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How good are children at learning inflection?

According to some researchers, children are extremely fast and efficient inflection learners (e.g. Wexler, 1998; Hyams, 2002, 2005). Other researchers, however, view inflection learning as a gradual process, which proceeds through developmental changes and extends over an extended period of time (e.g. Pinker, 1984; Clahsen, 1990; Blom, 2003, 2008; Rus, 2007).

Wexler (1998: 43) made his position explicit by proposing that children are ‘little inflection machines’ who learn the inflectional properties of their language almost instantaneously – a phenomenon that he refers to as Very Early Knowledge of Inflection (henceforth: VEKI). However, as we will see in this chapter, the available data do not provide unequivocal support for Wexler’s claim. It will be shown that the studies’ contradictory results are, to some extent, due to the fact that the studies differ from one another in the methodologies used for data collection as well as in data analyses techniques. The conclusion of this chapter will be that, given the insufficient empirical support from the available data, new evidence is necessary to assess the claim that children have very early knowledge of inflection. Moreover, an overview of relevant literature suggests that VEKI may need to be complemented by a hypothesis that emphasizes the role of salience in the linguistic input.

The chapter is organized as follows: More background on VEKI is given in Section 1.1. In Section 1.2, four issues are discussed that may cast doubt upon VEKI. Section 1.3 presents the aims of the thesis, and finally, Section 1.4 offers a detailed, chapter-by-chapter outline of the thesis.

1.1 Children as little inflection machines

Wexler (1998) claims that children have knowledge of inflection at the earliest observable stage of language production. This phenomenon is regarded as

‘Very Early Knowledge of Inflection’ and captured under the VEKI hypothesis stated in (1).

- (1) *At the earliest observable stage (from the time that the child enters the two-word stage around 18 months of age) the child knows the grammatical and phonological properties of many important inflectional elements in their language.*
(cited from Wexler, 1998: 25)

Wexler’s basic idea (e.g. Wexler 1990, 1994, 1998, 1999) goes contrary to the assumption of, what he calls, the ‘standard view of grammatical development’ (Wexler, 1998: 24). The standard view of grammatical development assumes that those aspects of grammar which depend on experience, develop slowly, while that those aspects of grammar which are innate are present very early. In contrast, Wexler argues that some innate aspects of grammar emerge late, whereas grammatical aspects that must be learned are in place very early. This means that some grammatical development is determined by maturation, and unfolds over time. Grammatical development of this sort is argued to be programmed according to a genetic blueprint that is the same for all children across all languages. Language learning that is dependent on experience may take place very early on in development (according to VEKI, before 18 months). This implies that children develop language with minimal experience and little environmental influence. To support his claim, Wexler addresses root infinitives, which are infinitival verbs that appear in finite matrix clauses, where target grammar requires a tense- and/or agreement marked verb. According to Wexler’s argumentation, children’s non-adult-like grammatical productions (i.e. root infinitives) are not simply the result of a learning process but, instead, are linked to “a genetic program that determines the structure and timing of grammar in the human mind/brain” (Wexler, 1999: 61).

Inflection, under the standard view, is thought to be an experience-dependent property. Further, it is claimed that inflection appears late in development, and that learners’ incorrect grammatical usage can be attributed to the fact that there is much to be ‘learned’ (e.g. Pinker, 1984; Clahsen, 1990; Blom, 2003, 2008; Rus, 2007, Blom and Wijnen, submitted). More specifically, under the standard view, acquisition of inflection does not occur as an abrupt change, i.e. there is no immediate switch from non-adult to adult grammar. Instead, under this view, acquisition of inflection is viewed as a learning process that spreads over a longer period of time.

Contrary to the standard view, Wexler argues that very young children already know a lot about verbal inflection. For example, Poeppel and Wexler (1993) analyzed the spontaneous speech of a 25-month-old German-speaking boy: Andreas, and found that: (i) 1st and 3rd person singular subjects always co-occurred with the correct verbal agreement; (ii) 2nd person singular subjects were rare and; (iii) all agreement errors (in total, seven out of 231 possible utterances) occurred with plural subjects. In addition to Andreas' data, Poeppel and Wexler also discussed evidence from the data of Clahsen (1986), and concluded that, when young German children (aged 2;1 – 3;6) produced verbal inflection, they usually also chose an appropriate subject which agreed with it.

Harris and Wexler (1996) showed a similar process in English, whereby children do not err with regard to subject-verb agreement relation: If a subject has certain morphosyntactic features, then children's verbal inflection will be in agreement with these features. Harris and Wexler documented children's accuracy with verb inflection on all first person singular nominative pronominal subjects. They analyzed transcripts of ten children (age range: 1;6 – 4;1) and found that the children very rarely used 3rd person singular verbal forms with first person singular subjects (three cases out of more than 1,700 sentences). That is, children did not say sentences such as: *I likes ice cream*. The same pattern held for the possessive *have*, i.e. *has*. Errors such as *I has no shoes* were not attested in the corpora with 1st person singular subjects.

There are also studies which investigate this phenomenon in languages that are assumed to be more inflectionally rich than those mentioned above, for example, Spanish, Italian, and Catalan. These studies (summarized in Table 1.1) report agreement errors under 5%; a finding that is in line with those reported in Wexler (1998).

Table 1.1: Overview of child's data with low agreement error-rate in Romance languages

Language	Child	Age	N of utterances	Error rate	Source
Catalan	Gisela	1;10-2;6	81	1,20%	Torrens (1995) in Montrul (2004)
Catalan/Spanish	Josep	1;9 -2;6	136	3 %	Torrens (1995) in Montrul (2004)
Catalan/Spanish	Marti	1;9 -2;5	178	0,56%	Torrens (1995) in Montrul (2004)
Italian	Diana	1;10-2;6	610	1,50%	Guasti (1994) in Hyams (2005)
Italian	Claudia	1;4 -2;4	1410	3 %	Pizzuto and Caselli (1992) in Deen (2002)

Based on early speech production data, Wexler (1998: 43) concluded that it is very hard to find examples of “central inflectional material” that would cause difficulty for young children. According to Wexler (1998: 42), “there may be *some* inflectional properties that are not known at the earliest stages, since these *must* be learned. But in general, the morphemes of verbal agreement *do* seem to be known, in the sense that their phonology is in general known *and* their grammatical features are known”. This suggests, for example, that English-speaking children know that the phoneme $-s$ is specified as [3rd PERSON; SINGULAR; PRESENT].

Based on this explanation, however, one might wonder why English-speaking children still produce utterances like *Daddy like coffee* (example taken from Bloom, 1970). If agreement morphemes were acquired so early, the expectation would be that the $-s$ affix, which marks the 3rd person singular, has already been learned. Wexler contends that these errors in English can be explained on the basis of the distinction between finite and non-finite forms. He argues that children go through an Optional Infinitive stage, where children use non-finite forms interchangeably with finite forms. During this stage, however, children do in fact know the properties of both finite and non-finite

clauses. Things such as word order, and the placement of negation, for example are accurate and in tact. The notion ‘Optional Infinitive stage’ refers to a cross-linguistic developmental stage in which children between approximately 1;5 and 3;0, opt for an infinitival verb in a matrix clause, where the adult grammar would require a finite form. The example in (2) shows some examples from early child Dutch, French, Russian and English (examples taken from Haegeman, 1995; Pierce, 1989; Brun, Avrutin and Babyonyshev, 1999 and Brown, 1973, respectively).

- (2) a. *gras eten*
grass eat-INF
- b. *Michelle dormir*
Michelle sleep-INF
- c. *mama spat'*
mummy sleep-INF
- d. *he tickle a feet*
he tickle-INF a feet

Instead of arguing that children drop the 3rd person singular inflection, as one might assume (e.g. Brown, 1973), Wexler claims that children are producing genuine infinitives (Schütze and Wexler, 1996; Schütze, 1997 but see Blom, 2007).

The empirical evidence summarized in this section suggests that young children are virtually errorless when it comes to producing (verbal) agreement inflection. This observation led Wexler to the conclusion that children are ‘little inflection machines’ as they seem to have knowledge of the grammatical and phonological properties of inflection from the very onset of their language production (Wexler, 1998: 43).

1.2 Some doubts about Very Early Knowledge of Inflection

Wexler (1998: 43) makes a strong claim that children are ‘little inflection machines’. After all, children do seem to know a good deal of inflection before they even enter the two-word stage. Wexler also recognizes that “there is no reason to think that all inflectional material is known by the time that children are producing language (at the age of one year on average)” (1998: 42) and that “so many inflections remain to be investigated, and there could be all sorts of reasons that really do make certain inflections difficult to master” (1998: 43). Basically, by calling children ‘little inflection machines,’ Wexler is emphasizing the fact that children need very little time to master inflection.

However, as pointed out by Wexler himself, the available evidence is not sufficient to conclude, inconclusively, in favor of his claim. Nearly all the available data come from studies on children’s spontaneous speech production. Strictly speaking, it cannot be proved, on the basis of production data alone, that children know inflection before they enter the two-word stage. At this age, children’s one-word utterances simply do not provide reliable evidence for morphosyntactic agreement. According to Wexler, in order to either support or reject VEKI, it is necessary to conduct cross-linguistic tests with young infants, which take advantage of new experimental techniques such as the Headturn Preferential Procedure (Kemler Nelson, Jusczyk, Mandel, Myers, Turk and Gerken, 1995; Jusczyk, 1998). Furthermore, there also exists empirical evidence which seems to contradict VEKI. I will turn to some of these findings in the following.

Although VEKI is a very interesting and challenging hypothesis, there are some empirical issues that may cast doubt on the claim that children know the grammatical and phonological properties of agreement inflection at a very early age. In this section, I will pay attention to four main issues and discuss why they lead to doubts with regard to VEKI. First, the empirical support for VEKI allows for two possible interpretations: The high accuracy percentages in two-year-olds could mean that children possess early knowledge of agreement inflection. Alternatively, it could mean that children memorize separate inflectional forms in the lexicon. Second, new data-driven research provides evidence that, depending on the type of data-analysis, the amount of agreement errors can rise up to 50%. Third, cross-linguistic studies demonstrate variation in the developmental speed of inflection acquisition (e.g. paradigmatic contrasts in verbal paradigm in Turkish emerge earlier than in English). The fourth and

final issue that casts doubt on VEKI has to do with the variation in the speed of development between inflectional domains (verbal vs. nominal). It will soon become clear that the third and fourth issues just mentioned (variation across languages and across domains) pose the same problem for VEKI, namely that some inflections appear considerably earlier than other inflections; sometimes up to two years earlier. In the following I will focus on each of these four issues in turn in more detail.

(1) The empirical support for VEKI is ambiguous.

In evaluating the empirical support for VEKI, I would like to argue that the data used by Poeppel and Wexler (1993) and by Harris and Wexler (1996), as reported in Wexler (1998), are not rich enough to support VEKI. The main pitfall of these studies is that, nearly all of the conclusions are based on collections of spontaneous speech. Although spontaneous speech data enables researchers to accurately document children's emerging inflectional forms, it does not allow researchers to determine the degree to which a child's speech is productive.

There are three major limitations in using spontaneous speech when exploring inflection development. First, spontaneous speech data are likely to contain little paradigmatic variation. That is, the distribution of paradigmatic forms is dependent on the child's individual preference and on the topics that a child chooses to discuss. This may make it impossible to determine why a particular morpheme is absent from spontaneous speech. Research shows that children tend to produce verbal inflection for 1st and 3rd person singular, and that they rarely produce verbs in the 3rd person plural (see, for example, Poeppel and Wexler, 1993; Wijnen and Verrips, 1998; Blom and Wijnen, submitted). This observation could provide evidence for: (i) the absence of an inflectional morpheme due to a lack of linguistic ability; (ii) the absence of an inflectional morpheme due to a lack of exposure; or (iii) for the absence of an inflectional morpheme due to a lack of appropriate discourse contexts in the sample.

Second, there is little variation in children's lexical production in the early developmental stages. That is, children tend to use only a few different verb types. This is especially true when one considers the actual size of available corpora upon which, a majority of the research is based. Blom and Wijnen (submitted) analyzed the early utterances of six Dutch children aged 1;7 – 3;4.

Here, they showed that children in the initial stages (average MLU = 1.125) only used between two and nine different verbs (types) with finite inflection. This finding can be interpreted in two ways. First, it could indicate that children have inflectional knowledge and attach an inflectional morpheme to a verb stem (e.g. *loop* + *t* 'walk + s'). Even if this were the case, the productivity of inflections cannot be assessed because the children's productive lexicons at this age are so small. The alternative interpretation is that children's early inflections are rote-learned and that children use them repeatedly without any morphological analysis (e.g. *loopt* 'walks').

Third, the most convincing evidence that children use inflections productively come from data showing that children say something that they could not possibly memorize from the input (Berko, 1958; Pinker, 1999). Productivity is an indication that a child is making use of inflectional rules. Some indications of productivity in spontaneous speech include children's use of inflection with self-invented words, and substitution errors. In general, children's active vocabulary at two years is not very rich (according to Aitchison (1994) about 500 words). It is therefore, not very likely that researchers will find self-invented words in the corpora of two-year-olds.

Given these three limitations, we can conclude that spontaneous speech samples are not adequate to assess the productivity of children's inflectional knowledge. Consequently, they are also inadequate to empirically test VEKI. The data obtained from spontaneous speech of two-year-olds are simply too ambiguous, which leads to a general disagreement about children's knowledge of inflection at this stage: Some researchers interpret the information provided by spontaneous data as evidence that two-year-old children are extremely good inflection learners. Others, however, argue that children's early inflections are rote-learned and appear only in a very limited number of contexts (schemas) (Goldberg, 2003; Tomasello, 2003) or as word specific paradigms (Pinker, 1984).

In order to assess to what extent developmental changes play a role in children's acquisition of inflection, one must monitor children's development over time. One well-known phenomenon concerning developmental changes is the *U-shaped curve*, which characterizes children's development of past tense morphology in English (e.g. Marcus, Pinker, Ullman, Hollander, Rosen and Xu, 1992; Pinker, 1999). As illustrated in Figure 1.1, a U-shaped curve describes a course of development that begins with good performance, is followed by a decrease in success, and then finally, good performance once again.

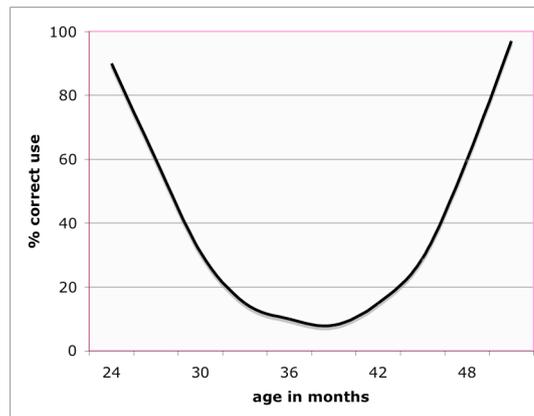


Figure 1.1: A fictive example of a U-shaped developmental curve.

A U-shaped curve predicts that errors are absent in early stages. Since Poeppel and Wexler (1993) did not analyze Andreas' data longitudinally, and since they only focused on a single developmental point (age 2;1), it is not surprising that their analysis revealed very few errors. Their results, for example, could simply represent the initial stage of the U-shaped developmental curve. Thus, without considering children's development over time, it was not possible to gain a full understanding of the child's inflectional development.

While Poeppel and Wexler's data do not speak explicitly against the claim that children have very early knowledge of inflection, their data are incomplete since the authors do not consider the entire course of development in their analysis. The extremely high percentage of correct inflections at this age was not necessarily an accurate portrayal of the children's developmental curve. Further, the lack of errors at this single stage allows for different interpretations: The errorless performance could also indicate, for example that children's early inflections are simply memorized in the lexicon. In sum, the high rate of accuracy found in the spontaneous data of two-year-old children does not provide unequivocal support for Wexler's claim.

(II) Other empirical studies report higher error-rates.

Recent findings from child Dutch, Spanish and Italian, indicate that children's performance was not as flawless as VEKI predicts. These studies broke down children's production data by looking at their performance with specific paradigmatic cells. In addition, some of the studies also analyzed children's performance over time. Overall, these studies demonstrated that children made considerably more errors than the rates reported in Table 1.1. In the following, I will expand on the nature of these studies in more detail.

De Haan (1996) documented the inflection development of four Dutch children from 1;8 to 3;4, whose data was taken from the Groningen corpus (Bol, 1996), which is available from CHILDES web database (MacWhinney, 2000). De Haan demonstrated that all four children followed the same developmental sequence, and that this sequence was in line with the first two stages of the U-shaped curve as mentioned previously. Specifically, the errorless stage was followed by an increase of inflection errors. Although data was not available for these children beyond 3;4, we can assume that the children eventually ridded their speech of inflection errors, thus completing the U-shaped curve. In the longitudinal data, De Haan focused on errors that Dutch children made with verbal inflection in the present tense. She distinguished between person and number agreement and observed that, in the initial stages, children did not make any errors in either domain. At 2;5, however, number agreement errors began to appear, and just one month later (2;6), errors with person agreement were also present. At the children's worst performance, De Haan reported that the overall error-rate reached 29%.

In an analysis of the verbal paradigm in two Spanish-speaking children (Juan, age: 1;10 – 2;5 and Lucía, age: 2;2 – 2;7), Aguado-Orea (2004) and Aguado-Orea and Pine (2005) demonstrated that, when inflectional contexts were collapsed altogether, the overall error rates in child Spanish appeared to be extremely low (4.4% and 4.5%). However, when the inflectional contexts were analyzed separately, the error rates in 3rd person plural present tense reached higher than 50%. According to Aguado-Orea and Pine, the overall percentage of accuracy was inflated because of children's high accuracy rates in the 3rd person singular. When the inflectional contexts were analyzed separately, the error rates increased dramatically. Thus, whereas 2nd singular forms in Juan's sample showed a 10.2% error rate, Lucía's error rate raised to almost 23%. This was even higher in the case of 3rd person plural, where Lucía performed worse than chance. When 3rd person singular was discarded from the count, the

overall error rate raised to 15.2% for Juan and 27.5% for Lucía. Moreover, roughly 75% of all verbs produced in the samples were highly frequent verbs. In the samples of both children, the same distributions were found with respect to both verb types and verb tokens. The most frequent verbs produced in the samples were: *querer* ‘to want’, followed by *tener* ‘to have’, *poder* ‘can’, and *poner* ‘to put’. Aguado-Orea and Pine also showed that the error rate also increased when the most frequent verb tokens were excluded from the analysis.

Differences in accuracy across inflectional contexts were also reported in a cross-sectional investigation of children’s verb inflection in Italian (Leonard, Caselli and Devescovi, 2002). The study used elicitation tasks in order to explore the use of verbal inflections by children from 2;5 to 7;1. Leonard et al. reported that children in all age groups were equally accurate in using 3rd person singular. In this condition, all groups reached an accuracy level of 97.5% or higher. Significantly lower accuracy levels were found in the two-year-old group (age range: 2;5 – 3;1) for 1st person plural, 3rd person plural and the 1st person singular. The older children (3;1 – 7;1 years) reached above 90% accuracy in all conditions (Brown, 1973). Interestingly, the outcome of the error-analysis showed that children’s errors most often differed from the target construction by a single feature of either number or person. The substitutions appeared in the following directions (i) 3rd person singular replaced the 1st person singular (ii) 1st person singular replaced the 1st person plural and (iii) 3rd person singular replaced the 3rd person plural.

In sum, the data from child Dutch, Spanish and Italian reveal that children’s output can change over time and that error rates can vary considerably across inflectional contexts. Moreover, factors such as frequency may also play a role. Given the higher error-rates reported in these studies, one could easily conclude that children are less perfect inflection learners than VEKI would predict. However, to draw such a conclusion, more information about the data is necessary. For example, it might be the case that different patterns emerge, depending on how researchers collapse different types of verbs (lexical, modals, auxiliaries etc.), or verbs from different conjugation classes. This issue is important because it might have significant consequences for the interpretation of the findings. That is, children may have knowledge of agreement but might still misclassify inflectional paradigms. Subsequently, misclassification of a paradigm may cause higher error-rates in children’s output. I will return to this issue in Chapter 7.

(III) *There is variation across languages.*

Cross-linguistic studies report that children correctly produce inflections before the age of two if the inflections are regular and salient. The development of inflection is slowed down when inflections have an opaque character (e.g. Slobin, 1985; Peters, 1985; Dressler, 1997; Bittner, Dressler and Kilani-Schoch, 2003; Voeikova and Dressler, 2002; Laaha and Gillis, 2007).

Bittner et al. (2003) provided a collection of detailed longitudinal analyses of children's production of verbal inflection in fourteen different languages. The data samples were based on naturalistic, production data, beginning at the child's speech onset (age range: 1;3 – 2;0) and lasting until the age of about two and half years (range: 1;10 – 3;8). The research focused on the emergence of verbal mini-paradigms, which are, from an adult's perspective, incomplete paradigms. Based on this view, mini-paradigms represent inflectional productivity, and are found whenever three phonologically unambiguous and distinct inflectional forms of the same lemma have emerged and recurred in spontaneous production in various contexts in the same month of recording (Kilani-Schoch and Dressler, 2002; Bittner et al., 2003). In other words, in order to be considered a mini-paradigm, a child has to produce inflections in paradigmatic and lexical variation during a short period of time.

According to this criterion, Bittner et al. report that, from the onset of speech production, it takes only two to four months for children acquiring Turkish, Finnish, Russian and Croatian, to produce their first verbal mini-paradigms. The same process takes children acquiring Yucatec Mayan, Italian, French, Dutch, German and English at least twice as long. For the sake of comparison, mini-paradigms appear at 1;7 in Turkish (Aksu-Koç and Ketrez, 2003) and at 2;5 in English (De Villiers and De Villiers, 1985; Gülzow, 2003). The order of inflection development across languages presented by Bittner et al. seems to reflect properties of the inflection systems: Turkish children have little difficulty with inflection because of the morphophonological regularities, whereas English children lag behind due to the opacity of the English verbal paradigm. It should be noted, however, that conclusions made in Bittner et al. are based on investigations of a relatively small number of children. More specifically, ten out of fourteen languages in this sample were case studies. And while these studies do indeed show valuable developmental tendencies, they lack the power to draw generalizations.

(IV) There is variation across inflectional domains.

In addition to cross-linguistic variation in acquisition of inflection, there are also studies that report on variation across inflectional domains. Given that VEKI is not limited to the verbal domain, developmental asymmetries across domains (e.g. between verbal and nominal domain) are not to be expected. However, in an experimental investigation of verbal and nominal inflections by Hungarian children between 2;10 and 4;7, Gábor and Lukács (2006) demonstrated that noun inflections (i.e. cases) were productive in all age groups whereas verb inflections (i.e. person and number agreement) were much slower to develop, reached ceiling level at 4;7. Gábor and Lukács tested children's inflectional knowledge by employing nonce nouns and nonce verbs and eliciting their production. Their experiments revealed a striking difference between children's success rate with nouns and verbs. In fact, the authors reported a difference of nearly two years. Interestingly, verbal and nominal inflection in Hungarian have different typological characteristics: Nominal inflection is typically agglutinating whereas verbal inflection has more fusional properties. This pattern within the language is analogous to a cross-linguistic difference, between Turkish and Italian. Recall from above that Turkish children are faster than Italian children at building inflectional paradigms. It is thus possible that the agglutinating structure affords for easier learning, and that this tendency holds both within a single language, and across languages.

A similar developmental asymmetry is reported by Pheiler (2002) for children learning Yucatec Mayan. Pheiler demonstrates that verb inflection with agglutinating properties appears around age two, whereas in nominal inflection, which is predominantly fusional in nature, no case markers were attested until the end of the analyzed periods at 2;3 and 2;4.

However, the developmental variation across domains does not concern only the fusional/agglutinating opposition. Developmental variation between nominal and verbal inflection has also been reported within highly fusional languages. For example, Slobin's (1985) comparison of verbal and nominal inflection in Slavic languages (Polish, Russian and Servo-Croatian) revealed that the inflection in the nominal domain lagged behind those in the verbal domain. In contrast, based on cross-linguistic investigations of fusional languages collected in Bittner et al. (2003) and in Voeikova and Dressler (2002), Dressler, Stephany, Aksu-Koç and Gillis (2007) concluded that noun morphology is

acquired faster than the verb morphology. How might one explain this contradiction?

Crucially, Dressler et al.'s (2007) comparison between verbal and nominal inflection did not make a distinction between agreement inflection that is dictated by the syntax, and inherent inflection, which is syntax-independent (see Booij (2002) for a detailed description). In other words, Dressler et al.'s conclusion was based on an analysis where all morphemes that were encountered in children's spontaneous speech were collapsed (i.e. morphemes encoding inherent inflection, agreement inflection, derivational morphemes and compounds). As a consequence, the data did not provide information solely about acquisition of agreement inflection, but rather about the acquisition of morphology in general. When the focus is only on agreement inflection, we observe differences in verbs and nouns. In particular, the authors found that, by the end of the study, children produced very few paradigmatic contrasts with nominal inflection (age range: 1;3 - 4;8) (data collected in Voeikova and Dressler, 2002). With verbal inflection, however, (data collected in Bittner et al., 2003) all children made at least two paradigmatic contrasts by the end of the study (age range: 1;10 - 3;8). Based on this more refined comparison, and on the findings reported by Slobin, I can conclude that, in fusional languages, verbal inflection develops earlier than nominal inflection.

1.3 Aims of the thesis

VEKI's claim that children are 'little inflection machines' undoubtedly challenges the prevailing view and raises an interesting debate with respect to acquisition of inflection. The discussion of relevant literature showed that the available data from early developmental stages might not be sufficient in order to assess VEKI in a reliable way. It has been observed that the rates of accuracy in inflection differ across paradigmatic contexts and that acquisition of inflectional morphemes varies across languages as well as across domains. Obviously, Wexler is aware of these differences and leaves some space for variation. He states "inflectional properties interacting with the innately unfolding aspects of inflection create quite different surface effects in the development of different languages" (Wexler, 1998: 26). Wexler, however, does not address this issue in detail. Similarly, with respect to VEKI, he does not specify what 'the many important inflectional elements are, nor does he make explicit, what specific grammatical and phonological properties children at 18 months are expected to know. VEKI does not make specific predictions about

which inflectional morphemes are acquired earlier than others, nor does it state whether or not there is a default within an inflectional paradigm. In this respect, testability of VEKI is very limited. To empirically assess VEKI, I interpreted it as an empirical generalization, which states that children have full knowledge of agreement inflection at the age of 18 months. Note that my formulation of VEKI is slightly different from the original formulation cited in (1), as it is stronger. This reformulation is necessary in order to make the generalization expressed by VEKI falsifiable.

With regard to the process of acquisition itself, VEKI represents a maturational account in which children's failure to produce correct inflectional forms is often ascribed to immature representations. Although nobody in child language research would deny the fact that language acquisition depends on both biology and experience, the extent to which both processes are involved remains debatable. In the case of inflection, it could be that some morphemes are acquired later than others, simply because they are unsalient and hence, not easily accessible to the language-learning child. If one wants to accurately portray the process through which children acquire inflection, it is crucial that one complements an internal account, that is, one which focuses on maturation as driving inflection, with an external account, which focuses on the role of salience in the linguistic input.

In theory, there are two ways to approach the issue of maturation vs. salience in children's inflection development. The first approach would be to pinpoint how the internal mechanisms drive inflection development. The second approach would be to investigate how salience contributes to changes in the developmental process. In the present study I choose to approach the acquisition of inflection by exploring the role of the salience. Thus, although I acknowledge that children are genetically equipped to learn a language, I do not make the a priori assumption that the changes that occur reflect a general maturational pattern. Instead, I focus on the nature of the salience, and its impact on inflection development.

This study explores the acquisition of inflection by monolingual Dutch children. It can be viewed as a follow-up of several investigations of the early acquisition of verbal morphosyntax (e.g. Schlichting, 1996; Wijnen and Verrips, 1998; Blom, 2003, 2008). These studies, however, focus primarily on the acquisition of verbal inflection, thus, data regarding the development of inflection in other areas is lacking. Further, the available studies focus primarily on children's spontaneous speech data. These studies would surely be

complemented by experimental data. The current study aims at filling in these gaps by conducting experiments which investigate children's acquisition of verbal and adjectival inflection, and compare the two developmental trajectories with one another.

The aim of the present investigation is twofold. First, based on new experimental data from child Dutch, the study attempts to verify the claim that children have very early knowledge of inflection. Second, the study investigates whether Dutch children's developmental patterns with inflection can be accounted for in terms of salience.

In order to assess whether Dutch children know inflection from an early age, this study examines the inflectional productivity in monolingual Dutch children between the ages of three and eight and the perceptive sensitivity to inflectional patterns in Dutch infants aged 18 and 19 months. In order to overcome limitations of spontaneous speech data, the knowledge of verbal and adjectival inflection was tested by means of elicited production tasks. In verbal inflection, children were tested with nonce verbs in order to control for productive use of inflection rules. In adjectival inflection, which constitutes a rather complex agreement system, the productivity of rules was measured by controlling for grammatical gender assignment. I did not perform the elicited production tasks with children younger than three years. This decision was based on three factors: First, it is difficult to maintain the same experimental control in elicitation tasks with children younger than three (see also Thornton, 1996 for detailed discussion about using elicited production tasks). Second, there are indications that Dutch children start using finite forms with lexical verbs around the age of three (Blom, 2003). Until that stage, Dutch children show a strong preference for using infinitives or an inflected auxiliary verb in combination with an infinitive (e.g. Blom, 2003). Third, there are indications that Dutch children start using *determiner-adjective-noun* combinations (which is a prerequisite for testing production of the adjectival inflection) around three years (Rozendaal, 2008). In order to assess the empirical generalization based on VEKI, it was also necessary to learn about the inflection development of younger learners of Dutch. As an alternative to elicited production (which is not possible at young ages), I investigated children's early sensitivity to finite inflection in a perception experiment, using a Headturn Preference Paradigm (Kemler Nelson et al., 1995). This experiment produced reliable, experimentally controlled results about 18- and 19-month-old infants' perception of correct and incorrect inflection.

1.4 Outline of the thesis

In Chapter 2, I expand on the nature of salience. I discuss five salience factors and their influence on the order in which children learn inflectional morphemes. I will argue that salience of any given morpheme is not based on one single factor alone, but instead, on a variety of factors.

Chapter 3 provides a description of the Dutch verbal and adjectival inflection systems and introduces a procedure that is used to assess the level of salience within and across inflectional paradigms. After assessing the salience of the individual inflections, I assess the overall level of salience by accumulating all factors. Based on the level of salience, I formulate a number of specific predictions for the acquisition of verbal and adjectival inflection in Dutch. The remainder of Chapter 3 provides a detailed discussion of the existing empirical observations and relates them to the predictions. Towards the end of Chapter 3, research questions are presented.

Chapters 4 through 6 report on my empirical investigation, where I address the research questions that were formulated in Chapter 3. Chapter 4 examines the acquisition of finite verb inflection in children between three and six years by analyzing elicited production with existing and nonce verbs in various inflectional contexts. Chapter 5 investigates sensitivity of finite inflection in 18- and 19-month olds by means of Headturn Preference Paradigm. The focus of the perception experiment is on whether infants can detect agreement violations in 3rd person singular and 3rd person plural contexts. Chapter 6 investigates the acquisition of attributive adjectival inflection in children between three and eight years by using elicitation tasks.

The final chapter provides a summary of the main conclusions from the preceding chapters and presents a section with suggestions for future research.