion of acquisition must first be set. In order to consider a wh-word to be acquired, I require that the following condition must be met.

► Condition #1: a wh-word is deemed acquired if it occurs in a novel production more than 2 times within a certain time period (1 month).

(Simple repetition was excluded. All forms must be consciously used in productions, that is, the children must comprehend their meaning and use them in novel situations.)

•Special condition: for those wh-words with a small production sample, single occurrence of wh-word in combination with movement of the wh-word (SD questions or embedded clauses) is evidence for a wh-word to be deemed acquired. Again, all productions exclude repetition and must be novel grammatical productions.

3.2.2 Word Data compilation for Nijmegen corpus

The acquisition of *wh*-words in German does not fall into a neat pattern as shown in Table 3.1 below. The children acquire the *wh*-words at varying ages. The acquisition of the *wh*-words is also variable as not all children in the Nijmegen corpus acquire all of the *wh*-words. Table 3.1 below shows the ages of acquisition of each *wh*-word. The only pattern emerging is the semantically easier words are acquired early compared to the semantically more complex *wh*-words. This is explained in section 3.2.2.2 below. In general, it should be noted that the *wo* and *was* forms below are the first to be acquired overall. Explanations for this, again, are shown below in section 3.2.2.

Table 3.1
Acquisition of Wh-words

<u>Wh-word/Age</u>	<u>Simone</u>	<u>Caroline</u>	<u>Kerstin</u>
<i>wo</i> 'where'	1;10	2;01	1;10
<i>was</i> 'what'	2;02	1;12	2;03
<i>wie</i> 'how'	2;08	2;05	2;04
<i>wer</i> 'who'	1;10	2;03	2;09
<i>warum</i> 'why'	2;02	2;02	3;02
<i>wem</i> 'whom'	2;00	2;06	--
<i>welche</i> 'which'	2;07	2;02	--
<i>wann</i> 'when'	2;10	2;02	2;03
<i>wieso</i> 'why'	--	--	3;02

3.2.3 Explanation for *wo* 'where' and *was* 'what' early acquisition

Explanations for early acquisition of *wo* 'where' and *was* 'what' forms and stages of acquisition can be explained in two ways. The first is attributed to frequency. The second is attributed to semantics.

3.2.3.1 Frequency

The children's production frequency of *wo* 'where' and *was* 'what' forms surpass all other productions. This is presumably due to the frequency of productions of the

forms in their environment. Also as the first two forms are acquired, what determines one's acquisition over another? The *was* 'what' word was most frequently produced by adults. However, this does not affect the acquisition of *wo* 'where'. This is because the children are often required to answer the *was* 'what' questions with a simple noun phrase reply. On the other hand, the *wo* 'where' word was most frequently produced overall by the children. While the adults do have a high number of *wo* 'where' utterances, they do not have as many productions as *was* 'what'. Children are not affected by the relative frequency of 'what' in the adult's productions. This is explained by the games that are played with the children. While a question of 'what is that?' may prompt a single noun phrase response, games of 'hide and seek' with toys prompt the child to ask 'where is it?'. This prompts a higher production of the *wo* 'where' form the children and, therefore, earlier acquisition. Both *wo* 'where' and *was* 'what' words are the most frequent productions of the adults in interactions with the children.

These wh-words occur most frequently (i.e. higher in frequency compared to other wh-words). Because the Nijmegen sample size is large (19,782 wh-utterances) these frequency results lend credibility to the theory of frequency as a role in acquisition. It also supports previous findings by Clark and Clark (1977). Frequency of *wo* and *was* forms are high in interactions with children. In a study, Clark and Clark (1977:354) noted that 'where' questions 'are the most frequently asked by adults: they made up 80% of the wh-questions'. In the German data, *was* 'what' forms made up the largest proportion of parents' questions (35%). *Wo* forms made up 22% of all wh-productions. This makes a combined production total (*wo* and *was*) of 57%.

Table 3.2
Number of Total Wh-Utterances in Child/Adult and overall %

Wh-words	Adults		Children	
	Total	%	Total	%
All wh-words	17029	100	2887	100
<i>Wo</i> 'where'	3749	22%	979	34%
<i>Was</i> 'what'	6032	35%	679	23.5%
<i>Wie</i> 'how'	2451	14%	201	7%
<i>Wer</i> 'who'	2634	15.5%	137	5%
<i>Warum</i> 'why'	1124	7%	746	26%
<i>Wem</i> 'whom'	212	1%	3	<1%
<i>Welche</i> 'which'	600	3.5%	103	3.5%
<i>Wann</i> 'when'	102	1%	32	1%
<i>Wieso</i> 'why'	125	1%	7	<1%
<i>Wo/was</i>	9781	57%	1658	57.5%

It is easy to see why children acquire their *wo/was* forms early when adult productions of these forms add up to almost 60% of all their wh-productions. Although the *was* forms made up most of the adult productions, *wo* 'where' forms made up 34% of child productions.

The table below shows the overall percent of occurrence of *wo/was* wh-words. For comparison, the percent of occurrence for all wh-words are also given.

Table 3.3
Percentage of questions of a given type (out of the total number of questions of the types in the list below for a given child or adult)

	Simone		Caroline		Kerstin	
	Child total	Adult total	Child total	Adult total	Child total	Adult total
<i>Wo</i>	39	18	46	19	64	35
<i>Was</i>	36	31	30	42	26	38
<i>Wie</i>	9	12	12	22	2	10
<i>Wer</i>	12	24	<1	6	2	6

<i>Warum</i>	3	8	77	4	5	6
<i>Wem</i>	<1	1	<1	<1	0	1
<i>Welche</i>	3	4	8	4	1	1
<i>Wann</i>	<1	<1	3	<1	<1	<1
<i>Wieso</i>	0	<1	<1	<1	2	<1

Wo and *was* form make up 58% of the wh-productions by the parents. The wh-productions of the children are included for alternate comparisons. Notice that the proportions of the wh-words are similar for adult and child are similar (with the exception of *wo* for all three children, *wer* for Simone and *warum* for Caroline). Is it frequency or conversational style that plays a role? Perhaps it is a combination of both.

Notice the number of occurrences for *wie* 'how' (with the exception of Simone) has the next highest number of productions after the *wo* and *was* examples. There is also a discrepancy between Simone and the other children. Simone is the only one who has a higher production of *wer* 'who' over *wie* 'how'. All other children (Caroline, Kerstin, and Carsten) have double the production of *wie* to *wer*. Simone's high *wer* 'who' production is possibly due to the fact that the adult total number of *wer* was much higher than the adult total for the other two children (compare the Simone's adults 24 to the other's 6 in table 3.3 above). Simone also has a higher number of wh-productions as a whole, this is most probably due to the fact that she has 10,000 more utterances than Caroline or Kerstin.

The reasons why *wo* and *was* are acquired early are explained above. However, one question still remains. The data samples used show a higher frequency of *was* over

wo. So why is *wo* acquired before *was*? This data contradicts the frequency approach discussed above. Perhaps other studies can provide some explanation.

A study of English data by Bloom, Merkin, and Wootten (1982) can explain why *was* 'what' is learned before *wer* 'who'.

One possible explanation is the relative frequency of the contextual events in which children would hear and have occasion to use [the wh-words]... since young children are usually in the company of familiar others, it is intuitively likely that there are many more objects and places than persons that they might ask about which [explain]... the fact that there were relatively fewer identifying questions with 'who' than questions that asked for sentence constituents [what].
(Bloom, Merkin, and Wootten 1982:1091)

Given that all the children in the Nijmegen corpus and Carsten from the Wagner corpus are recorded during interactions with parents or family members, it may explain why the *was* 'what' questions are higher over the *wer* 'who' questions. For the Nijmegen corpus, the children were recorded so often that even the researcher is not a stranger. They, therefore, have less reason to use *wer* questions.

The fact that the interactions occur between known *wer*'s (i.e. known person questions) may also explain the acquisition of *wie* 'how' over the *wer* 'who' form. This is contradictory to the English data studied by Bloom, Merkin and Wootten (1982) where *who* is acquired before *what*. Results from their study are in the table below.

Table 3.4
Wh-word developmental sequence in English

Wh-word	Average age of acquisition
where, what	26 months (2;02)
Who	28 months (2;04)
how	33 months (2;09)
why	35 months (2;11)
which, whose, when	after 36 months (2;12)

(Bloom, Merkin, and Wootten 1982:1086)

3.2.3.2 Semantics

Clancy (1989 in O'Grady 1997:130) suggests that developmental order may be partly determined by cognitive factors. Early wh-words (*wo* 'where', *was* 'what' and *wer* 'who') correspond to object and relations that are easily perceivable, while late acquisitions (*wie* 'how', *warum* 'why') require an understanding of time and causality. So, in this respect, *wo* 'where' and *was* 'what' forms are semantically easier to understand for children. A child can relate to a physical object in the room. The object is there. The object may be hidden or the child may not know the name. This notion of a concrete form to connect with their abstract word (what, where) enables the child to acquire these forms earlier. This applies to both wh-word and SD movement of wh-word acquisition.

Wer 'who', *wenn* 'whom', *warum* 'why', *wie* 'how' are, however, phrases that are not concrete in meaning in these sessions. *Wer* 'who' and *wenn* 'whom' questions were often asked about persons who were not physically there. This is evidenced in the acquisitional stages where only one child acquires the *wer* 'who'. So although Clancy deems 'who' as semantically easier, here it is not the case. *Warum* 'why' and *wie* 'how' forms also have no concrete notion to attach to it for easy learning for the child. As the acquisitional stages aforementioned show, they are also acquired later. This includes both wh-word and wh-word SD movement. It is apparent from the data that the wh-word acquisition does depend on conceptual complexity. The data also shows that frequency (and language games) play a large role in order of acquisition.

3.3 SD movement of wh-words

3.3.1 Criterion

Wh-movement of the wh-words, not surprisingly, occurs after the acquisition of the wh-word.

In order to consider SD wh-movement of wh-words to be acquired, the following condition must be met.

► Condition #2: there must be at least 2 correct occurrences of SD wh-movement within a specific time period of one month. Short Distance (SD) wh-movement is evidence of movement of the wh-word to Spec-C.

(Simple repetition was excluded. All forms must be consciously used in productions, that is, the children must comprehend their meaning and use them in novel situations.)

•Special condition: for those wh-words with a small production sample, single occurrence of wh-word in combination with movement of the wh-word (SD questions or embedded clauses) is evidence for a wh-word movement to be deemed acquired. Again, all productions exclude repetition and must be novel grammatical productions.

3.3.2 Movement data compilation for Nijmegen corpus

The table below shows the ages of wh-movement for each child. Movement had to follow the criterion set above. Notice that the ages of wh-word movement acquisition generally occurs months after the acquisition of the wh-word. The exceptions, which are explained above, have the same acquisition age of the wh-word and wh-word movement.

While the wh-word *wo* was the first to be acquired by Kerstin and Simone, notice that it is *was* which all children have first acquisition of movement. While frequency could not explain why the wh-word *wo* was acquired earlier in Simone and Kerstin, perhaps it is an explanation for the earlier *was* movement acquisition. In the table below, Caroline is consistent in showing an early acquisition of *was* movement with the wh-word acquisition explored above.

Table 3.5
Acquisition of Wh-word movement

Wh-word/Age	Simone	Caroline	Kerstin
<i>wo</i> 'where'	2;02	2;04	2;07
<i>was</i> 'what'	2;02	2;03	2;05
<i>wie</i> 'how'	2;09	--	2;04
<i>wer</i> 'who'	2;02	2;08	2;09
<i>warum</i> 'why'	--	2;06	--
<i>wem</i> 'whom'	2;11	2;06	--
<i>welche</i> 'which'	2;07	2;10	--
<i>wann</i> 'when'	2;10	2;06	2;03
<i>wieso</i> 'why'	--	2;07	3;02

Table 3.5 shows that there is no clear distinction between wh-word movement forms as with the wh-words. Movement acquisition is variable with no clear wh-word movement taking precedence or a clear pattern. Ages of acquisition are variable across children. An important fact shown with this table is that although *wo* is the first wh-word acquired, *was* wh-word movement is acquired before *wo* movement in 2/3 children. Simone is even considered a special example in this case as she acquires both at the same time and thus following the special condition set out in Condition #1 and #2. Frequency explanations that did not explain a wh-word acquisition of *wo* over *was*, may offer an explanation for why *was* wh-word movement forms occur earlier than *wo* word movement forms.

The following table shows how acquisition of wh-words and their movement compare.

Table 3.6
Wh-words vs. Wh-movement Acquisition

	Avg. wh-word	Avg. wh-movement
<i>wo</i> 'where'	26 months	28 months
<i>was</i> 'what'	25.5 months	27.5 months
<i>wie</i> 'how'	26 months	Variable
<i>wer</i> 'who'	27 months	30 months
<i>warum</i> 'why'	34 months	Variable
<i>wem</i> 'whom'	Variable	Variable
<i>welche</i> 'which'	Variable	Variable
<i>wann</i> 'when'	27 months	31 months
<i>wieso</i> 'why'	Variable	Variable

Notice in the ages that are comparable, wh-word movement (SD wh-movement) occurs after the acquisition of the wh-word. This occurs, of course, for words that are not variable in acquisition. Average word and movement of wh-words are considered 'variable' when not all three children have acquired the wh-word. Those, which are variable in acquisition and explained in Condition #2 'special condition' above, are examined differently. Thus, in some cases, word and movement acquisition occurs simultaneously. Not all children acquire the wh-word that fall under the 'special condition'. It is difficult to compare these words and movement as a whole as they are variable and not all of the children in the Nijmegen corpus have acquired all of the wh-words or their respective SD movement.

Notice that there is a clear division, with but only one exception with *wie*, between those wh-words acquired before 36 months on Table 3.4 above by Bloom, Merkin, and Wootten (1982:1086). Although final results varied in age of wh-word acquisition, there

were some similarities. The 'semantically easier' questions show a definite distinction compared to the other wh-words. However, notice the difference in the average age of acquisition of the wh-word *wie*. It is learned by the Nijmegen corpus by the average age of 27 months (2;03). This contrasts with the findings from Bloom, Merkin, and Wootten (1982). The tables of average wh-word acquisition in both English and German (Nijmegen corpus) are compared below.

Table 3.7
Comparison of English and German findings of avg. wh-word acquisition

	English	German
	Avg. wh-word	Avg. wh-word
<i>wo</i> 'where'	26 months	26 months
<i>was</i> 'what'		25.5 months
<i>wie</i> 'how'	33 months	26 months
<i>wer</i> 'who'	28 months	27 months
<i>warum</i> 'why'	35 months	34 months
<i>wem</i> 'whom'	after 36 months	Variable
<i>welche</i> 'which'	"	Variable
<i>wann</i> 'when'	"	27 months
<i>wieso</i> 'why'	"	Variable

In table 3.7 above, notice that for *wo/was*, *wer*, and *warum* the ages coincide with the English data from Bloom, Merkin, and Wootten (1982). However, all other wh-words do not fall easily into the same pattern as the English wh-words. Wh-words that are considered to be variable are explained above. So wh-words that are not acquired by the age of 4;00 (48 months) and the end of the data sets are deemed as variable when comparing all three children together. It is interesting to note that the 'variable' words acquired are those that occur after the '36 months' mark in the English data. At 36 months not all children have these words, however, it does coincide with the English data, which arrived at the same results. Perhaps further examination is needed to determine

exactly when after 36 months these words are acquired. Notice, also, that for the German children the wh-word *wann* is acquired almost 10 months earlier than the English-speaking children. Differences in data may be due to the fact that the English data involved direct elicitation while the Nijmegen corpus data collection occurred in a naturalistic environment. An important point to note, nonetheless, is that both English and German data have an early acquisition age of *wo/was* 'who/what' forms. The frequency and semantic explanations found in sections 3.2.3.1/2 above work for both languages. Perhaps in a controlled environment, results would not be as variable in German.

3.3.3 Embedded Clauses

While there have been few studies on wh-questions in German, Rothweiler (1990) did examine embedded clauses in German. 'Rothweiler (1990) reports that embedded questions initially appear without a wh-word in German' (Yamakoshi 1999:724). It must be noted here that in all instances examined, the children of both the Nijmegen and Wagner corpora use correct productions of embedded clauses. This contradicts the findings by Rothweiler (1990). Although the embedded clauses require a different word order (no V-to-C movement) than standard questions and declaratives, children produce these with no difficulty and no errors. The children used the embedded clauses with the wh-word at the same time of correct SD wh-movement. Questions of acquisition order according to complexity arise. A possible answer for the question of whether embedded clauses, being more complex, are acquired later than SD wh-movement is shown in the data. Although embedded clauses are more complex than the SD wh-movement because of the different head parameter, children have no difficulty producing embedded clauses

at the same time as SD wh-questions and, unlike with the wh-movement, embedded clauses have no error in production.

(94)

Caroline Age 2;05

guck mal # wie ich mache ? -embedded clause

wie Geld?

Carsten Age 3;06

guck mal was die Oma macht! --embedded clause

woher habn, die denn die Wanner die

The result of no error in embedded clauses and error in SD wh-movement offers support to the head-final structure theory in the German language. If a head first projection is assumed, then the embedded clause is a complicated structure with different head parameters. It is assumed that children would have difficulty acquiring this structure. However, assuming that German is a head final v and I language, it would not be surprising that the children have no difficulty with the embedded clause. This is because there is minimal movement within the structure, therefore making the structure simple. On the other hand, SD wh-movement under a head final structure would be more complicated with inversion and wh-movement occurring. The evidence in this thesis supports the head final structure in that the children have no difficulty and make no mistakes in producing embedded clauses. However, they do have difficulty producing SD wh-movement. While they do acquire this movement at an early age, they also do not acquire it faultlessly as with the embedded clauses.

3.4 Long Distance Questions

De Villers, Roeper, and Vainikka (1990) presented 3;05 to 3;06-year-old children with stories. Questions were asked which required either a LD or a SD answer. This

involved the answering of the question. In other words, children were tested to see if they understood (i.e. comprehension) if the wh-word they are required to answer came from a LD or SD position.

(95)

- (a) Argument extraction question:
Who did the boy ask ___gap 1 to call ___gap 2 ?
- (b) Adjunct extraction question:
When did he say ___gap 1 he hurt himself ___gap 2 ?

(Guasti 2002:210)

Children who have mastered LD questions 'should sometimes answer (a) by indicating the person who was called and (b) by indicating the time he hurt himself (gap2)' (Guasti 2002:210).

Thornton (1990) conducted an elicitation experiment with children aged 2;10 to 5;05. This production experiment was 'designed to evoke LD questions from subject and object positions . . . Most children produced adult-like subject and object LD questions' (quoted in Guasti 2002:210). De Villers, Roeper and Vainikka (1990) and Thornton (1990) had either a direct elicitation or production task. While both of these studies offer interesting speculations into the production and comprehension of LD questions, they do not shed light into the LD productions of German.

As German is comparable to English, similar results were expected in the Nijmegen and Wagner corpus. However, as these data samples occur in naturalistic environments with spontaneous speech, it is difficult to compare De Villers, Roeper and Vainikka (1990) and Thornton (1990) to the German data found. No evidence of LD questions was found in either corpus. Frederik and Gabi's data samples were included to extend the analysis of LD wh-movement as the Nijmegen corpus did not display any such

results. However, upon examination, there is also no evidence of LD movement in Gabi or Frederik's data samples. This may be attributed to sample size of the Wagner corpus. However, as Thornton (1990) has adult-like productions from her children from the ages of 2;10 to 5;05, one would expect the Nijmegen data sample to be sufficient.

Again, there were no results of LD unveiled in either corpus. With the similarities between the languages, one question arises: Why is there no evidence of LD movement or partial movement from either corpus? Perhaps a direct elicitation or comprehension tasks for German children would also offer some interesting results for the German language. As LD questions and partial wh-movement questions are complex, perhaps they would not be found in colloquial speech in a naturalistic environment. Perhaps direct elicitation tasks are necessary to determine competence. Indeed, another area for further research has been revealed.

Chapter 4

This thesis examined three aspects of wh-acquisition in German: wh-word acquisition, SD wh-movement acquisition (wh-word movement) and LD acquisition. It is revealed that wh-word acquisition shows a clear distinction between the wh-words *wo/was* and other wh-words. These wh-words are acquired before all other wh-forms. Frequency and semantics have been used to explain this phenomenon. While frequency does not explain the reason why the wh-word *wo* is acquired first in 2/3 children, it may explain why *was* is the first wh-word to undergo SD wh-movement. Context of conversation is used to explain the prevalence of *wo* forms over *was* forms amongst the Nijmegen corpus.

A surprising result from examination of the data is that there are no clear patterns in the SD wh-acquisitions. Many of the children have a variable acquisition of SD movement of the wh-words they have acquired. By the age of 4;00, many of the SD wh-movements are not yet acquired. One clear result from the analysis of SD movement is that *was* SD wh-movement is acquired before *wo* SD wh-movement. Frequency, which could not explain the prevalence of *wo* wh-words, can be used to explain the early acquisition of *was* SD wh-movement.

It is also surprising to find no LD or partial wh-movement in any of the data samples. As these forms can be evidenced in English, one would assume examples of LD movement would be found, especially in the Wagner corpus with the older German learners.

One clear observation made for all data samples is that in a naturalistic environment, results are variable. Results from the English data involved direct

elicitation of *wh*-forms. Perhaps in a controlled environment structures, which seem elusive in German, would have been found.

This thesis, in analysing the German data, also discovered several questions for further research. As much research is completed on English and other languages, it is important to place some focus on the German language. Some questions that arose for further research include the following:

- A) Is there more evidence of templates in syntax? As templates have been used to explain language acquisition in other areas of linguistics, is there further evidence of children using templates to acquire syntactic structures?
- B) Why does Simone only use templates to learn her '*wo/wer*' forms only? Is there a reason why she would choose these *wh*-words over all others to employ a template?
- C) If data samples show an overall higher frequency of *wh*-word *was*, why is the *wh*-word *wo* acquired first? Is it simply attributed to context of conversation?
- D) If German and English are similar in structure, why is there no evidence of LD or partial *wh*-movement in the German data when there is ample evidence in the English studies? Are direct elicitation tasks needed to determine how/when German children acquire LD and partial *wh*-movement?
- E) An interesting question for further exploration is that if Caroline is capable of producing grammatical questions, why does she produce the majority of her questions without the finite verb? Why, also, if Caroline is capable of producing grammatical questions does she use frequent *wh*-drop and *wh*+DP questions?

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