

Early Child Bilingualism

Cross-Linguistic Influence in the Simultaneous Acquisition of German and English

by

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Abstract

This thesis investigates cross-linguistic transfer in a bilingual German-English child, Kayla, age 2;10 to 5;06 years. The study draws on data from elicited production probes in addition to spontaneous production data in order to provide a robust data set for investigation.

Recent literature assumes that bilingual children differentiate their two languages but endorses the possibility of cross-linguistic influence. It has been proposed that cross-linguistic influence can take one of three forms: transfer, acceleration or delay in the acquisition of certain grammatical constructions (Paradis & Genesee, 1996). The conditions under which cross-linguistic influence occurs have been the subject of considerable debate. One prominent proposal by Hulk & Müller (2000) suggests that overlap in the two languages is a key factor for cross-linguistic influence when it involves a grammatical structure influenced by properties at the interface of linguistic modules. Another recent proposal by Jakubowicz (2006) proposes that derivational complexity is the critical factor conditioning transfer.

According to Hulk & Müller's proposal, verb movement is a candidate for cross-linguistic influence because German and English exhibit considerable surface overlap in regards to word order, giving rise to a potential verb second (V2) analysis of both languages. In addition, V2 implicates the C-domain, which interfaces with pragmatic information. On the other hand, Jakubowicz (2006) does not anticipate transfer of V2 as this involves a derivationally more complex structure. The child data presented in this thesis find support for Hulk & Müller's proposal.

The study focuses on an investigation of the child's simple negative sentences and interrogatives, both of which potentially expose transfer of V2 properties to English. The current data reveal that the child's development of German is similar to monolingual peers, while her English exposes cross-linguistic influence. At the first stage, the V2 property is transferred to English, resulting in non-adult like utterances such as *'That opens not' (KAY, 2;11 years) and *'What wants you eat?' (KAY, 3;06 years). Second, raising finite main verbs from V to C (via I) in English causes acceleration in the proportion of Inflection in the child's utterances. In a later stage, the child's negative sentences conform

to the early productions of monolingual English speaking children. The child produces sentential negation exclusively with the adverbial form *not*, which is consistent with negation in German. This permits later productions such as *'It don't goes this way' (KAY, 4;01 years). The child is considerably delayed in the acquisition of the head form of negation ('*n't*') and consequently use of do-support and use of negative auxiliaries such as *doesn't*.

Statement of Candidate

I certify that the work in this thesis entitled “**Early Child Bilingualism: Cross-linguistic influence in the simultaneous acquisition of German and English**” has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree to any other university or institution other than Macquarie University.

I also certify that the thesis is an original piece of research and it has been written by me. Any help and assistance that I have received in my research work and the preparation of the thesis itself have been appropriately acknowledged.

In addition, I certify that all information sources and literature used are indicated in the thesis.

The research presented in this thesis was approved by Macquarie University Ethics Review Committee, reference number: 5201001170 on 5.10.2010.

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To FKLM.

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Chapter 1: Introduction and Exposition

1.1 From language fusion and separation to cross-linguistic influence

There is a rapidly growing body of research articles and numerous books on the issues surrounding bilingual first and second language acquisition. Superficially it seems as if we already understand the internal and external factors guiding the acquisition process. However, the language acquisition process remains one of the biggest puzzles in linguistics to date.

This puzzle becomes even more complex when children grow up learning more than one language. While it is widely accepted that bilingual children separate their languages from early on, many linguists also agree that the different language systems are not acquired in complete isolation. Rather the languages have the potential to interact with each other, leading to cross-linguistic influence. Since the late 90's, research has focused on three manifestations of such cross-linguistic structures proposed by Paradis and Genesee (1996): transfer, acceleration and delay. Almost two decades after this proposal about these different manifestations of cross-linguistic influence, the processes are still not well understood. Many studies have found contradictory results concerning internal and external factors motivating the occurrence and resolution of cross-linguistic influences. With new data at hand from a German-English bilingual child, Kayla, this thesis provides further evidence for cross-linguistic influence in the domain of verb movement, which become noticeable in sentential negation and (negative) interrogatives. While Kayla masters the German V2 properties at the same competence level as her monolingual peers, she displays non-target verb movement patterns in negated matrix clauses and interrogatives in her English. Most of her English negative utterances conform to word order patterns of monolingual children at this stage in development, but the earliest data also reveal raising of lexical verbs over negation, as in (1). These non-adult like variations are unattested in monolingual English-speaking children and are argued to result from the German influence on the English target grammar.

- (1) *That opens not. (Kayla, 2;11 years)
(2) *Makes it a noise? (Kayla, 4;00 years)

In addition Kayla produces subject verb inversions with finite verbs raised out of the VP in yes/no questions requiring do-support, as in (2). These non-adult utterances can be systematically detected at a stage when Kayla has not yet mastered do-support. These data are a challenge to particular proposals of cross-linguistic transfer, as Kayla seems to adopt a more complex option (verb movement), while there is a less complex option (non-movement) available. This contradicts the key idea of the Derivational Complexity Hypothesis (Jakubowicz, 2006; Jakubowicz & Strik, 2008a; Strik, 2011; 2012b; 2012a). Third, once Kayla realizes English to be a non-raising language she exhibits another non-adult structure, namely moving inflection over negation as illustrated in (3).

(3) *It don't/not jumps. (Kayla, 4;01 years)

The structure in (3) is employed by English monolingual children as well (Thornton & Tesan, 2013). Based on Zeijlstra (2007a; 2004), who claims that all children initially default to adverbial negation due to learnability reasons, Thornton and Tesan (2013) assume English-speaking children to initially permit only an adverbial form of negation before adding head negation with the clitic *n't* to their grammar. As German permits only adverbial negation (Haegemann, 1997; Hamann, 2000) I claim it serves as constant reinforcement, leading to delay in the acquisition of head negation and thus the formation of a functional category NegP in the English of German-English bilingual children. In line with Thornton and Tesan (2013), I propose that the child converges on the target grammar through the acquisition of the negative form *doesn't*.

One day we might be able to complete the picture of the 'miracle' of (bilingual) language acquisition, as each new study, including the present one, provides another piece of the puzzle.

1.2 Problems of current models for cross-linguistic influence

A lot of studies have been carried out to get a better understanding of how children develop their language system and generally process linguistic information in a monolingual environment. The simultaneous acquisition of two or more languages as first languages has only recently become the focus of linguistic investigation. An earlier view was that children form an initial unitary system, which combines all of their languages, resulting in mixed utterances due to fusion of the children's lexicons and grammars (Swain & Wesche, 1975;

Volterra & Taeschner, 1978). However, recently the separate language hypothesis, which proposes that the language systems develop autonomously, has been further refined by several studies (Döpke, 2000; Jakubowicz, 1996; Lanza, 1992; Müller, 1998; Paradis & Genesee, 1996). This autonomous development does not exclude influences from one language on the other. These influences may be seen through delay, acceleration or transfer (Paradis & Genesee, 1996). When languages are in close contact and the bilingual child is presented with problematic input the child may allow strategies from one language into the other and create ‘short cuts’, resulting in cross-linguistic interference (MacWhinney, 1987b). Hulk and Müller (2000) point out “the interesting question is to find out what this problematic input is, i.e. which parts of the grammar are sensitive to such cross-linguistic influence and why this should be so”.

Amongst the first generative researchers to chart the conditions for cross-linguistic influence in bilingual children were Hulk and Müller (2000). They proposed that transfer occurs due to surface overlap in the structure of the two input languages. According to Hulk and Müller (2000), the languages overlap if one of the target languages suggests two possible analyses and one of these is confirmed in the other language. In addition, the syntactic structure in question has to be at the interface of two modules of grammar, one being the C-Domain, also the locus of problems in monolingual first language acquisition. This early proposal, the Cross-linguistic Influence Hypothesis, has been criticized in more recent literature, i.e. by Serratrice (2013) as she claims that these conditions make cross-linguistic influence possible, but not necessary, making it impossible to falsify the hypothesis. In addition Perez-Leroux, Pirvulescu and Roberge (2009) as well as Pirvulescu, Perez-Leroux and Roberge (2012) have argued that this initial hypothesis is too weak to separate effects of cross-linguistic influence from more general effects of bilingualism itself. Their study showed similar results to the study by Hulk and Müller, with their French-English bilingual subjects omitting objects more frequently than their monolingual counterparts, despite the fact that both languages typically prohibit object drop. In line with an earlier proposal by Sorace and Serratrice (2009), the authors take this as an indication that acquiring two languages simultaneously delays the successful mapping of syntactic form-discourse functions in bilingual

children in general. Thus, they claim that a refinement of the initial Cross-linguistic Influence Hypothesis by Hulk and Müller (2000) is needed.

One recent proposed modification of the Cross-linguistic Influence Hypothesis is the Derivational/Computational Complexity Hypothesis (Jakubowicz, 2006; Jakubowicz & Strik, 2008b; Strik, 2009). The basic idea is that some derivations, for example *wh*-movement, are more costly than others (i.e. non-movement) and are therefore acquired later, as children initially avoid the costlier options. Complexity is derived through a simple metric, where “(a) Merging α n times gives rise to a less complex derivation than merging α $(n+1)$ times, and (b) Internal Merge of α gives rise to a less complex derivation than Internal Merge of $\alpha + \beta$.” (Strik, 2011). Therefore a language is less complex if it involves fewer movement steps in the derivation of the structure. For a bilingual context this implies that structures with less complex derivations become vulnerable to cross-linguistic influence, as children are considered to be conservative learners, only assuming as much syntactic structure as is needed to successfully incorporate the input. In other words, less complex structures are more likely to get transferred. In a bilingual language acquisition context this can account for acceleration, delay and transfer in acquisition of certain functional categories, i.e. Infl, where transfer takes place from the less complex language to the more complex one. Thus directionality of transfer is predicted on the basis of language internal properties. From this assumption it follows, that transfer should always occur in the same direction in all bilingual children of a specific language pair. This, however, is questioned by the data presented here, as the child exhibits almost exclusive influence from German to English, contrasting with findings from other German-English bilingual children (Döpke, 1998; 1999; 2000; Schelletter, 2000; Tracy, 1995).

While English and German are closely related languages, the surface word order (SVO) in simple matrix clauses conceals underlying differences in word order in the languages, which becomes evident in negative sentences, the focus of the study. First, German is a Verb Second (V2) language in which the main verb raises to C. In negative sentences, the V2-property requires the finite verb to move over negation, stranding it in sentence-final position (Clahsen, Penke, & Parodi, 1993; Döpke, 1999). This results in a V-NEG word order, as in ‘Die Ente schwimmt nicht’ (The duck swims not). English, by contrast, is a language where main verbs remain in situ and do-support is required in sentences

without a modal or auxiliary verb. In addition, English displays V2 in questions which may encourage V2 transfer (Rankin, 2012). A second complication for children is that English has two ways of expressing sentential negation – either with the negative adverb *not* or with its cliticized variant, the head form of negation *n't*, whereas German features only adverbial negation (Hamann, 2000). Use of adverbial negation in English in the pre-do-support stage could result in movement of tense/agreement affixes over negation in negative sentences, as in ‘The duck not swims’. If early forms of the negative auxiliary verbs are unanalysed forms (Bellugi, 1967), forms such as ‘The duck can’t/don’t swims’ are also predicted.

Data from the bilingual child, Kayla, show evidence for all three manifestations of cross-linguistic influence, as she (i) transfers the verb second (V2) properties from German to English. However, V2 and negation are not regulated by discourse or pragmatic functions, a key component of the Cross-linguistic Influence Hypothesis (Hulk & Müller, 2000). Both linguistic phenomena are assumed to be part of the core syntax of German (Clahsen et al., 1993). Thus, V2 transfer suggests that cross-linguistic influence is not restricted to the syntax-pragmatic interface, a problem for the initial Cross-linguistic Influence Hypothesis. Rather, in line with Bentzen (2013), I propose that structural overlap and economy considerations, can adequately explain the occurrence of transfer in the child data. Throughout this thesis economy considerations refer to the general claim that children try to keep their linguistic system minimal (also see section 6.1), a definition that is not to be confused with economy in derivational complexity accounts (Jakubowicz, 2011). Thus in a bilingual context, where one (sometimes incorrect) analysis serves to satisfy both target grammars, the child will adopt this analysis until further positive evidence in the input requires the child’s syntax to be adjusted accordingly, even if this analysis might be derivationally more complex (requiring more steps to derive the structure). The data also attest the second manifestation of cross-linguistic influence: (ii) acceleration of the acquisition of Infl in English. As a direct result from V2 transfer, where the verb moves from V-I-C, raised verbs exhibit inflectional morphology of the third person singular –s morpheme right from the beginning of the study. This is unusual compared with monolingual English speaking children, who are said to frequently omit the affix –s at this Optional Infinitive stage (Bonnesen, 2009; Wexler, 1998; 2011). Thus

acceleration of Infl constitutes a difference between monolingual and bilingual language development in this domain. Thirdly we find (iii) delay in the acquisition of a functional category for negation in our bilingual child. I propose, in agreement with Thornton and Tesan (2013) who tested this in four monolingual English speaking children, that German-English bilingual children also default to adverbial negation before a functional projection for head negation is added to their grammar. This change is rather sudden and coincides with the acquisition of the negative form *doesn't*. This questions the triggering mechanism proposed by Zeijlstra (2007a; 2004) in his Formal Flexible Feature Hypothesis (FFFH). He proposed doubling effects in the input, for example in negative concord (NC) where two negatives cancel each other, to trigger grammatical change within the child's syntax. However, children acquiring Standard English are not exposed to NC, which causes a learnability problem for these children (Thornton & Tesan, 2013). So far, none of the theoretical models introduced here can adequately capture all aspects concerning the occurrence and resolution of the attested phenomena.

1.3 Thesis aims and framework

The central questions remain: What syntactic environments sanction cross-linguistic influence and how do bilingual children converge on their respective target grammars? What does the developmental pattern look like? Is this predictable with current models of (bilingual) language acquisition? What triggers change in the children's syntax? How do language internal and external factors interact? And what does this tell us about the language acquisition process in general?

I aim to (partially) answer these questions by focusing on the acquisition of sentential negation and (negative) interrogatives in a German-English bilingual child to investigate cross-linguistic influence: transfer, acceleration and delay. I recorded the child whose data are investigated over a period of almost three years, ranging from 2;10 up to 5;07 years. The data presented here are useful to detangle internal and external factors in the generation and resolution of cross-linguistic structures, as the child's language development was monitored when she changed dominance relations in the language pair due to relocation to a new linguistic environment. In addition the child's naturalistic speech was recorded and I also conducted elicited production tasks targeting

sentential negation and (negative) interrogatives. This methodological approach ensured a robust data sample of structures that are often avoided by children in natural conversations. These data permit solid conclusions about the child's linguistic knowledge, even in developmental stages where the target structure is not yet completely acquired (i.e. missing do-support). Therefore we can get a glimpse at the child's exact knowledge and the strategies employed in coping with internal and external factors of (bilingual) language acquisition.

I will demonstrate that structural overlap, in combination with economy, is sufficient to explain the systematically occurring manifestations of cross-linguistic influence: transfer of V2, acceleration of Infl and delay of the acquisition of a functional category for negation (NegP) in the English target language. In the course of this thesis different accounts will be discussed. By the end of this dissertation I hope to provide a convincing explanation for the observed structures evolving from cross-linguistic influence. By closely following the developmental steps taken by Kayla to arrive at the target grammar I will argue that bilingual children stay within options of the target language made available by universal grammar (UG) when they produce non-target structures. Thus language internal factors guide the appearance of cross-linguistic structures, which are not attested in the input. Hereby I specifically claim that economy considerations and surface overlap are sufficient to explain the structures at hand. However, language external factors play a vital role in determining the extent to which these non-adult like structures are present in the child's output.

1.4 Overview

The thesis begins with a presentation of some central issues of bilingual first language acquisition, specifically focusing on the current state of research concerning internal and external factors influencing the acquisition process in chapter 2. This background information is directly followed by a review of the linguistic properties of sentential negation and (negative) interrogatives in the two target languages German and English. Combining knowledge from these background sections, the predictions for the developmental pattern of a German-English bilingual child are presented. Chapter 3 outlines the present study and methods of data collection. Chapter 4, 5 and 6 are devoted to a detailed discussion on each of the observed manifestations of cross-linguistic

influences found in the data presented: transfer of V2 (chapter 4), acceleration of Infl (chapter 5) and delay of the acquisition of a NegP (chapter 6). More evidence in favour of the analysis proposed within this dissertation is given in chapter 7, as cross-linguistic influence is also observed in another structure: interrogatives. The last chapter (8) summarizes the study and discusses the obtained results and their meaning for current linguistic theory of (bilingual) first language acquisition.

Chapter 2: Bilingual first language acquisition

It has been the norm for a long time for children around the globe to grow up speaking more than one language (Lanza, 2007). Nevertheless the study of children being exposed to more than one language during first language acquisition has only recently become the centre of attention in linguistic research. This chapter teases apart some of the terminology used when speaking about bilingualism, specifically concentrating on issues relevant for the study presented here and the occurrence of cross-linguistic influence. Cross-linguistic influence in bilingual children appears in very systematic, linguistically constrained ways (Hulk & Müller, 2000; Meisel, 2007). Some researchers consider cross-linguistic influence in bilingual first language acquisition to be mainly processes internal to the child (Genesee, Nicoladis, & Paradis, 1995; Hulk & Müller, 2000; Meisel, 2006), while others argue for language external factors to be major determinants (Ambridge & Rowland, 2009; Matthews & Yip, 2011; Paradis & Navarro, 2003; Rowland, Chang, Ambridge, Pine, & Lieven, 2012; Yip & Matthews, 2000; 2006). Another group of linguists have focused on the combination of this dichotomy to interpret their data from bilingual children (Döpke, 1999; Hauser-Grüdl, Guerra, Witzmann, Leray, & Müller, 2010; Kupisch, 2007; Toribio, 2004). These researchers propose a view of simultaneous bilingual first language acquisition (2L1), which allows for cross-linguistic influence to occur due to internal factors arising from Universal Grammar (UG), whereas individual differences in the acquisition pattern can be attested for by external mechanisms such as language dominance, language processing mechanisms and fluency. The afore mentioned groups differ substantially from language acquisition models within the usage-based account, which reject the notion of UG all together and attribute children's language acquisition sole to learning mechanisms and imitation of the input provided (Cameron-Faulkner, Lieven, & Tomasello, 2010; Lieven, Behrens, Speares, & Tomasello, 2003; Theakston & Lieven, 2008). However, as the bilingual child under investigation creates structures that are not compatible with either the German or the English input, but are assumed to be generated by the child on the basis of the interaction of the two grammars she is acquiring simultaneously, I will adopt a generative approach to account for the child data.

Research has determined several external and internal factors that make cross-linguistic influence possible, however not necessary (Serratrice, 2013). The main factors discussed in the literature will be examined in the following sections. For external factors the focus is on context of acquisition, especially the frequency of a particular structure in the input, contact-variety effects and language dominance. Major internal factors concern biological conditions, such as brain development or age of onset, and language-internal grammatical conditions defined by structural compatibility or surface overlap, economy effects and derivational complexity. This clear distinction between internal and external factors may lead to the impression that a single factor can be attributed to be the cause for cross-linguistic influence. However, in a complex task such as acquiring a first language, these specific factors are likely to interact (e.g. marked structures are often used infrequently in the input) and cause individual differences in the developmental pattern. The next sections review the current debate in order to provide the necessary background information for the interpretation of the data presented in the remainder of this thesis.

2.1 External factors

2.1.1 Approaches to bilingualism

Studying first language acquisition is a challenging task. There are many factors that contribute to the acquisition process. Children have to figure out the particulars of their native language, i.e. lexicon, syntax and phonology. In addition to these ‘organizational competences’ of language they have to learn how to use this knowledge appropriately (Baker, 2011). This picture becomes even more complex in multilingual children, who grow up with two or more languages, or does it? The answer to this question relies heavily on the approach taken towards multilingual first language acquisition: a ‘monolingual’ or a ‘holistic’ view (Baker, 2011). While most parents in Western societies consider learning another language useful, multilingualism is still an exception as it has long been associated with negative effects on the cognitive development of children, leading to incomplete language acquisition (Baker, 2011; Grosjean, 1985; Jessner, 2008; Kupisch, 2007; Tucker, 1990). This misconception of bilingualism in Western societies is rooted in a ‘monolingual or fractional view’ of bilingualism. Here the bilingual individual is seen as two monolinguals within

one person (Grosjean, 1982; 1985), resulting in the expectation that the bilingual should have the same competencies as a monolingual in each of the respective target languages. This however is unrealistic and unjust. It is like comparing a hurdler to a sprinter or a high jumper: while the hurdler has to run and jump his athletic skills in these two disciplines cannot be compared with athletes concentrating their expertise on just one of the two disciplines (Baker, 2011). Therefore, Grosjean (1985) proposes a holistic view, arguing that bilinguals have their very own and unique linguistic profile, just like the hurdler is an athlete in its own right. This approach has been advanced by several researchers over the last decades, especially leading to and profiting from an increase in research on the bilingual brain (Grosjean, Li, Münte, & Rodríguez-Fornellis, 2003; Jessner, 2008; Kovelman, Baker, & Petitto, 2007; Mindt et al., 2008; Sebastian-Galles, 2010). The holistic view has great implications for how bilingualism is studied. It raises questions in regards to how we can assess the competencies of bilinguals and if bilingual language acquisition can be compared to monolingual acquisition, or only acquisition by bilinguals. Furthermore, can we assess all bilinguals in a similar way? Or do we have to consider the external and internal factors contributing to that individual's context of the acquisition process? While it is desirable to consider the totality of a bilingual's language use and competence in all domains (Baker, 2011), this is beyond the scope of this thesis. To understand the developmental path Kayla chooses, it is essential to compare the data obtained to monolingual children of each target language respectively and to other German-English bilingual children. Nevertheless, to tease apart the influence of external and internal factors on the occurrence of the non-adult like structures reported in the data, I will review some of the main points that play a role in the language acquisition process of the bilingual child studied here.

2.1.2 Family language policy

Research demonstrated that the family language policy chosen impacts the child's language development (Billings, 1990; De Houwer, 2007; Döpke, 1992; Gathercole & Thomas, 2009; King & Fogle, 2013; 2006a; Piller, 2002; M. Schwartz, Moin, & Leikin, 2011; Yamamoto, 1995). Thus it is necessary to briefly review the models available for bilingual parenting and their consequences for the child's acquisition process. There exists a large variety among family

practices governing the multilingual upbringing of children. Among these are for example the well studied model One Parent – One Language (OLOP) (Billings, 1990; Döpke, 1992; Döpke, McNamara, & Quinn, 1991; Yamamoto, 1995), the One Language – One Environment approach (OLOE) (Baker, 2011; Billings, 1990; Gathercole & Thomas, 2009; Yamamoto, 1995), also taken by the parents of the current study, and other forms such as mixed languages (Billings, 1990; Gathercole, Laporte, & Thomas, 2005; King & Fogle, 2006b; Lanza, 2007; Paradis & Genesee, 1996) or the more recent emergence of additive bilingualism (bilingual childcare, exposure to bilingual television shows, language immersion programs, etc.) (Baker, 2011; Bamford & Mizokawa, 1991; King & Fogle, 2013; 2006a; M. Schwartz et al., 2011). While Yamamoto (Yamamoto, 1995) found no direct correlation between patterns of language use at home and bilingual children's proficiency level, others argue for a clear interaction (Billings, 1990; Caldas & Caron-Caldas, 2000; Döpke, 1992). In her survey of Japanese-English families Billings (1990) found that even though the majority of families adopted the OLOP model, the bilingual children were more successful in becoming active bilinguals within the OLOE approach to bilingualism. Within the group of parents adopting a mixed language approach, two thirds reported their children to be only receptive bilinguals in the minority language, but comparable with monolinguals in the majority language in the society. Similarly Döpke (1992) reports on a German-English bilingual child with the OLOP model, who experiences great difficulties resulting in a number of mixed utterances and reluctance to speak one of the target languages. Romaine (1989) also concludes, that the OLOP model is likely to result in receptive bilingualism. From this it can be concluded that bilingual children growing up with the OLOE model are more likely to become active, balanced bilinguals, where bilingualism itself doesn't seem to influence the linguistic developmental path, as these children are more compatible with their monolingual peers. However, it remains unclear what happens to the developmental pattern if there is a change in the language dominance relation due to a move to another linguistic environment. Or put differently, what is the effect of the linguistic environment compared to the interlocutor on the language acquisition process?

After studying French-English children, who switched language environments moving from Louisiana (USA) to Quebec (French-Canada) over time, Caldas and Caron-Caldas (2000) stress the importance of the linguistic

environment on the language choice and proficiency compared to the role of the interlocutor in bilingual conversation. Olsson and Sullivan (2005) support this claim in their case study of a Swedish-English child temporarily changing language environments and thus provoking a dominance shift in the two target languages. The bilingual child studied was a receptive bilingual with the dominant language being Swedish. After two months the greater exposure to his weaker language English resulted in an increase in utterance length, bigger lexicon, decrease in code-switched utterances and a partial shift in the language dominance relationship. Jisa (2000) reports similar effects of a language dominance shift on the frequency and types of code-switches in the weaker language in two French-English sisters. She emphasizes the finding that changes in the linguistic environment only bring about change in the non-dominant, the weaker language in the bilingual individual. Further, she notes that the competence levels attained in the languages before the dominance shift occurred are an important variable when examining changes in the developmental pattern.

All these former studies involve a change from the dominant language of the bilingual child to a partial or complete monolingual environment of the non-dominant language. The study presented in this thesis differs in this respect. The model of bilingual parenting is of the OLOE kind, whereas both parents are native German speakers residing in Australia. While the minority language (German) is spoken only at home, the majority language in the environment is English. As will be illustrated in chapter 3, this approach resulted in an initially balanced bilingual production (according to MULw measures) for the time spent in Australia. When Kayla moved to Germany for the extended period of thirteen months the picture changes slightly. The parents decided to keep to the OLOE approach. However, they became the sole source for English input, as both parents have near native competencies of English and committed strongly to speaking English to the child. Thus, English became the non-dominant language spoken only in the home environment, being the minority language in an otherwise German monolingual environment. Here the present study can provide valuable insight to the claim made by Gathercole et al. (2009) that 'weaker' in a stable bilingual environment might differ from 'weaker' in an immigrant community, where the minority language receives none or little support, which may affect the developmental pattern of each target language

respectively. The effects of the particular constellation in the language dominance relation regarding the linguistic change in the two target languages of the current study will be examined further in chapter 3.

A third factor to consider in the family language policy is the type of strategy chosen to achieve children's bilingual language development. Two types are reported in the literature (De Houwer, 2007; M. Schwartz et al., 2011): external and internal. While external strategies include the promotion of bilingualism in the sociolinguistic environment outside the family, something that is of marginal interest in this particular study, internal strategies concern family internal communication patterns. Internal strategies govern the language choice of parent-child interaction, the parents attitude towards language mixing and code-switches of the bilingual child and their reactions to violations of the established rules, as these are believed to be major factors in language separation/differentiation (Döpke, 1992; Genesee et al., 1995; Grosjean, 2001; 2004; Lanza, 2007; Paradis & Genesee, 1996; M. Schwartz et al., 2011).

Döpke (1992) reports in her study of a German-English bilingual child that once the OLOP rule was introduced to the family language policy, the mother deliberately did not react to the child, if addressed with the 'wrong' language choice. Another strategy taken is reported in Calda's (2000) study, where the parents in an OLOE model each behaved differently. The calculated bilingual preference ratio (BPR) demonstrated that the mother predominantly spoke French in the home environment with a BPR of 0.92, regardless of the language used by her children, while the father had a BRP of 0.79 over the twelve months of the study. This indicated that the father used French in two thirds of his conversations with the children at home, allowing roughly one third of interaction to be in English, possibly encouraging code-switches. In contrast, during a study on French-English children's repairs in communication breakdowns (Comeau, Genesee, & Mendelson, 2007) the investigator constantly asked for clarification starting with simple questions "What?" to explicitly stating "Can you say that in French/English?", forcing the child to use the appropriate language. The latter strategy is also employed in the family language policy of the current study. Whenever the child responded in the inappropriate language, she was reminded of the rules, which soon lead to complete compliance with the policy.

Within recording sessions at child language labs at the respective Universities a native speaker of the language of the recording was present to largely control the language mode of the child (Grosjean, 1997; 2001; 2004) and thus avoid mixed utterances. For further details please refer to chapter 3. Even though the family language policy and the measures taken to control language mode during the recording sessions ensured a small number of mixed utterances and provided the best ground for active bilingualism, these external factors seem to have only a limited effect on the occurrence of cross-linguistic influence, the main focus of this thesis. Thus we have to consider other factors in explaining the data obtained.

2.1.3 Input quality or contact-variety input

Input factors have long been an intriguing explanation for the occurrence of cross-linguistic influence in bilingual children's language acquisition (De Houwer, 2007; Gathercole & Thomas, 2009). However, most studies have focused on quantitative measures, such as exposure patterns in bilingual settings or the frequency of a particular grammatical construction in the input provided by the parents (De Houwer, 2007; Gathercole & Thomas, 2009; Kupisch, 2003; Paradis & Navarro, 2003; Paradis, Nicoladis, Crago, & Genesee, 2010; Pirvulescu, Pérez-Leroux, Roberge, Strik, & Thomas, 2013; Schlyter, 2009; S. Unsworth, Argyri, Cornips, & Hulk, 2012). I will return to this issue in more detail in the next section, as input quantity and language dominance in terms of frequency, exposure and proficiency level are much-debated criteria for successful bilingual language acquisition. This section will focus on input quality, a less well researched factor.

There is a fast growing body of research resulting from an increasing interest in investigating the possibility of so called contact-variety input (Chondrogianni & Marinis, 2011; Hauser-Grüdl et al., 2010; Jacobson & Cairns, 2008; Paradis, 2011; Paradis & Navarro, 2003). In line with Paradis (2011) I understand input quality to refer to variation of form and/or use of a particular structure in the input, for example due to dialectal differences or long time exposure to another language in the linguistic environment leading to attrition effects in the input provided by the parent(s). While input quantity is reserved to measure frequency effects, input quality takes into account the amount of exposure to qualitatively rich environments, determined by the amount of

contact to native speakers via media, caretakers or peers (Paradis, 2011). Importantly, the term ‘quality’ is to be understood in a neutral, non-judgemental way. Contact-varied input quality could potentially lead to a different underlying linguistic representation in the bilingual grammar, as it might lead to optionality in the use and processing of a particular structure in the bilingual child. Thus, altered input quality could be a source for cross-linguistic influence, as it may contribute to non-convergence with the monolingual target grammar.

Effects of the input quality have been studied in different bilingual populations and settings promoting bilingualism. The following studies are not an exhaustive list of the research in this area, rather they provide the reader with conflicting findings, emphasizing the need for further research to settle this debate. For example, a study by Paradis and Navarro (2003) found a positive correlation of a Spanish-English bilingual toddler’s overuse of redundant subjects in Spanish (compared to her monolingual peers) and the higher exposure to overt and redundant subjects in the input provided by the non-native mother. The findings of Schlyter’s (2009) study support this claim. She observed gender errors and altered use of pronominal constructions in Swedish-French bilingual children visiting an international preschool, where the children receive mixed input from both languages through the instruction by non-native speakers. This altered language use was absent in children from the same linguistic background, who went to monolingual schools. In addition research on Turkish children learning Dutch as a second language during adolescence, stresses the importance of non-standard varieties within the language environment of these children, resulting in the productions of incongruent determiner-noun combinations (Blom & Vasić, 2011).

Contrasting the studies mentioned above, who each attest a positive correlation of input quality and effects of cross-linguistic influence, Cornips and Hulk (2006) question these cohesive results. They examined the acquisition of gender in Dutch by different bilingual populations (simultaneous, early successive and second language learners) from diverse first language backgrounds, concluding that the relationship of input quality and the observed differences to monolingual acquisition of the Dutch gender system remains inconclusive (Cornips et al., 2008). Another point is made by Chondrogianni and Marinis (2011) who found external factors, such as parents’ second

language proficiency, contribute to less accurate acquisition of vocabulary and complex syntax in successive Turkish-English bilingual children, whereas the acquisition of the English tense morphology remained unaffected. Thus the question of domain specific effects of contact-variety input arises. In a similar fashion Meisel (2011b; 2011a) argues for an interplay of external and internal factors accounting for delay and possible incomplete acquisition in successive bilingualism.

For simultaneous bilingual children there is still no consensus about the interaction of bilingual performance and specific language learning conditions (Gutiérrez-Clellen & Kreiter, 2003). However, most studies stress the fact, that input quality is just one of many external factors influencing the outcome of the language acquisition process in bilingual settings. Therefore I now turn to other external factors possibly contributing to cross-linguistic influence: language dominance, frequency and fluency.

2.1.4 Dominance, frequency and fluency

Several studies have focused on language dominance, or relative strength of one language over the other (Meisel, 2007), as a possible source for the occurrence of cross-linguistic influence (Bernardini & Schlyter, 2004; Cantone, Kupisch, Müller, & Schmitz, 2008; Gawlitzek-Maiwald & Tracy, 2005; Kupisch, 2007; Serratrice, 2013; Yip & Matthews, 2006). Importantly, there are different approaches to defining and measuring language dominance, leading to contradictory results. Yip and Matthews (2000), for example, conclude that the language external factor dominance can override language internal grammatical conditions, as their Cantonese dominant subject displayed *wh*-in situ interrogatives, null objects and prenominal relatives - structures that are either not present in the English target language or are reported to occur at a substantially lower rate in monolinguals. However, they define dominance by taking formal quantitative measures, using mean length of utterance (MLU) values.

In contrast, Gawlitzek-Maiwald (2001) takes a domain oriented approach in her Bilingual Bootstrapping Hypothesis, where dominance relates to a language specific domain or structure developing quicker in one of the two target languages, which temporarily leads to cross-linguistic influence. Once again, the perceived difference in the rate of language development as measure

of dominance is of a quantitative nature and does not reveal anything about the bilingual child's linguistic knowledge (Meisel, 2008).

To tap into children's linguistic knowledge Meisel (2007) argues for a distinction between 'weak' and 'strong' acquisition, where weak refers to incomplete acquisition of a particular structure. While language dominance and preference in any bilingual might change constantly due to external factors, such as language attitude or conversational partners (Gathercole & Thomas, 2009; Gawlitzek-Maiwald & Tracy, 2005; Genesee et al., 1995), it remains open whether or not this also applies to language strength. Meisel (2007; 2011a) introduced the Weaker Language Hypothesis (WL) claiming that the weaker language in a bilingual child might resemble second language acquisition. Thus unbalanced bilingual children might exhibit incomplete grammatical knowledge (Schachter, 1990), leading to the manifestation of cross-linguistic influence.

This has been demonstrated in a study on intra-sentential code-mixing of Swedish-French/Italian unbalanced bilingual children communicating in their weaker language (Bernardini & Schlyter, 2004). In their seminal paper introducing the Ivy Hypothesis, Bernardini and Schlyter (2004) found that unbalanced bilingual children project more syntactic structure in their stronger than in their weaker language, leading to mixed utterances, where the weaker language grows on the stronger one – like ivy on a tree. However, more recently Cantone, Kupisch, Müller and Schmitz (2008) claimed that language dominance and the occurrence of cross-linguistic influence are not necessarily related, as such influence can be attested in balanced bilingual children as well. Rather such structures can be explained by the higher cognitive demands caused by bilingualism itself, the central claim of performance and maturational accounts (Phillips, 2010; Toribio, 2004).

A second fact to consider, besides dominance relations, is frequency of a particular structure within the input. By the nature of the acquisition process itself, bilingual children experience less exposure to each of their languages compared to monolinguals. However, there is a consensus in the literature that this divided exposure affects only lexical development (Lanza, 1992; Meisel, 2006), but not the acquisition of syntax in balanced bilingual children. The picture changes, however, when unbalanced bilingual children are considered. Here several studies have found great discrepancies between monolingual and bilingual acquisition of syntax, in the use of verbal morphology (Austin, 2009)

or determiners (Kupisch, 2003; 2007), for example. In unbalanced bilingualism the child is exposed substantially less to one of the target languages in comparison to the other one. This is closely related to language dominance, as the non-dominant might be used less frequently. The infrequent use of the non-dominant language itself, or limited exposure to it, might lead to a preferred use of the dominant language, making it more frequent again. This becomes a cycle, where frequency directly influences dominance. Therefore certain linguistic structures provided by the input in unbalanced bilingual children might not reach a certain threshold in the weaker language, possibly leading to acquisition failure (Meisel, 2011a). In such a case the bilingual child might resort to the dominant language and transfer structures from the lexicon or the syntax, as a strategy to avoid communicative breakdown in the weaker language (Gawlitsek-Maiwald & Tracy, 1996; Grosjean, 1997; Toribio, 2004). In this sense the occurrence of cross-linguistic influence can be viewed as a coping mechanism employed by the bilingual child. This take on non-target structures evolving during cross-linguistic influence takes away the notion of linguistic deficit, bringing to the forefront the strategies in avoiding linguistic structures that are not yet fully acquired. I will return to this point at a later stage, when reviewing the results obtained within this study.

The idea of frequency effects on the occurrence of cross-linguistic phenomena has been put to the test in a study by Hauser-Grüdl and her colleagues (Hauser-Grüdl et al., 2010). They argue that frequency effects in the input cannot account for cross-linguistic influence observed in their German-Italian subjects. Further they found no evidence for a frequency effect of contact-variety input (see section 3.6) by the parents, either. However, they propose an effect of language fluency, measured in words per minute, on the occurrence of cross-linguistic structures. As their German dominant subject displayed a higher rate of object omissions in his Italian than in his German, while his Italian dominant counterpart did not show this effect, they concluded that the effect of cross-linguistic influence is substantially lower, the more fluent a child is in the derivational more complex language. This is in line with other studies which found a negative correlation of language fluency and cross-linguistic influence (Cantone & Müller, 2005; Hauser-Grüdl & Guerra, 2007). However, as proposed by Müller and Hulk (2001) and Gawlitsek-Maiwald and Tracy (1996), this correlation only holds for the language with the linguistically

more complex analysis for the grammatical structure under investigation (the issue of derivational complexity is discussed further in section 2.3.3). Therefore the external factors of dominance, frequency and fluency might not be sufficient enough to generally explain the occurrence of cross-linguistic influence in bilingual first language acquisition (Kupisch, 2007). Instead child and language internal factors have to be considered as major determinants in the study of cross-linguistic influence, which is the focus of the next section.

2.2 Internal factors

Internal factors influencing bilingual language acquisition can be divided into two subgroups: i) child internal factors, such as age of onset, brain development or the maturation of language control/inhibition and ii) linguistic factors including the relatedness of the target languages, surface overlap and derivational complexity of the structure under investigation. The current state of the art research in both of these domains will be reviewed in the next sections to further guide the interpretation of the data in the current case study.

2.2.1 Age of onset

Age of onset (AoO) or time of first exposure to the second language is a well-studied, yet still controversially discussed, factor in bilingual language acquisition. It proves difficult to decide where simultaneous acquisition ends and second language-learning starts. Most studies consider simultaneous bilingual children, who are exposed to both languages from birth, to behave like monolinguals (Austin, 2009; De Houwer, 1990; Meisel, 1994; Paradis & Genesee, 1996; Serratrice, 2013; S. Unsworth et al., 2012). Simultaneous bilingual children are claimed to a) differentiate their two linguistic systems early (Genesee et al., 1995; Meisel, 1989), b) follow the same sequence of syntactic development (Meisel, 2007) and c) acquire a complete grammar with a competence level that qualitatively resembles monolingual acquisition (Meisel, 2011a) in both of their target languages.

There is a large body of support for claim a), the early differentiation of morpho-syntax and lexicon (Serratrice, 2013). In addition research on bilingual infants' phonological development revealed no developmental difference between monolingual and bilingual children's discrimination abilities, tuning of phoneme inventories and learning of word-object associations (Sebastian-Galles, 2010). However, research with bilingual infants also demonstrated that

bilingual children develop different processing strategies to optimally cope with bilingual input, resulting in a different sequence of phonological acquisition compared to monolingual infants (Sebastian-Galles, 2010). This challenges the assumption made under b), as this difference is observable in children as young as 4 months of age, which raises the question of a critical age period. Different ages have been considered in the literature, ranging from birth (Gawlitze-Maiwald & Tracy, 1996) up to 4 years of age (Meisel, 2009), where a child is still considered to be simultaneous bilingual, as opposed to ages 4 to 7 years, which classifies as successive child bilingualism (B. D. Schwartz, 2003). Another age barrier is seen at 10 years, where bilinguals are considered as adult second language learners (Haznedar, 2013), who are unlikely to achieve complete acquisition of the second target language (claim c), as the critical/sensitive age period has passed (Meisel, 2007).

Differences in age are explained through maturational accounts and availability of Universal Grammar (UG). While simultaneous bilingual children acquire both languages at the same time with all options of UG available to them, successive bilingual children after the age of 4 have already created an almost complete grammar (Haznedar, 2013; Meisel, 2008; B. D. Schwartz, 2003). In addition Meisel (2008) argues that at age 3 the optimal age for native-like attainment of phonology and syntax in bilingual learners begins to fade out. In a study of acquisition of finiteness and grammatical gender in German-French bilingual children aged 2 to 4 years, Meisel (2009) concludes that parameterized principles and language specific learning mechanisms change due to neurological maturation, accounting for the differences observed in level of performance of simultaneous and successive bilingual children.

This clear cut in age is challenged by Unsworth (2012), as there is confounding evidence for maturational changes within the brain development at this age (for more details see section 2.2.2). Interestingly Unsworth (2012) states, that age effects in bilingual children partially depend on the language combination in question. McDonald (2000) for example found bilingual children (who were exposed to their second language before age 5) with their first language being Spanish to perform better in their second language English in grammatical judgement tasks than bilingual children with their first language being Vietnamese.

Also Kohnert et al. (2009) suggest that cross-linguistic influence heavily depends on other factors like typological similarity of the two target languages for the phenomenon in question, maintenance of the minority language spoken at home, age of testing and the status of the languages within the wider society, not just age of onset alone. Other studies support this claim and add length and amount of exposure as determining factors for attainment of native-like performance in each target language (Parodi, Schwartz, & Clahsen, 2004; M. Schwartz, Kozminsky, & Leikin, 2009; S. Unsworth et al., 2012). In addition a lot of studies found a positive correlation of AoO and environmental factors (Chondrogianni & Marinis, 2011; Jia & Fuse, 2007) for the competence level attained during bilingual language acquisition (see section 2.2.1). However, the critical age period (Hakuta, Bialystok, & Wiley, 2003; Wiley, Bialystok, & Hakuta, 2005) expects no difference in level of attainment with different language pairs. In addition the near native performance of late bilinguals is unexpected and cannot be explained solely through age related factors.

In summary AoO seems to be relevant only when considering exposure, as bilingual children with later AoO usually experience less exposure to one of the target languages (S. Unsworth & Blom, 2010). If the external variable exposure is controlled for, Hopp (2011) notes that any differences in AoO or chronological age disappear. Another important observation regarding AoO is made by Unsworth (2012). In her study she compared patterns of gender acquisition in English-Dutch with English-Greek early successive bilinguals. She notes that not AoO per se, but the nature of the grammatical property investigated is a relevant factor in the acquisition process in the sense that certain phenomena are acquired early and others late. This differs across languages. In line with Unsworth (2012) and Hopp (2011) I conclude AoO alone to be too simplistic to account for the differences observed between simultaneous and successive bilingual and monolingual language acquisition. Instead it is important to examine the background variables and language internal factors to account for the linguistic development of bilingual children.

2.2.2 Cognitive development, brain structure and function in (early) bilingualism

As mentioned in the section above, one of the factors to consider when explaining differences in acquisition patterns of various types of bilinguals and

monolinguals are biological changes. The idea that brain development, furthermore plasticity, influences the outcome of language acquisition was first proposed by Penfield and Roberts (1959). This idea led Lenneberg (1967) to propose his critical age period, which links the developmental path of language acquisition to certain brain growth curves. His hypothesis states that there exists a sensitive period in which particular grammatical structures are typically acquired within a language. Thus grammatical development corresponds to maturation of the brain.

In bilinguals the critical age period has often been used to explain incomplete acquisition of grammatical structures in the weaker language and poor outcomes in syntax, phonology and lexicon of late second language learning (Birdsong, 1999; Hakuta et al., 2003; Mayberry & Lock, 2003). The latest advances in neuroimaging techniques enhance the debate about the role of AoO for the level of achievement in language performance (Saur et al., 2009). Recent research has turned to the possibility of differences in brain development between monolinguals, simultaneous and successive bilinguals (Kovelman et al., 2007), which could provide useful evidence for maturational accounts, such as the one proposed by Meisel (2008; 2009; 2011a). In addition results from research employing neurological imaging techniques has the potential to provide new insights into the debate on the separation of bilingual's representation of their two languages within one cognitive system (Emmorey, Luk, Pyers, & Bialystok, 2008; Kovelman et al., 2007; Luk, De Sa, & Bialystok, 2011).

Research in neurology and psychology has greatly tributed to understanding language control in bilinguals (Bartolotti & Marian, 2012; Grosjean et al., 2003; Mindt et al., 2008), biological changes in phonological distinction (Sebastian-Galles, 2010) and effects of language dominance and frequency of lexical items on vocabulary learning and retrieval (Peltola, Tamminen, Toivonen, Kujala, & Nääätänen, 2012; Poarch & van Hell, 2012). From the growing body of research it becomes evident that bilingual language acquisition has a “profound impact on cognitive development, as well as brain structure and function” (Mindt et al., 2008).

Regarding possible factors motivating cross-linguistic influence two cognitive mechanisms have to be considered, namely frequency effects (‘weak links’) and competition of the two languages during language processing and

production (Mindt et al., 2008). Kroll and Bialystok (2013) revealed through behavioural and neuroimaging studies that both languages are always active in bilingual communication, calling for the need to inhibit or control of the activation of the non-target language. For language production this inhibitory effect is bigger when bilinguals talk in their non-dominant/weaker language, as the dominant language is generally more accessible and needs to be suppressed in order for the bilingual to speak the non-dominant language (Bartolotti & Marian, 2012; Emmorey et al., 2008; Green, 2003). This implies less cross-linguistic influence when bilinguals use their dominant language, as the weaker language is activated to a lesser extent (Mindt et al., 2008).

Peltola et al. (2012) also found these effects in unbalanced bilinguals, whereas balanced bilinguals lack inhibitory control of vowel discrimination in a Swedish-Finnish context. This suggests separate language systems for dominant bilinguals (most likely late second language learners and receptive bilingual children), who can suppress one language and an inseparable system for simultaneous, balanced bilinguals.

Poarch (2012) notes, that the effects of inhibitory control are only visible in bilinguals with a high proficiency of their weaker, non-dominant language. They found lower levels of proficiency in their child second language learners of English with their first language German, aged 5 to 8 years, to result in limited cross-language activation, as cross-linguistic influence was examined only in the English target language. This however could be the result of language related factors, as I will argue below (see section 2.2.3 and 2.3 respectively).

In summary, neurobiological research on cognitive development and bilingualism predicts cross-linguistic influence to be more prominent in the language used less often (measured by length of exposure), as this indicates a lower frequency effect through less exposure to the input. As our subject matures throughout the time of 3 years, the duration of the study, neurological research suggest diminished occurrences of cross-linguistic influence, as the cognitive system develops, which enhances the mechanism for cognitive control and inhibition within the subject, as long as she is relatively balanced with a high proficiency in her weaker language (measured in MLU_w values). I will return to this in chapter 3, where the study presented here is reviewed in greater detail.

2.2.3 Typological similarity and differences of the language combination

The question of whether typological and structural similarities or differences lead to cross-linguistic influence in bilingual children is still much debated in the literature. It remains unclear what constitutes similarity and how to measure it. While belonging to the same language family accounts for relatedness, languages not sharing this property but coming from very distant language families can nevertheless contain a lot of identical structures. Hartsuiker et al. (Hartsuiker, Pickering, & Veltkamp, 2004) suggest, if constructions have a very similar syntax and/or semantics they could be shared across the two languages of a bilingual, leading to cross-linguistic influence, regardless of language relatedness. More support for the shared representation of syntactic structures comes from a study by Schoonbaert et al. (Schoonbaert, Hartsuiker, & Pickering, 2007), demonstrating priming effects in lexical retrieval of Dutch-English bilinguals with translation equivalent verbs. However, this effect could be due to the close relatedness of the languages involved in the study, as both English and Dutch are West Germanic languages.

The role of relatedness of the target languages has been investigated in a study on English-Italian (West Germanic and Romance) and Spanish-Italian (both Romance) children (Serratrice, Sorace, Filiaci, & Baldo, 2012). Serratrice et al. used two groups of English-Italian children, one living in England and the other residing in Italy, to control for the role of the language community and frequency effects. In addition this study aimed to tease apart general effects of bilingualism, such as processing costs, from pure linguistic factors rooted in the syntax. The assumption was that, if processing costs cause the difference to monolingual performance on the task, appropriateness of pronoun use should be judged in the same way in both bilingual groups, regardless of the language pair at hand. However, they found English-Italian children to perform less accurate than the Spanish-Italian children. This led to the conclusion that the language combination, together with frequency effects in the input due to the language community has a greater effect than processing cost associated with bilingualism itself. Also, structural similarities between the two languages have a greater potential to generate cross-linguistic influence than more distant language pairs, as the use of the structure in language A automatically leads to

an activation in language B (recall that in bilinguals both languages are always activated). Thus processing a shared syntactic structure inevitably results in a greater entrenchment in the mental representation of this structure in both languages. In the case of ambiguous structures where language A has two possible analyses of this syntactic structure and language B confirms one of these (Hulk & Müller, 2000) the surface overlap leads to a frequency effect through constant exposure, making one option more prominent in the selection process than others. This can easily result in transfer of grammatical structures of one language to the other, even if the selected structure is inappropriate (Sorace & Serratrice, 2009) or ungrammatical (Döpke, 1998).

To sum up the discussion on typological differences and similarities as motivation for cross-linguistic influence, results from previous studies suggest that, not only the language combination at hand, but also the influence of the language spoken in the environment serve as predictors. Especially vulnerable are similar structures (overlapping in form and/or function) within related languages, as they might have a shared mental representation in the cognitive system of the bilingual, resulting in competition of the structures during the selection process in production, noticeable as non-target utterances.

Before turning to the study, collected data and results I will use the second half of this chapter to review the relevant syntactic properties of both target languages, German and English respectively, as this is a very important internal factor to consider when examining cross-linguistic influence in bilingual first language acquisition, the main focus of this thesis.

2.3 Grammatical factors

The current study deals with two closely related West Germanic languages: German and English. The particularities of each target language regarding the syntax of negation and interrogatives will be discussed in the respective chapters. However, the two languages have a lot of similarities, often resulting in surface overlap, which hides the underlying syntactic differences, making cross-linguistic influence plausible (see section 2.3.1). As argued above, language external factors alone cannot account for the various results found in other studies. Based on the results from previous studies I conclude, that language dominance and/or proficiency effects based on frequency of exposure

to a specific language alone cannot adequately explain all the observable differences between monolingual speakers and their bilingual peers.

While some studies provide evidence in favour of a language dominance effect in cross-linguistic influence (Kupisch, 2007; 2012; 2013; Yip & Matthews, 2006) others found no such correlation (Hulk & Müller, 2000; Müller, 1998). Therefore language internal factors have to be considered. Here the focus is on surface overlap and derivational complexity. In addition, following Lightfoot and Westergaard (2007) and Westergaard (2003; 2007a) I introduce the notion of economy, markedness and input cues, which are claimed to be essential determiners for the occurrence and resolution of cross-linguistic structures in any bilingual child.

2.3.1 Overlap and the Cross-linguistic Influence Hypothesis

Overlap can be defined as the existence of a shared underlying syntactic structure in the two different languages of a bilingual, while ambiguity refers to a shared meaning of more than one linguistic structure within an individual language (Nicoladis, 2011). Döpke (1998) observed cross-linguistic influence on the basis of overlapping surface strings. In Döpke's seminal work, the German-English bilingual children recorded displayed a substantial amount of non-target like verb placement in German with the verb preceding its complement, a word order that is unattested in German monolingual children¹. The preference for this V-XP word order in complex verb constructions is argued to arise from cues introduced by the children's simultaneous exposure to English, where this word order is the only grammatical option. Döpke concluded, that surface overlap created structural saliency in the children's mental representation of these complex structures, resulting in overgeneralization of the English V-XP word order in German, during the stage when the children had not yet fully analysed the underlying target syntax. This is an example of qualitative differences between bilinguals' and monolinguals' linguistic behaviour (Serratrice, 2013) that can be accounted for by cross-linguistic influence.

Qualitative differences become evident if children display non-adult like utterances that are not available in the target language, arguably being motivated by the influence of the other target language. Alternatively there

¹ While this might be the case for main clauses, there has been evidence for errors in monolingual children's acquisition of verb placement in complement clauses (for example see (Brandt, Lieven, & Tomasello, 2010) and references therein).

could be quantitative differences attributed to cross-linguistic influence. Quantitative differences are present if bilingual children use a specific structure more often, than what is attested for in monolingual speakers. Here a structure that is present in both target languages is constantly reinforced, gaining saliency, which results in preference of this structure. Monolingual children might also generate these (sometimes non-adult like) structures, but to a lesser extent. Thus, the influence of language A on language B could lead to a preference for a certain structure in a particular context which might be regarded as inappropriate in the other language, but not necessarily ungrammatical (Serratrice, 2013).

Amongst the first generative researchers to chart the conditions for cross-linguistic influence in bilingual children were Hulk and Müller (2000). They proposed that transfer occurs due to overlap in the structure of the two input languages. According to Hulk and Müller, the languages overlap if one of the target languages suggests two possible analyses, thus is ambiguous, and one of these analyses is confirmed in the other language. In addition, the syntactic structure in question has to be at the interface of two modules of grammar, one being the C-Domain, as this is also a locus of problems in monolingual first language acquisition.

The C-Domain, as defined within the Minimalist Program (J.-W. Zwart, 1998) is the highest level of a clause. Sentence structure includes three universal phrases: the verb phrase (VP), the inflectional phrase (IP) and the complementizer phrase (CP). The CP is located in the left periphery of the clause. The hierarchy of these phrases in a sentence representation is shown in Figure 1.

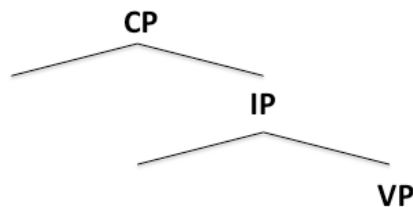


Figure 1: Universal clause structure (Chomsky, 1995)

The central role of the CP is to link the content of the lower structures IP and VP to the discourse (Platzack, 2001; Rizzi, 1996). Adapting an analysis that was originally proposed by Rizzi (1997), Platzack (2001) assumes two levels of the CP, one facing outward (ForceP) being up higher in the derivation and the other

inward (FinP). The ForceP specifies the clause type as interrogative, imperative or declarative, while the FinP licenses tense and mood in the IP through a feature of finiteness [finite] in its head. Between these two projections of the CP, Platzack (2001) assumes there are Topic and Focus phrases, which I will not discuss further. The feature of finiteness becomes important in chapter 4 and 5, where the properties of the German grammar regarding V2 and negation are discussed.

Returning to the Cross-linguistic Influence Hypothesis, the original model hypothesized that structural overlap facilitates transfer, particularly at the syntax-pragmatics interface (Hulk & Müller, 2000; Sorace & Serratrice, 2009). The phenomena studied by Hulk and Müller were root infinitives (RIs) and object drop in a German-Italian and a Dutch-French child. While object drop is demonstrated to be sensitive to cross-linguistic transfer, RIs are not. The authors argue that while RIs are “grammatically unanchored structures whose interpretation depends on discourse and other contextual information” (Hulk & Müller, 2000, p. 229) they do not fulfil the second requirement, overlap. In other words, it is not the case that either adult syntax (Dutch/German) licenses RIs in root declarative clauses and would therefore reinforce the misanalysis of RIs as correct in the other language (French/Italian). Only object drop is suitable for cross-linguistic transfer in the language pairs they observed, as it fulfils both requirements of the Cross-linguistic Influence Hypothesis. The Germanic languages Dutch and German allow topic drop in sentence initial position as in (4). However, monolingual children omit objects in a wider range of constructions leading to non-adult like utterances as in (5).

- (4) Heeft mevrouw de Wachter gemaakt. (Joost, 2;08 years)
‘[THAT] has Mrs. De Wachter made.’
- (5) Ik heef gevonden. (Hein, 2;06 years)
‘I have [THAT] found.’

The observation that monolingual Italian/French children also allow object omissions (although to a lesser extent than the children acquiring Germanic languages), despite the fact that these Romance languages are non-topic-drop languages, lead Hulk and Müller to the proposal that all children license empty objects in their early stages of language development via a default discourse licensing strategy. While monolingual children acquiring a Romance language soon refrain from this misanalysis and replace it with the adult like, language-

specific “morphological licensing of the empty object position by a preverbal clitic” (p. 230), the bilingual children keep this option for longer, as the misanalysis gets positive reinforcement from the Germanic input. Both predictions were borne out by their data.

The early proposal of the Cross-linguistic Influence Hypothesis (Hulk & Müller, 2000) has recently been criticised i.e. by Serratrice (2013) as the conditions stated make cross-linguistic influence possible, but not necessary. In addition Perez-Leroux, Pirvulescu and Roberge (2009) as well as Pirvulescu, Perez-Leroux and Roberge (2012) argued that this initial hypothesis is too weak to separate effects of cross-linguistic influence from more general effects of bilingualism itself. Their study showed similar results to the study by Hulk and Müller, with their French-English bilingual subjects omitting objects more frequently than their monolingual counterparts, despite the fact that both languages typically prohibit object drop. In line with an earlier proposal by Sorace and Serratrice (2009), the authors take this as an indication that simultaneously acquiring two languages delays the successful mapping of syntactic form-discourse functions in bilingual children in general.

In addition the issue of directionality of transfer and the influence of language internal and external factors is still discussed controversially within the field. A variety of language structures within different language pairs have been tested with contradictory results. While some studies support the claim that linguistic effects, specifically overlap, override external factors like language dominance, as unidirectional effects of cross-linguistic influence are attested in balanced and unbalanced bilinguals of the same language combination (Müller, 2008; Serratrice, Sorace, & Paoli, 2004), other studies show significant interaction of language external and internal factors for language development (Sorace & Serratrice, 2009; N. Unsworth, 2010) leading to bidirectional influence. Furthermore, it has been demonstrated that language external factors such as working memory capacity make transfer probable but not unavoidable, as there is a considerable amount of individual variation within subjects under similar conditions (Hauser-Grüdl et al., 2010; Müller, 2008; Serratrice, 2013).

2.3.2 Underspecification, the notion of economy and markedness

There are researchers who state that, in addition to the conditions stated by Hulk and Müller (2000), underspecification of interpretable features in one

language leads to the overgeneralization of a certain grammatical structure in the other language. This overgeneralization is possible whenever there is a lack of parallel structures within the same syntactic context (Sorace, 2011; Tsimpli, Sorace, Heycock, & Filiaci, 2004). For example, bilinguals who are exposed to a null-subject language (Spanish/Italian) and a language that does not allow null-subjects (English), are often reported to overuse overt pronouns in constructions that require a null pronoun (Sorace, 2011). It is claimed that the pragmatic constraints regulating use of overt and null pronouns are weakened in the null-subject language, due to the constant reinforcement of the use of overt pronouns in one of the target languages. While one language provides a straightforward analysis (to not allow null subjects), the other has a more complex system (allowing null subjects in a restricted set of linguistic and/or pragmatic contexts). In other words, a language is less economical if a syntactic structure is only present in some instances and therefore optional, whereas more economical refers to a language displaying one obligatory syntactic structure in a context where the other language provides multiple, optional constructions. Thus, the more economical language affects the other, not vice versa, leading to unidirectional transfer (Sorace, 2011).

Tsimpli et al. (2004) also assume underspecification to be responsible for transfer, specifically the underspecification of the interpretable feature [+Topic Shift]. Here a qualitative difference in the representation of bilingual and monolingual speakers becomes evident. Monolingual Italian/Greek speakers have a one to one mapping of these features linked to overt pronouns, whereas the Italian/Greek-English bilingual representation is influenced by no restrictions on the use of overt pronouns. While the interpretable feature of topic shift is highly specified in the monolingual grammar (always pronounce an overt pronoun when there is a [+TS] feature, but not in contexts of a [-TS] feature), this feature is not clearly defined in the bilingual grammar. This underspecification leads to optionality in the bilingual representation, namely allowing overt pronouns in [+TS] and [-TS] contexts (Sorace, 2011; Tsimpli et al., 2004). This is illustrated in (6) and (7) taken from Sorace (2011).

(6) Monolingual Italian/Greek grammar:

OVERT <=> [+TS]

NULL <=> [-TS]

(7) Bilingual Italian/Greek-English grammar:

OVERT <=> [+TS]

OVERT <=> [-TS]

NULL <=> [-TS]

Chomsky (1981) introduced another explanation for difficulties during language acquisition that can potentially account for the manifestation of cross-linguistic influence in bilingual first language acquisition: markedness. Within the principles-and-parameters framework markedness captures the idea that the binary choice in parameter setting during language acquisition contains an unmarked option (default) and a marked option. The marked option is chosen only if the specific language requires it, otherwise children resort to the default option provided by UG. Haspelmath (2006) remarks that this definition of markedness is unusual as this term does not refer to linguistic categories but rather cognitive states. Haider (1993) refers to this markedness in the sense of initial preference in child language acquisition as the children automatically choose the unmarked structure, if evidence of a marked feature is missing in the input they receive. For word order Haider assumes the unmarked order is SVO, while the marked word orders (i.e. V2) have to be learned through input cues. The Minimalist Program assumes two strength distinctions of features, weak (unmarked) and strong (marked). Previously it has been claimed that only unmarked features can transfer while marked features cannot (Platzack, 2001; Westergaard, 2003). Marked features are predicted to be immune to transfer, as the language learner does not expect to find these specifically marked structures in the other target language (Westergaard, 2007b). Thus, transfer of the marked V2 word order to English unmarked option has long been claimed to be impossible (Håkansson, Pienemann, & Sayehli, 2002).

However, markedness has been discussed controversially in the literature resulting in over twelve different uses of the term describing phenomena ranging from ‘markedness as complexity’ over ‘markedness as difficulty’ to ‘markedness as a multidimensional correlation’ (Haspelmath, 2006). Another definition of markedness is provided by Henry and Tangney (2001). Here a language is marked if it displays movement in just a few sentences types, while

movement is absent in other sentence types. Thus the varied distribution of movement and non-movement contexts results in markedness, which in turn results in lower economy (having multiple options available), which causes difficulties in the acquisition process. Further Henry et al. (2001) elaborate, that it is not enough to look at a specific feature in isolation (i.e. verb movement versus non-verb movement), but rather it is important to consider the entire language system it occurs in. As before in the Chomskyan approach, the acquisition of the marked structure, such as V2, is highly dependent on frequency in the input. If the marked version appears with a high frequency in the input children will acquire the structure early, while infrequent use leads to delay in the acquisition of that particular structure (Henry & Tangney, 2001).

2.3.3 The Derivational Complexity Hypothesis

As an alternative account to the initial Cross-linguistic Influence Hypothesis by Hulk and Müller (2000), Strik and Pérez-Leroux (2011) propose a complexity based theory of syntactic transfer, the Derivational Complexity Hypothesis (DCH). In their study Dutch-French bilingual children favored the *wh*-in situ structure and lacked the obligatory subject-verb-inversion in *wh*-fronted questions in Dutch. This cannot easily explained by the structural overlap account, as Dutch allows only one grammatical *wh*-interrogative construction, namely *wh*-fronting with subject-verb inversion, whereas French offers multiple options including *wh*-fronting with and without inversions and *wh*-in situ. Thus, structural overlap should result in a preference for the *wh*-fronted questions with inversion in both target language, leading to a quantitative difference between the Dutch-English bilinguals and monolingual French-speaking children. However, here the non-overlapping structure of the *wh*-in-situ option is transferred from French to Dutch.

In line with earlier Minimalist proposals of economy in language acquisition (Jakubowicz, 2003; Jakubowicz & Strik, 2008b), Strik (2012a; 2012b) and Pérez-Leroux (2009) compare the options available for *wh*-interrogatives in terms of derivational complexity. Here the term ‘complexity’ is reserved for syntactic operations referring to internal and external Merge. While internal Merge is equivalent to the operation Move in earlier frameworks such as the Principles and Parameters approach, external Merge corresponds to the earlier operation Merge (Chomsky, 1995c). The basic claim is, that constructions

involving fewer internal (movement) and external Merge operations are easier to compute and therefore less complex. This is captured in the derivational complexity metric, which combines two claims:

- a) Merging α n times results in a less complex derivation than merging α $(n+1)$ times and
- b) internal Merge (movement) of α is less complex than internal Merge of $\alpha+\beta$ (Jakubowicz, 2011).

The less complex analysis is acquired early and preferred in both languages (Serratrice, 2013). Adopting Chomsky's (1995a) considerations of economy, van Kampen (2004) argues that young children avoid movement operations unless they are obligatory, as movement is more costly. Along the same lines, Zuckermann et al. (2001) claim that children initially opt for the more economical option, the one involving less computational steps, if the language they acquire provides multiple options.

Further, Jakubowicz (2003; 2011) proposes a preference of Merge over Move operations in young children on the basis of constraints on the working memory capacity. Following Chomsky (1995a; 2005) she assumes the computation of a linguistic structure to proceed through the iteration of Merge (External and Internal Merge) and that Internal Merge (movement) is derived through uninterpretable feature checking mechanisms. The less complex option (Merge) is preferred over more complex ones (Move), as working memory capacity is thought to be sensitive to the complexity of the computed derivation (Jakubowicz & Strik, 2008b). For example the acquisition of *wh*-questions in root clauses in French is assumed to be mastered in the following order, dependent on complexity of the derivation: (i) *wh* in situ (involving one external merge and no movement) as in *Tu as vu qui?* 'You saw who(m)?'; (ii) *wh*-fronting without V to C movement (involving one additional move compared to (i)), as in *Qui_i tu as vu t_i?* 'Who(m) you saw?'; (iii) clefted *wh* (involving yet another external merge), as in *C'est qui_(i) |Op_i que tu as vu t_i?* 'Who is it that you saw?'; (iv) *wh*-fronting with V to C movement (being the most complex derivation involving two independent move operations in *wh*-fronting and V-C), as in *Qui_i as_j tu t_j vu t_i?* 'Who(m) have you seen?'. With the exception of preference for *wh* in situ questions in the beginning of the languages acquisition process, the proposed order of acquisition has successfully been attested (Jakubowicz, 2011). However, Tesan (2005) proposes an analysis of English

negation bearing two different morphemes, one with affixal value (*not* and *n't*), which triggers do-support, and a second, phonologically empty morpheme bearing a feature value which is satisfied via merge of an adverb (i.e. *never*). Her analysis implies that for English negation, feature movement is preferred over merge, contrasting earlier claims of Merge over Move (Chomsky, 1995a).

The central claims of the DCH generally apply to all types of conditions for language acquisition alike, monolingual first language acquisition, simultaneous and successive bilingual language acquisition, second language learners and children with specific language impairment (Jakubowicz, 2011). Thus the Derivational Complexity Hypothesis predicts clear stages in the language acquisition process, leading to early acquisition of UG-compatible default options, which converge to the target consistent structure over the course of acquisition. Further, Strik (2009) argues for an interaction of derivational complexity and interpretational ease at Logical Form (LF), where “LF-transparent derivations are less complex than LF opaque ones” (p.99), as they involve fewer processing costs. In her work on long distance questions in Dutch and French bilingual children she offers an account for the preference of her French subjects for the complex *wh*-fronted over *wh*-in situ interrogatives and partial movement constructions, the derivationally simpler options. I will return to this issue in a later section, when interpreting the results obtained for the interrogative structures produced by the German-English bilingual child of this study (chapter 7).

Chapter 3: A longitudinal case study

This chapter introduces the current study. The first part reviews the technical details such as methods used for data collection, recording equipment and transcription, as well as analysis procedures. The second part of the chapter gives an overview of the corpus of data, in order to demonstrate the robustness and reliability of the results presented later within this thesis. In addition, this chapter establishes an understanding for the work involved in conducting a longitudinal case study. In the third part of the chapter I provide the reader with a detailed description of the child participant including a linguistic profile based on background information such as parents' education, language use at home, approaches taken to bilingual language acquisition, dominance relations in the language development, exposure times and other relevant factors for the interpretation of the results presented in the thesis.

3.1 Reflection on methodological aspects

3.1.1 'Scarcity of data' and the need for a new corpus

There is a large number of corpora available on open access databases such as CHILDES (MacWhinney, 2000) for monolingual and multilingual children. However, most of the recordings are tapes or videos of children playing with a caretaker or investigator producing spontaneous speech samples in more or less naturalistic settings. The transcripts might have little or no information regarding specific syntactic properties one sets out to investigate, such as the use of specific lexical items or a morphological structure like the development of third person singular –s in English. This is potentially a disadvantage known as the 'scarcity of data' problem. As this study is concerned with the development of negation and negative interrogatives, structures that are not used very often in children's spontaneous speech productions (Döpke, 2000), it is essential to explore other methods for data collection to ensure a robust data set. Therefore, in addition to recordings from naturalistic play situations at the home environment of the child, I used elicited production techniques for data collection gathered at language labs at Macquarie University (Australia) and the University of Leipzig (Germany) respectively.

3.1.2 Method of choice: Elicited Production

The elicited production games were designed following the procedures outlined in Thornton (1996) and Crain and Thornton (1998). Elicitation tasks create situations or contexts that encourage the child to produce the syntactic structure under investigation, without modelling it, a crucial difference to elicited imitation tasks. The benefits of this method include, that i) the child's grammar is revealed directly, without the need to indirectly infer about the grammatical representations through yes/no responses as in various comprehension tasks; ii) high control of the context, which reduces possible interpretations of the child's utterances, a well-known problem in transcripts of spontaneous speech data; iii) a robust data sample of the target structure can be gathered in relatively short time to enable solid conclusions about a child's grammar at a particular point in time.

Elicited production data was collected through different experimental manipulations including testing properties of specific items, role-play and interaction with puppets in contexts evoking sentential negation or negative questions. The protocols of each context are reviewed in the next section. Each session combined multiple elicitation tasks, alternating with free play to keep the child's attention. Experimental tasks were designed to investigate the status the child assigns the negative markers in each target language. In addition I wanted to trace the developmental pattern of the functional category for negation (that is, NegP) in English, specifically targeting sentential negation in third person singular contexts.

Through analysis of use and placement of inflectional morphology and negation in the German data, it was possible to test the child's knowledge of finiteness and V2, a crucial prerequisite for cross-linguistic influence in the form of transfer to occur. Negation in third person singular (3PS) contexts showing violations of placement of inflectional morphology allow to follow the child's acquisition of the morphological category Infl in the English target language. This enabled testing of cross-linguistic influence in the form of accelerated acquisition of Infl in English, a follow up prediction of V2 transfer which predicts high inflection rates as a result of the V-I-C movement, accelerating use of inflectional morphology during the Optional Infinitive (OI) stage (see chapter 5 for details). Elicitation of English negation in 3PS contexts allows to test Thornton and Tesan's (2013) claim, that the negative form *doesn't* is sufficient

for children exposed to Standard English to acquire a functional category for negation (NegP). This approach is a crucial addition to Zeijlstra's Formal Flexible Feature Hypothesis (FFFH) (2007a; 2004), where children ought to acquire a NegP only through doubling effects in the input, for example through negative concord (NC). However, children acquiring Standard English are not exposed to NC, which causes a problem for the FFFH. Thornton and Tesan (2013) propose a solution to this learnability problem, as they claim *doesn't* is informative enough for children to establish head negation with the clitic *n't*, thus adding head negation to the default adverbial negation with *not* and successfully incorporating a NegP into their grammar. I tested this claim in a German-English bilingual child, to see whether the prediction holds that *doesn't* is strong enough to enable change within the bilingual child's syntax or not. In addition this is the place for expected language delay in the acquisition of head negation, following previous studies (Bernardini & Schlyter, 2004; Paradis & Genesee, 1996; Perez-Leroux et al., 2009; Serratrice, 2013) investigating cross-linguistic influences.

3.1.3 Eliciting sentential negation

Tasks were designed to be highly felicitous for the child to produce negation in third person singular contexts (3PS) in German and English respectively. In the elicited contexts adults typically produce the structure *NP doesn't V*. Eliciting the same structure in our bilingual child enables the detection of word order variations in the placement of negation and the verb, arguably due to cross-linguistic influence of the two target languages (Döpke, 1999).

Negative statements become felicitous whenever the corresponding positive affirmative proposition is under consideration. Hence, I first elicited positive statements, before manipulating the situation so that the same positive statements turned out to be incorrect. In particular, Kayla tested certain items to see whether the examined object displayed a specific property or not. To make the task enjoyable for her, a variety of 'games' were created. In one instance Kayla tested several markers to see if they still worked or not. Another game invited her to test whether or not certain items were able to float in a water bucket. In yet another scenario Kayla squeezed baby toys to hear if they could squeak or not. Every game started with 2 to 3 positive trials before a negative statement was elicited. All the verbs tested were intransitive (e.g. jump,

open, smell, fit, stick, etc.). The lead-in statements were always positive and I refrained from using negation, in particular avoiding the negative form *doesn't*. This was done to prevent Kayla from simply mirroring the adult utterance.

In (8) an example of an elicitation task is given, where the child tests properties of items. In this particular set up we encouraged the child to determine whether or not things work, specifically aiming for the contrast of 'it works' versus '*it doesn't work*'. A common problem in elicitation experiments is, that the child might simply answer the question with 'yes' or 'no' responses, as illustrated in (9). In these cases we prompted the child to answer in a full sentence through the reply "Yes/No what?".

(8) Protocol for eliciting 3rd person singular negation requiring do-support,
Kayla aged 3;00 years

Investigator: (testing old markers) And do you think this one works?

Kayla: Yes.

Investigator: You got the top off.

Investigator: You're strong, aren't you?

Kayla: Yeah. (tries the marker).

Kayla: That's working not.

Investigator: Oh, all the others were okay.

Investigator: Let's try another one.

(9) Protocol for eliciting full negated sentences, Kayla aged 3;08 years

Investigator: I say the dinosaur swims.

Kayla: no!

Investigator: no, what?

Kayla: They didn't swim.

The procedure outlined above was also used in the sessions recording the German data. Every session, whether English or German, included a native speaker of the target language in order to control for the child's language mode and to keep language mixing/switching to a minimal (Grosjean, 1997).

3.1.4 Eliciting negative interrogatives: The snail game

For elicitation of negative interrogatives a slightly different tasks design was used. The tasks for eliciting negative interrogatives was designed in line with previous studies eliciting questions and grammatical judgements on negative questions (Crain & Thornton, 1998; Hiramatsu, 2003; Thornton, 1990; van der

Lely, Jones, & Marshall, 2011). Questions were elicited in a game using a snail puppet. A snail was purposely chosen, as it embodies a shy animal that can hide in its shell. In addition a snail lacks teeth, legs, arms, hair, etc. all facts that were used to elicit negative questions in the format 'Why don't you have teeth?'. The game required two experimenters, one playing the puppet and the other being the 'grown-up' manipulating the toys to create the situations for the question-answer scenario. First the child was introduced to the puppet and the experimenter explained that the puppet is shy and would only talk to kids. This set the scene for the child to act as a mediator between the puppet and the 'grown-up'. The game started with some warm-up questions in which the 'grown-up' asked the child to find out the name of the puppet, its age, whether it is a boy or a girl and the like. Each time the child asked a full question and the snail answered, the child was allowed to reward the snail with a jewel. This further motivated the child's interest in the game. As soon as the child was comfortable with the situation and was able to respond to the 'grown-ups' lead-ins, the target elicitations were introduced. The protocol for the question-answer game was as follows:

(10) Protocol for eliciting interrogatives, Kayla aged 5;05 years

Investigator: I found this snail this morning in my garden, but it doesn't want to come out of its shell. Maybe it is afraid of grown-ups. Can you knock on its shell to see if it comes out?

Kayla: (knocks)

Snail: Who's there?

Kayla: Kayla.

Snail: (comes out to look) Oh hello Kayla.

Investigator: I knew the snail would talk to children. Thank goodness, this way you can help me to find out some things about this snail. I want to make sure it has a good time while it is in my garden. So can you ask it some questions for me?

Kayla: (nods)

Investigator: I wonder if the snail has a name. Can you find out?

Kayla: What is your name?

Snail: My name is snail.

Investigator: Oh good, now I know its name. I wonder how old Snail is. Can you find out?

Kayla: How old are you?

Snail: I am ...

The experiment targeted negative interrogatives with different *wh*-words (what, where, when, why, how), different tense (past and present) and different person and number features (2nd person singular, 3rd person singular, 2nd person plural). This ensured a variety of utterances and kept the child from repeating previous question formats. In addition (negative) yes/no questions of the form ‘Do you like spaghetti?’ were evoked. Negative interrogatives were elicited in the following way:

(11) Protocol for eliciting negative interrogatives, Kayla aged 5;05 years

Investigator: Now we know it’s a girl, we know her name and how old she is. But I just noticed something... Snail doesn’t have any teeth. I wonder why?

Kayla: Why have you no teeth?

Snail: Because I am a snail.

Investigator: I wonder what Snail likes to eat, especially as she has no teeth. Can you ask her?

Kayla: What likes you to eat?

Snail: Cabbage, spinach and grass.

Investigator: That’s interesting. I wonder if there are things that Snail doesn’t like to eat. Can you find out what she doesn’t like?

Kayla: What...

This question-answer game was used in different sessions with slightly different scenarios and different puppets. For example, in a guessing game to elicit long-distance questions, Oscar the blind old dog was introduced to Kayla. As he was hard of hearing and could not see very well he often made incorrect guesses about scenarios that were acted out in the workspace in front of Kayla and Oscar. This situation evoked the required (negative) long-distance questions. An example for a protocol is given below:

(12) Protocol for eliciting long-distance questions, Kayla aged 5;07 years

Investigator: Today I brought a friend of mine with me to play with you. His name is Oscar. He is a very old dog and cannot hear very well anymore. But he really wanted to play with you. Oscar’s favourite game is hide and seek. Would you like to play that with him?

Kayla: (nods)

Investigator: Here I brought some cookies. They are his favourite snack. I will hide one here (places it under a box), one here (behind Kayla's back) and one here (under a can). Now, if Oscar can tell us where the cookies are hiding, he can have them. Can you find out what he thinks where the cookies are hiding?

Kayla: What do you think...

Every full question that Kayla asked was included in the data sample for further analysis. Each protocol provided a great variety of responses, resulting in a total of 424 interrogatives.

3.2 Equipment, transcription and coding details

The recording sessions were taped with a Canon digital camcorder with an internal microphone, avoiding the need to attach any technical device to the child. This ensured free movement and allowed for high quality in sound during the collection of naturalistic speech in the home environment of the child as well. In addition a portable voice recorder was used as a back up in case of technical failure. Recordings were transcribed in the CHAT format (MacWhinney, 2000) using the transcriber mode and video linkage. This avoids the necessity for time coding, as each line of the transcript is directly linked to the video recording. Linkage enables reassessment of the transcriptions and interpretations within the situational context, including supra-segmental and non-verbal information. I transcribed all recordings myself. This has the advantage of conformity/continuity within the transcripts on the one hand and the disadvantage of subjective transcription through interpretation of the utterances at the other. However, due to external limitations this could not be avoided.

Analysis of the transcripts was done through semi-automated searches with the CLAN program (MacWhinney, 2000; MacWhinney & Snow, 1990). Five percent of the transcripts were searched manually to check the reliability of searches done with CLAN. Utterances containing the negators *no*, *not* and forms of the clitic *n't* were extracted in English. The German transcripts were searched for negators *nicht*, *nein* and all forms of *kein*. This seems to be unnecessary as in adult German the negator *nein* is used for anaphoric negation exclusively. However, German-English bilingual children might overextend the use of the English *no* in sentential contexts and produce utterances involving *nein* as

sentential negative modifier. In studies observing the development of negation in monolingual German speaking children (Clahsen, 1983; Clahsen et al., 1993; Stromswold & Zimmermann, 2000; Wode, 2008) such variable use of *nein* in anaphoric and non-anaphoric negations has been excluded. However, a difference between mono- and bilingual acquisition cannot be ruled out at this point. Single and two-word utterances, as well as anaphoric uses of the negation, were excluded from the dataset, as they bear little information on the placement of the negator in relation to the verb, the crucial aspect of this investigation.

Data were coded for clause type, clitic versus stand-alone negative marker, adult- versus non-adult like utterances and placement of the negator in relation to the (finite) verb in both target languages (Wode, 2008). For German this had the effect of establishing whether or not the child had already mastered the V2 syntax of German. The same analysis yielded insight into whether or not the German V2 syntax also affected the placement of negation in English.

3.3 The data collection

The case study investigated the development of negative declarative sentences and negative questions in monthly recordings over a period of almost three years. At the onset of the study Kayla was 2;10 years (34 months) old, around the age of 3 years, an age of predicted change in many models of syntax generation from the constructivist to the generative account. The relatively late start to data collection was for multiple reasons: possibly due to the simultaneous acquisition of two languages and several middle ear infections before the age of 2 years, Kayla was a late talker, producing her first two-word utterances around age 2;3 years (diary data from the mother); another reason accounting for the late onset of the study is the elicitation method chosen and the subject of this investigation. To correctly analyse the development of word order patterns in the placement of the verb and their variations during the acquisition of negation, Kayla had to produce multiword utterances containing at least one negative element and a verb, which was the case in both target languages at age 2;10 years. The investigation continued up to 5;07 years, the age when Kayla used adult-like negation productively in both target languages. A structure is coded as fully established and used productively when it was correct in over ninety per cent of all cases. Kayla was recorded approximately

twice each month for an hour in each target language respectively. Occasionally, recording was not possible due to illness or family holidays. This yielded a large data set, consisting of 62 recordings. Out of these 57 have been transcribed and analysed. The dataset for this thesis comprises of 27 English and 30 German transcripts. An overview of the German and English data obtained is given in Table 1 and Table 2 respectively. The final corpus consists of 828 utterances containing sentential negation produced by Kayla; 502 English and 326 German utterances. Due to repetitions, direct imitations of previous sentences in the input or due to ambiguity, a number of multiword utterances had to be excluded. The remaining 334 English and 126 German utterances were used for further analysis. In addition, this investigation contains 181 German and 424 English interrogatives, including 47 English and 36 German negative questions, which are represented in Table 3 and Table 4 respectively.

Table 1: Details of data transcribed in German

German				
Age ² (year; month)	Total number of utterances	MLU _w	Utterances containing negation	Utterances used for analysis
2;10* ⁺ ³	226	2,96	11	3
2;11* ⁻	253	2,74	3	3
3;00* ^{+, -}	334	3,60	8	4
3;01 ⁴⁺	127	2,85	21	10
3;04* ⁻	236	3,18	3	3
3;05 ⁺	67	3,39	9	7
3;06* ⁻	558	3,71	3	3
3;07 ⁺	156	4,38	52	40
3;08 ⁻	107	4,54	4	4
3;09* ⁺	277	3,89	12	11
3;10 ⁺	113	3,46	13	13
4;01* ^{+, -}	273	3,98	33	29
4;02 ⁺	153	3,62	26	8
4;03 ⁺	246	4,26	58	20
4;04* ⁻	224	3,98	11	4
4;11 ⁺	189	5,10	37	5
5;04 ⁻	158	4,07	22	12
Total	3697	(2,74-5,10)	326	126

² Ages marked with * include multiple recordings. The mean MLU_w's of all recordings in one age are presented here. For an overview of the exact MLU_w development refer to Figure 2.

³ Recordings marked with + indicate that utterances are mainly collected within elicitation tasks, while – represents data from naturalistic speech.

⁴ Grey markers highlight a forced language shift during time spent in Germany. Here the majority language in the environment became German, while at home the parents spoke English to the child.

Table 2: Details of data transcribed in English

English				
Age ² (year; month)	Total number of utterances	MLU _w	Utterances containing negation	Utterances used for analysis
2;11 ³	243	2,16	9	8
3;00* _{+, -}	443	2,51	40	30
3;01 ⁴ ₊	353	2,55	16	9
3;05-	249	3,92	0	0
3;06* ₊	269	4,27	31	27
3;07* _{+, -}	674	3,77	58	50
3;08 ₊	295	3,92	68	62
3;09-	257	4,26	0	0
3;10 ₊	284	3,69	25	19
3;11* _{+, -}	450	4,43	44	40
4;00 ₊	293	4,01	31	27
4;01 ₊	360	3,83	32	26
4;02* _{+, -}	349	3,67	12	11
4;03-	113	4,11	3	2
4;04 ₊	117	3,69	14	8
4;06-	111	3,96	0	0
4;11-	124	3,31	7	7
5;00-	136	4,13	0	0
5;01-	179	3,26	3	0
5;05 ₊	305	3,16	39	35
5;06 ₊	197	4,23	26	26
5;07 ₊	325	5,19	44	44
Total	6153	(2,16-5,19)	502	334

Table 3: Details of Kayla's German interrogatives

German interrogatives				
Age ² (year; month)	MLU _w	Adult like	Non-adult like	Total
2;10* ₊₃	2,96	9	2	11
2;11* ₋	2,74	12	3	15
3;00* _{+,-}	3,60	1	1	2
3;01 ⁴ ₊	2,85	11	1	12
3;04* ₋	3,18	6	1	7
3;05 ₊	3,39	8	1	9
3;06* ₋	3,71	24	4	28
3;07 ₊	4,38	4	1	5
3;08 ₋	4,54	4	0	4
3;09* ₊	3,89	11	1	12
3;10 ₊	3,46	9	3	12
4;01* _{+,-}	3,98	9	2	11
4;02 ₊	3,62	11	1	12
4;03 ₊	4,26	0	1	1
4;04* ₋	3,98	19	4	23
4;11 ₊	5,10	8	2	10
5;04 ₋	4,07	7	0	7
Total	(2,74-5,10)	153	28	181

Table 4: Details for Kayla's English interrogatives

English interrogatives				
Age ² (year; month)	MLU _w	Adult like	Non-adult like	Total
2;11 ³	2,16	3	2	5
3;00* ₊	2,51	11	2	13
3;01 ⁴ ₊	2,55	17	5	22
3;06 ₊	4,27	10	10	20
3;07* _{+, -}	3,77	37	9	46
3;08 ₊	3,92	17	6	23
3;10 ₊	3,69	19	0	19
3;11* _{+, -}	4,43	14	5	19
4;00 ₊	4,01	34	2	36
4;01 ₊	3,83	37	4	41
4;03 ₋	4,11	6	3	9
4;04 ₊	3,69	2	0	2
4;06 ₋	3,96	12	3	15
4;11 ₋	3,31	7	4	11
5;05 ₊	3,16	64	21	85
5;07 ₊	5,19	47	11	58
Total	(2,16-5,19)	337	87	424

3.4 A language profile for Kayla

The data presented were gathered in a longitudinal study investigating a bilingual girl, Kayla, who was being raised with the one language – one environment approach to bilingualism. Kayla’s language development was studied from the age of 2;10 to 5;06 years. Her parents are both tertiary educated native speakers of German with near native competence in English. When Kayla was three months old the family moved to Australia. This became the time of first exposure to English for Kayla, which is within the critical period (Haznedar, 2013; Meisel, 2008) regarding age of onset. Thus Kayla can be classified as a simultaneous bilingual child. The parents spoke German at home and English in the environment. From age eight months onwards she went to an English-speaking childcare centre three days a week. When the family moved to Germany for an extended period of thirteen months at age 4;03 years Kayla was exposed to a forced language shift. The language spoken in the environment became German, whereas both parents were strongly committed to speaking English at home. In Germany Kayla went to a German-speaking childcare five days a week. At the age of 5;04 years Kayla and her parents moved back to Australia, where they stayed for the remainder of this study. Table 5 lists the weekly exposure times of both target languages throughout the time span of the investigation, including the forced language shifts. It can be seen that Kayla is predominantly exposed to German through the input.

Table 5: Language contact for Kayla

Age (year; month)	Language in the environment	Home language	Weekly exposure times (environment/home)
2;10-3;00	English	German	24h/60h
3;01-3;03	German	English	70h/14h
3;04-4;01	English	German	24h/60h
4;01-5;03	German	English	45h/39h
5;04-5;07	English	German	24h/60h

3.5 Language dominance as source for cross-linguistic structures?

Theoretical issues regarding dominance and the influence on language development have already been discussed in detail in section 2.1.4. Through the

forced language shifts the influence of language use of the society at large for the bilingual development could be monitored through the analysis of mean length of utterance in words (MLU_w)⁵. In line with Clahsen, Penke and Parodi (1993) MLU_w values were used to establish the developmental stages of Kayla⁶. However, developmental boundaries were determined by the presence of a gap or big leap in MLU_w values, rather than a strict numeric formula, causing markedly different durations of specific developmental stages. Keeping in mind that it is impossible to compare MLU values across languages⁷ it is nevertheless a useful measurement to show the child's progress in each of her two languages. This was undertaken to establish the overall progress in language development in order to illustrate normal language development of our subject, Kayla, in comparison to other German-English bilingual children studied in previous literature. MLU_w are used here due to the difference in morpheme complexity of the two target languages (Döpke, 1998). In addition this method is faster and more sensitive to the child's development as no 'ad hoc' decisions regarding the nature of morpheme development (Hickey, 1991) have to be made. In addition MLU_w analysis verifies the dominance relations implied by the exposure times. It also allows us to see whether or not the forced language shifts had a direct impact on the language development. Figure 2 shows Kayla's language development in both target languages measured in MLU_w.

⁵ See Hickey (1991) for a discussion of the benefits of various ways to calculate MLUs, as well as Parker & Brorson (2005) for a comparison of counts of MLUs in morphemes and words.

⁶ Phase I ≤ 1.75 ; Phase II 1.75-2.74; Phase III 2.75-3.74; Phase IV 3.75-4.74; Phase V ≥ 4.75 (Clahsen et al., 1993).

⁷ Developmental progress in morphologically more marked languages like German might manifest itself through increase in syntactic operations, such as movements, rather than an increase in utterance length (2000).

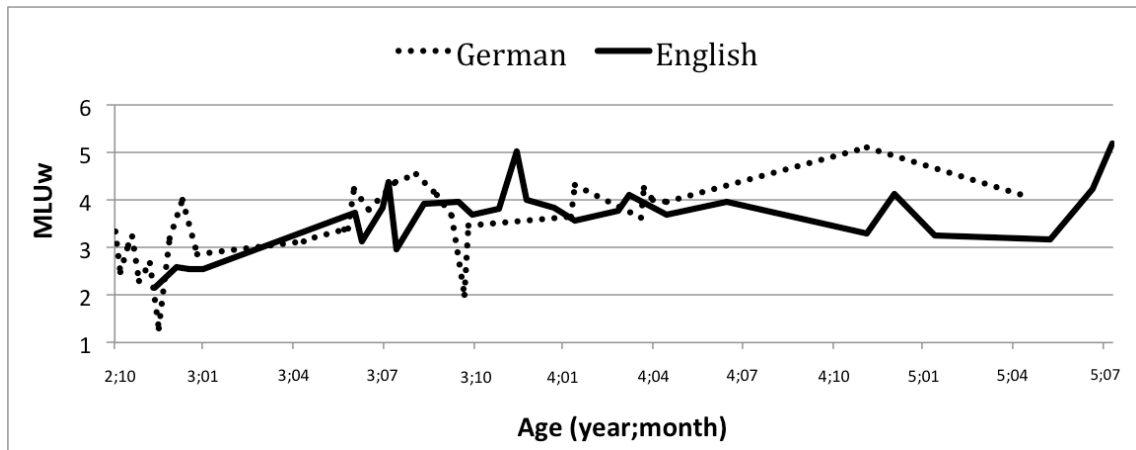


Figure 2: Kayla's language development in MLU_w

Compared to monolingual children (Clahsen, 1990b; Wenzlaff & Clahsen, 2005) the MLU_w values show a slight delay of about two months in the acquisition of German. This can be attributed to the greater demand on memory capacity of bilingual first language acquisition (N. Unsworth, 2010; S. Unsworth & Blom, 2010). Kayla's German MLU_w shows no difference compared to other bilingual German-English speaking children in previous studies (Döpke, 1999; Schelletter, 2000; Tracy, 1995). A second observation is the relative delay in her English development, which is not evident in her German data when compared with other bilingual German-English children. In comparison with the four children presented in Döpke's (1998; 1999; 2000) study, Kayla seems to lag behind by an average of four months. This can be attributed to differences in sampling methods, as data in the current study are derived through recordings of naturalistic speech and elicited productions. As elicited production pushes the child to use structures that she might not be comfortable using in naturalistic speech just yet, this method of data sampling potentially results in higher rates of non-adult like utterances and avoidance structures, which would go unattested in naturalistic speech sampling. Hence in naturalistic speech certain structures simply do not appear until they are (fully) acquired. I conclude that Kayla is a typical-developing, balanced bilingual German-English speaking child.

It can be noted that there are no drastic changes in use of language as captured by MLU_w related to the forced language shifts. Regardless of the country Kayla resides in, both of her target languages develop in a similar progression, although for the extended period spent in Germany her MLU_w values for German were slightly higher than for her English. Thus throughout

this time Kayla was slightly dominant in German. When she moved back to Australia this difference diminished quite suddenly. I conclude that language dominance plays a factor in the retention of non-adult like structures, but they are not the source of it. One possible source discussed in the literature are contact induced changes through the input. The mother as primary caretaker and native German speaker might introduce non-target structures into the grammar of the bilingual child. To assess this claim we now turn to the analysis of child directed speech.

3.6 Contact-variety input in child directed speech as source for cross-linguistic structures?

Over the last decade an increasing number of linguists have turned away from the child as possible source of the occurrence of cross-linguistic structures or the language pair involved. These researchers focus on so called contact-variety input. Here the focus is on primary caretakers, who themselves are not native speakers of the language spoken with the child. The claim is that they might introduce cross-linguistic structures to the child through so-called contact variety input in everyday communication (Hauser-Grüdl et al., 2010; Paradis & Navarro, 2003; Sorace, 2004), causing differences between monolingual and bilingual first language acquisition.

This claim of contact induced changes through child directed speech (CDS) is tested with the comparison of the input from the mother, a native German speaker with near native competence in English and the assisting investigator, Prof. Rosalind Thornton, a native speaker of English. The first three and last three recordings were taken as reference to assess negation in CDS. The transcripts contained 1219 utterances from the mother and 2797 from the English investigator. As both speakers were carefully refraining from modelling the structure under investigation, there are relatively few utterances containing sentential negation. Overall the mother produced about the same amount of clitic sentential negation as the native speaker, ranging between five and six per cent. However, there is a difference in usage of adverbial negation. The mother uses the adverbial negative marker *not* twice as much as the English investigator, accounting for four per cent of sentential negation. This implies a more frequent production of adverbial negation by the mother, possibly due to her native language German, which only features adverbial negation. However,

the total number of utterances with *not* as sentential modifier remains low (49/1219) and it is unlikely that frequency can account for the data we found in the subject's corpus. This is in line with other studies focusing on parental contact-variety input (Hauser-Grüdl et al., 2010). In addition the mother never displayed transfer of the German V2 syntax to English, a structure that is only produced by the bilingual child.

A second structure that could influence Kayla's use of sentential negation is the use of tag questions. Tag questions are added to declaratives to either request confirmation or to indicate uncertainty (Dennis, Sugar, & Whitaker, 1982). An example of a negative tag question is given in (13).

(13) She looks nice, doesn't she?

Tag questions are formulated in a very particular way, involving several linguistic manipulations of its declarative. For example Dennis (1982) elaborates that a tag pronoun uses person, number and gender of its declarative and a subject pronoun is restated in the tag, while a subject noun is pronominalized before it can be used in a tag question. Furthermore if the declarative has an auxiliary, this then becomes the verb of the tag, otherwise *do*-insertion takes place. The auxiliary of *do*-support surfaces before the tag pronoun, except with an uncontracted negated auxiliary, as in 'did you not?'. Importantly the polarity of the declarative is reversed in the tag. Therefore affirmative declaratives receive a negative tag and vice versa. It follows, that tag questions reveal a lot of the underlying syntax of its declarative. In the case of affirmative declaratives the tags are negative, a fact that could result in an elevated number of negative clitics in the child's input, as tag questions are not unusual in adult-child interaction, given its pragmatic purpose. A search of the transcripts revealed no elevated use of negative tags by the mother. However, the investigator, a native English speaker, used a lot of tags. Even though they were used frequently within the recording sessions, this exposure was very limited in time, given that the bilingual child visited the language lab only once a month for 60 minutes. In addition the investigator refrained from using tag questions with the form 'doesn't', as these were the focus of this investigation.

Another factor that could potentially contribute to Kayla's non-adult like productions is the fact that she received a lot of her English input from monolingual or other bilingual peers in the childcare centre. These children could introduce other structures from other target grammars into Kayla's

grammatical system. This however remains speculation, as these interactions were not recorded.

In summary, contact induced changes through (i) child directed speech of Kayla's parents, non-native speakers of English, (ii) elevated exposure to the structure under investigation through tag questions and (iii) the exposure to other non-adult like structures from other bilingual peers seem little convincing as source for the high rates of cross-linguistic influence I found. Thus other explanations, namely language internal sources (e.g. parameter settings), have to be sought in order to explain transfer of V2 (chapter 4), the high rates of use of inflected main verbs (chapter 5) and the delay in the acquisition of English head negation (chapter 6).

Chapter 4: V2 transfer?

This chapter introduces the parameter governing verb movement. Verb movement is a well-studied phenomenon within the generative framework (Bonnesen, 2009; Clahsen et al., 1993; Poeppel & Wexler, 1993; Radford, 1990). The principles and parameters approach to language acquisition brings different phenomena and structures in different languages together as derived by the same underlying syntactic process. While principles are universal and govern the syntactic component in every language, parameters demarcate the different options a language may exhibit. A recent definition of parameters suggests that they define which formal features can make up functional categories and determine how such a feature is expressed in that particular language (Chomsky, 1995a). Parameters are central to language acquisition, as they provide a limited set of options to the learner. Within this model the child simply has to set the parameter to the appropriate value on the basis of the available linguistic input (Clahsen, 1990a). Thus parameters account for the fast and accurate acquisition process of certain properties, including verb movement, in children.

While German and English are two West Germanic languages that have many similarities, they also demonstrate significant differences in certain syntactic phenomena. One such phenomenon is the verb-second (V2) requirement of the German syntax, which can be derived by double head movement, an analysis originally proposed by Thiersch (1978). The variable placement of the verb in German has led to the analysis that the basic position of the verb is in clause-final position, while all other placement patterns are derived by verb movement. In matrix clauses and yes/no questions, the finite verb is raised to initial position by movement to the C position in the complementizer phrase (CP). In declarative sentences, a further constituent is raised to the specifier position of CP through the process of topicalization. Thus in simple declarative matrix clauses the finite verb always appears in the second position.

English, by contrast, is a non-V2 language, where main verbs remain in situ in VP and never raise. The verb or auxiliary typically appear in third position (from a linear perspective), whenever the subject is not clause initial.

However, auxiliaries and the verbs *be* and *have* are permitted to raise in affirmative declaratives, sometimes surfacing in second position of the clause, even though movement is only up to I. In addition, English interrogatives feature auxiliary movement from I up to C, parallel to German. In these cases English displays the same surface word order (SVO) as German. This mixed distribution of verb movement in English causes ambiguity in the input. The bilingual child has to figure out that German has a [+verb movement] setting and English a [-verb movement] one, despite the variable input. The conflicting data children are exposed to could, potentially, lead to non-adult like productions in a German-English bilingual child, resulting in overgeneralized double verb movement (V-C).

To find out whether or not the verb movement options are subject to cross-linguistic influence, I examine the placement of negation in simple matrix clauses. The placement of the negator *nicht* in relation to the finite verb is to a large extent the function of verb movement and as such an excellent test case. In negative matrix clauses, the V2-property requires the finite verb to move over negation, stranding the negation in sentence-final position (Döpke, 1999). This results in a V-NEG word order, as in ‘Die Ente schwimmt nicht’ (The duck swims not). English, by contrast, is a language where main verbs remain in situ and do-support is required in sentences without a modal or auxiliary verb, leading to the word order NEG-V. English could be said to be the less economical language in the sense that it features two placement patterns for the verb in negative main clauses – raising the auxiliary/modal or inserting do-support and leaving the main verb in situ. Following Hulk and Müller’s (2000) Cross-linguistic Influence Hypothesis, transfer is predicted to be unidirectional from German to English, because the V2 grammar is predicted to be overgeneralized, as data in the input from both target languages display confirming evidence for a double verb movement grammar (V-C). This results in English utterances with V2 word order, like *‘The duck swims not’, where the negator appears in a position following the finite verb. In contrast, the Derivational Complexity Hypothesis by Jakubowicz (2006) predicts no such transfer from German to English. Here the two-step movement required to derive V2 is assumed to be more complex, as more movement steps are involved. On Jakubowicz’s account, children will choose the less complex option available. Thus the English non-movement option would be the preferred

construction in a German-English bilingual context, leading to the word order of negation preceding the main verb.

In this chapter I will focus on the derivational complexity of the verb-second construction in German, henceforth V2, and compare it to the non-movement option provided by the English syntax. The notions of economy, derivational complexity and surface overlap, which were introduced in chapter 2, lead to very specific predictions regarding possible word order transfer in simple (negated) matrix clauses of the bilingual child in the current study. The claim that V2 never transfers (Bohnacker, 2006; Håkansson et al., 2002) is challenged by the results presented here and in other studies, which also demonstrate significant V2 transfer in bilingual children's acquisition (Anderssen & Westergaard, 2010; Bentzen, 2013; Westergaard, 2007b).

The chapter is organized as follows: In section 4.1 I briefly review the syntax of the German verb-second (V2) requirement, specifically focusing on the consequences for verb placement in matrix clauses when sentential negation is introduced into an utterance. Any acquisition challenges for monolingual children regarding the mastery of V2 are discussed in section 4.2. Specific attention is paid to the structures that trigger a V2 analysis in children's syntax, before turning to the English properties of verb movement, do-support and negation. Here the focus is also on data that trigger either a raising or non-raising analysis for the English verb-movement paradigm. While section 4.4 reviews previous studies that investigated verb placement and negation in a German-English bilingual context, section 4.5 introduces the possibility of transfer of V2 into the English target language. Here the Cross-linguistic Influence Hypothesis and the Derivational Complexity Hypothesis are introduced to formulate clear predictions regarding possible transfer in bilingual first language acquisition. The findings from the current child data, which support the Cross-linguistic Influence Hypothesis, are presented in section 4.6 and discussed in 4.7. Section 4.8 concludes this chapter.

4.1 German: V2 and Negation

German is a verb second language, featuring obligatory verb movement to the second position of the matrix sentence. It is generally assumed that the verb raises to the head of CP (Bentzen, Hrafnbjargarson, Hróarsdóttir, & Wiklund, 2007; Platzack, 2001; Thráinsson, 2007; Westergaard, 2009b; 2009a). This

movement is restricted to main clauses, as the C position is filled by the complementizer in embedded clauses. Further, German displays verb movement from V to I to C. This contrasts with V2 languages such as Icelandic or Yiddish, where the finite verb moves only up to I, thus allowing V2 in embedded clauses as well (Thráinsson, 2007). All other modern Germanic V2 languages including German, have V2 word order in matrix clauses only (exceptions to this rule will not be discussed here)⁸.

There are two motivations for this V2 analysis, which have resulted in different terminology, such as ‘symmetric versus asymmetric’, or ‘general versus restricted’ V2 (Thráinsson, 2007). Movement to C is assumed due to (i) the asymmetric word order of adverbs and the finite verbs in embedded and main clauses respectively and (ii) the word order of topicalized arguments and the finite verb in matrix clauses. The central observation mentioned under (i) is that the finite verb precedes the adverb in main clauses but not in embedded contexts. This led to the conclusion that the main verb moves to the head of C (C⁰), whereas the subject moves to SpecCP (if it precedes the finite verb) generating V2 word order in matrix clauses.

The second motivation for movement to C mentioned under (ii) states that in V2 languages topicalized elements are immediately followed by the finite verb in main clauses. Topicalization refers to movement of non-subject constituents to the clause initial position. This kind of movement is stipulated only under the assumption that topicalization involves movement to SpecCP with movement of the finite verb to the empty C, which is unavailable in embedded clauses (Thráinsson, 2007; Westergaard, 2009a). While V2 in many Germanic languages is required in matrix clauses and *wh*-questions, non-V2 is present in exclamatives, unmarked yes/no questions and embedded clauses, which feature verb-final (VE) or verb first (V1)⁹ word order. However, there are exceptions too, such as the German *weil*-V2 clauses (equivalent to *because*, an English causal adverbial clause), that allow V2 in embedded adverbial clauses (Antomo & Steinbach, 2010).

German V2 is a strictly syntactic requirement, not the result of a default word order. As noted, there is some consensus in the literature that German is

⁸ The interested reader is directed to the work of Holmberg (2013) and (Thráinsson, 2007).

⁹ Interrogative V1 sentences have formerly been analysed as being covertly V2, where an abstract question operator occupies the first constituent. This has also been argued to be the case in imperatives (Holmberg, 2013).

an SOV language and that the V2 property results from the syntactic movement of the finite verb. However, in simple declaratives verb movement due to the V2 property often leads to a SVO surface word order. This is important to keep in mind, as in English auxiliary verbs or modals can also occupy the second position, yielding SVO word order. English, however, is a non-V2 language in the sense described above, as the verb or auxiliary can appear in second position, but does not necessarily have to. If the subject is not in clause initial position the verb or auxiliary occurs in third position. This is impossible in German matrix clauses, as they obligatory feature V2 to C. Therefore even if a verb surfaces in the second position of an English sentence this is only from a linear perspective and does not imply that the verb has moved to I or even C, as would be the case for German V2. Another difference between English and German is the level of highest projection. English declarative sentences are IPs and *wh*-questions are CPs, while in German both clause types are structurally CPs. Thus, even though English and German share the same surface word order, the syntactic structure differs greatly, as indicated in example (14) and (15).

- (14) [_{CP} Deine Mutter_i [_C kann_j] t_j kochen t_j.]
 your mother can cook
 ‘Your mother can cook.’

- (15) [_{IP} Your mother [_I can] cook.]

German verbs are marked as finite through inflection for tense, mood and subject-verb agreement. Finiteness and the acquisition of the functional category Infl(ection) will be discussed in greater detail in chapter 5. For now, the focus is on verb movement. The distribution of the finite verb is captured in the double movement analysis (Clahsen et al., 1993), where V2 in German is a property derived through head movement of the finite verb from a head-final position of the VP to a head-final position in T/IP and finally to a head-initial/specifier one in the CP. This double raising is illustrated in Figure 3.

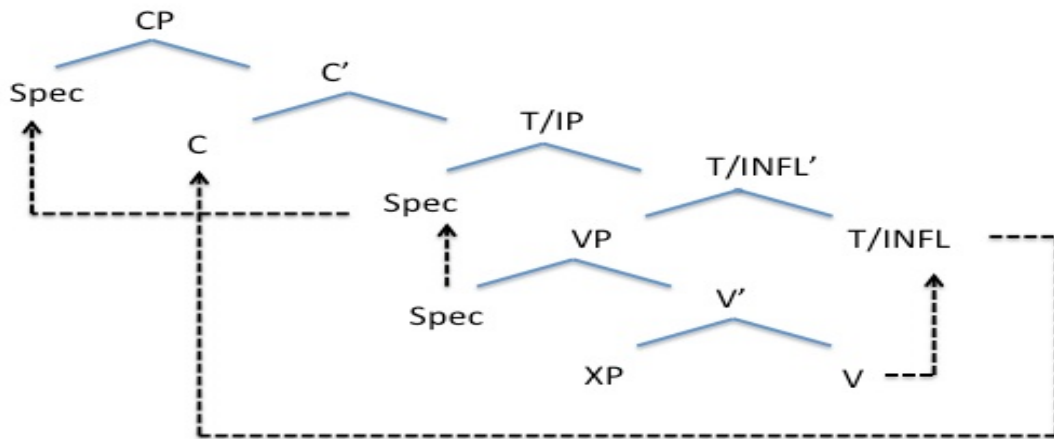


Figure 3: Derivation of V2 in German main clauses

Within the Minimalist framework (Chomsky, 1995b) verb movement in German matrix clauses is triggered through feature checking. There exist two strength values of features: strong or weak and only strong features trigger movement operations. Verbal features relevant for generating V2 are tense and agreement, which are associated either with the functional head I^0 or C^0 . Verb movement of the finite verb out of the VP is thus generated by the force of the strong features present in C^0 . These features might be spelled out by complementizers in German, leading to the asymmetry between matrix and embedded clauses (Weissenborn, 2002).

In most languages the way in which negation is expressed is closely linked with its position in the sentence relative to the verb – either systematically preceding the verb or following it. Hence the position of negation with respect to the verb has been studied extensively within the acquisition literature and taken as support for children’s mastery of verb movement in languages such as French or German (Döpke, 1999; Hamann, 1996; Meisel, 1997). Due to V2 in German matrix clauses, adverbs and modal particles (for example *still*, *only*, *even*, *also*) surface post-verbally in sentences without auxiliaries or modals. The two-step raising in German matrix clauses ensures the movement of the finite verb to the second position and leaves the negative adverb *nicht* stranded, so that it surfaces in a position following the finite verb which can also be clause final (16)¹⁰.

(16) Ich sehe sie nicht.

¹⁰ Note that verb movement to C is just one part of the explanation for deriving examples like (16). The second part involves the role of object scrambling in negative sentences, as exemplified in chapter 6.1 and also discussed in Hamann (2000).

I see her not.

‘I don’t see her.’

(17) ..., dass ich sie nicht gesehen habe.

..., that I her not seen have.

‘..., that I have not seen her.’

In German embedded clauses negation with the negator *nicht* behaves differently. Here the finite and the non-finite verb appear in a clause final position, forcing the negator to surface in a pre-verbal position (17) (Wenzlaff & Clahsen, 2005). In predicative constructions the negator *nicht* appears before the predicative complement (18) (Dimroth, 2008).

(18) Der Baum ist nicht hoch.

The tree is not high.

‘The tree isn’t high.’

It should be noted however, that the double movement account for German V2 is debated amongst syntacticians and other proposals have been advanced (Zwart, 1997). As this thesis focuses on child data concerning the word order and placement of the negative marker in main clauses, I will not discuss alternative proposals. The V2 analysis outlined above is sufficient to explain the child data presented.

4.2 The acquisition of V2

To follow the developmental pattern of the acquisition of V2 in children, generative researchers have largely focused on the placement of the finite verb (Anderssen, Bentzen, & Westergaard, 2010; Clahsen et al., 1993; Poeppel & Wexler, 1993; B. D. Schwartz & Vikner, 1996; Waldmann, 2014). Some have argued that once children master verbal morphology (Clahsen, 1990a; Radford, 1990) they are able to incorporate functional categories of the I- and C-domain into their syntax, allowing them to generate V2 word order. Clahsen and Penke (1992) found that children use V2 word order up to 90% correctly after they have acquired the subject-verb agreement paradigm. Their central observation was, that children added a higher projection (arguably C) to their syntactic representation allowing verb movement once they had mastered inflection of the German second person singular present tense *-st*, which is one of the latest forms to develop in the subject-agreement paradigm. Others, however, have not found a correlation between subject-verb agreement and the syntactic

development of V2 in children (Weissenborn, 1990). For example, Westergaard (2009b) showed that Norwegian and Swedish children master V2 as early as German children, despite the poor inflectional paradigm of these languages. Also Meisel & Müller (1992) demonstrated, that children successfully use V2 word order before the acquisition of complementizers in subordinate clauses. This phenomenon has also been attested in other V2 languages (Westergaard, 2007a).

It has often been asserted that mastery of verb-movement is related to the acquisition of finiteness (Clahsen, 1990a; Poeppel & Wexler, 1993; Wenzlaff & Clahsen, 2005; Wexler, 1998). The general claim is that children know the relationship between finiteness and V2, as they correctly place finite verbs in the V2 position and leave nonfinite verbs in the base position at a clause final position. In other words, finite verbs never occur in positions requiring a nonfinite verb and vice versa. In a similar fashion many studies focusing on V2 languages have found that children move finite verbs over negation in matrix clauses and non-finite verbs are left in situ, thus following negation, displaying the required word order of the adult grammar (Déprez & Pierce, 1993; Waldmann, 2012; Westergaard, 2009b). In contrast, Döpke (1999) rejects the claim of finiteness guiding the acquisition of V2 word order. Three of her four English-German subjects started with preverbal negation like *'Hund nicht kommt rein' (Döpke, 1999) (*'The dog not comes inside'), a structure unattested in monolingual German speaking children. Once the children adopted the adult word order and used postverbal negation, German target like utterances displayed nonfinite verbs following negation in 71% (24/34) in all cases, whereas 29% (10/34) of the verbs following negation were finite. This non-adult like structure is well above the mark for performance error, which is defined as 10% or lower (Brown, 1973). This variability in verb placement implies that children were not yet aware of the relationship between finiteness and verb movement in German, as finite verbs should raise and appear in a preverbal position only. However, the children studied by Döpke were bilingual, and so it is possible that other factors could have influenced the acquisition of verb movement. So the question remains: what triggers V2 in children?

According to Westergaard (2005) children learn V2 as they select functional categories from a universal set provided by UG by making use of cues in the input. A cue is defined as an abstract structure that is formed in the

children's mental grammar during the acquisition process (Lightfoot, 1999). The cues are present in certain sentence types in the input. However, cues are not to be misunderstood as surface strings. Rather children process the set of sentences from the input, which triggers the incorporation of cues into the child's I-language. A sentence triggers a cue if the cue is "unambiguously required for the analysis of the sentence" (Lightfoot, 2006, p.78). The cue for children ensuring the acquisition of the V2 properties is said to be "a piece of a structure where a phrasal category occurs in the specifier of a clausal phrase (CP), whose head is occupied by a finite verb" (Lightfoot & Westergaard, 2007), illustrated in (19).

(19) $_{CP}[XP \ cV...]$

Further children are assumed to be conservative learners in the sense that they will only build as much structure as necessary to incorporate the input. This is similar to the principle of structural economy proposed in the Lexical Learning Hypothesis by Clahsen, Eisenbeiss and Penke (1996). Children are assumed to move elements only as far as needed to satisfy the evidence of the input. With respect to verb-movement children are typically reported to move less than what is required in the target language, leading to non-adult like productions with omissions rather than commissions. This phenomenon is widely attested for the lack of subject-auxiliary inversion in English speaking children (Radford, 1990), the lack of scrambling and object shift in German and Dutch children (Barbier, 2000), lack of subject-verb agreement and overgeneralized V2 in German (Weyerts & Clahsen, 1994) and lack of verb movement (Westergaard, 2008b). Therefore the cue for V2 word order and consequently movement to C must be presented reasonably frequently with a high saliency in the input provided to children, otherwise children are expected to refrain from V-C movement in contexts where a more economical option is available (i.e. V-I movement or non-movement).

As highlighted above, V2 is obligatory and very frequent in the input, also to young children acquiring a verb-raising language V2 is present in topicalisation structures like (20), interrogatives (21) and sentences with adverbials (22) (Lightfoot & Westergaard, 2007; Westergaard, 2003).

(20) Heute liest Anna den ganzen Tag Shakespeare.

Today reads Anna all day Shakespeare.

'Today Anna reads Shakespeare all day.'

- (21) Was las Anna heute?
What read Anna today?
'What did Anna read today?'
- (22) Anna liest immer Shakespeare.
Anna reads always Shakespeare.
'Anna always reads Shakespeare.'

Lightfoot (1995) estimates the frequency of this cue to lie between 17% and 30% for all matrix clauses, according to the counts of these V2 structures occurring in natural adult conversations. Similar proportions are found for German speaking children (Phillips, 2010). Analyses of child directed speech revealed an even higher value of approximately 66% for the V2 cue presented to Norwegian-speaking children (Westergaard, 2008a). Furthermore Westergaard (2008a) claims that children search each clause type separately, which increases the saliency for the V2 cue. As cue frequency is calculated on a much smaller set of utterances from the overall input, the so-called micro-cues are much more robustly presented in the relevant structures, often leading to a saliency of close to 100%. In conclusion, if Westergaard is correct, the highly frequent V2 structure should be acquired early in the course of acquisition.

The cue for V2 is argued to be very robust, as German displays a rich agreement paradigm and the word order in sentences containing adverbs reinforces the double verb movement cues, as the finite verb precedes adverbs (Westergaard, 2009a). Therefore German monolingual children constantly receive reinforcement of the V-to-C movement cue through agreement and word order (Santorini & Kroch, 2007; Westergaard, 2008a), which accounts for the rapid and nearly error-free acquisition of V2 in matrix clauses (Clahsen et al., 1993; Meisel & Müller, 1992; Poeppel & Wexler, 1993). Thus it is not surprising that Poeppel and Wexler (1993) observed use of V2 in the earliest multi-word utterances, which emerge around the age of two years. This is in line with other findings from monolingual German speaking children, who are reported to have this V2 requirement in place early, at an MLU between 1.75 and 2.25 (Meisel, 2007; 1986).

Regarding negation and V2 word order the following can be concluded. Provided children have acquired V2 in German they should display only two placement patterns of the negation marker *nicht*:

- i) post-verbal appearing after a finite verb or

ii) pre-verbal before a non-finite verb (Clahsen et al., 1993).

Thus if children produce utterances with negation following a non-finite verb or preceding a finite verb in main clauses, it would indicate that children fail to adhere to the German V2 syntax (Déprez & Pierce, 1993). Unless children raise the finite verb to C, post-verbal negation in matrix clauses cannot be derived (Clahsen et al., 1993).

4.3 English: Verb movement, Do-support and Negation

While German features a [+verb movement] setting of the verb movement parameter to generate V2, English is a non-V2 language with a [-verb movement] setting. In contrast to German, where main verbs always raise to C for the agreement features to get checked, English main verbs receive their inflectional affixes through lowering in affirmative declaratives, as in ‘The duck swims’ (Bobaljik & Thráinsson, 1998). Thus, English main verbs remain in situ in VP and never raise. Negation therefore appears to the left of the main verb or sentence-medial adverb.

However, in Modern English auxiliary verbs are permitted to raise in affirmative declaratives, but only to I and not to C, as they do in German (Clahsen et al., 1993; B. D. Schwartz & Vikner, 1996). Further English interrogative contexts require auxiliaries to raise to C, paralleling the German V2 structure. Westergaard (2007a) suggests that in addition to interrogatives, stylistic inversions result in a V2 distribution. Whenever certain information structural conditions are in place, such as the verb being lighter than the subject (*‘On the platter **lay** some delicate cheeses’*), V2 can surface in English. Negative inversion (*‘Never **has** anyone seen a Yeti’*) is also described as an instance of a residual V2 constraint (Rizzi, 1996; Zanuttini, 1996). In addition, the verbs *have* and *be* display exceptional behavior as they raise to I like modals and auxiliaries, but unlike other main verbs. Stylistic inversion and its specific syntactic derivations are still controversial (Levin & Rappaport Hovav, 1995). The important point is that stylistic and negative inversions must be relatively infrequent in the input young children typically receive. The key observation for our purposes is that English is a mixed language in the sense that it prohibits V-to-C movement of main verbs, but allows movement of auxiliaries and the verbs *be* and *have*. As auxiliaries, the verbs *be* and *have* and interrogatives are quite frequent in the input to young children, and this mixed distribution of main

verbs and auxiliaries can easily lead to overgeneralized verb movement, as I will demonstrate.

There are two factors that further complicate the acquisition of verb placement in English negated matrix clauses. First, English requires *do*-support, a structure without any parallel in German syntax. Secondly, English has two negative markers for negation: either using the clitic *n't*, which constitutes a head in adult English, or the negative adverb *not*. The analysis of *not* as an adverb is not uncontroversial, however. Since the work of Pollock (1989) adult English is said to have a maximal projection NegP, with the negator *not* or the clitic *n't* heading this functional projection. The locality constraint states that a head α can move and adjoin to a head β only if α selects β (Holmberg, 2003). Main verbs remain in situ, receiving inflection through lowering of the marker for tense (Bobaljik, 1995). However, inserting a negative head into the derivation prohibits this lowering, as it would violate the Head Movement Constraint (Travis, 1984). To resolve this controversy *do*-support has been introduced as a rescue operation to save the derivation. The auxiliary *do* is not subject to the locality constraint on tense lowering. Thus *do* can raise over the negative head and collect the inflectional affix, which would have been left stranded in simple negative sentences containing only main verbs (Santorini & Kroch, 2007). While this analysis nicely explains the stipulation for Modern English *do*-support it has its drawbacks. In particular, it does not provide a satisfying explanation of early child data. Initially children display only adverbial negation with *not*, which becomes evident in movement of inflection down to the main verb, a proposal in the literature that will be supported by my own data. While analyzing *not* as adverb saves children from producing stranded inflectional affixes, they still need to acquire *do*-support and head negation in order to converge to the adult grammar.

The status of the negative marker *not* has long been debated within the field. The question of whether it constitutes a head or is (mis-)classified as such and should be treated like a specifier instead, has not been settled yet. Recent research, however, has greatly contributed to the debate. Several studies have provided evidence that *not* is positioned in SpecNegP or constitutes a negative adverb (the analysis that is supported within this thesis), while the clitic negation *n't* is indeed a head (Haegemann, 1997; Thornton & Tesan, 2013; Zanuttini, 1997; Zeijlstra, 2007b; 2004). This is an important distinction to

make in order to explain the child data presented within this thesis. The bilingual child produces utterances such as *'It not jumps', in which it appears that the inflection is moved over negation with *not*, a movement that is prohibited by the Head Movement Constraint of UG, if *not* were a head. Therefore I will adopt the analysis offered by Zeijlstra (2007a; 2004) and assume the negator *not* to be a negative adverb (for more detail see chapter 6). This is in line with previous findings from other languages (e.g. West Flemish) which feature a negative adverb which projects at SpecNegP and a negative head in Neg⁰ (Haegeman & Zanuttini, 1991). This analysis however does not provide any answers to the question of how children acquire do-support and become adult like in their productions.

Regarding negation and verb placement in English, negation appears to the left of the verb in a pre-verbal position in sentences without any modals or auxiliaries, as main verbs remain in situ. This yields Neg-V word order in matrix clauses, regardless of whether the adverbial form of negation *not* or the clitic *n't* that constitutes a head is used. In the absence of modal or auxiliary verbs, do-support is needed in sentences with a main verb in English to provide a landing site for the otherwise stranded inflectional affix. The affix gets stranded, as the main verb is prohibited from raising and head negation with the clitic *n't* blocks the lowering of the inflectional marker onto the verb (Adger, 2003). In sentences containing both, a lexical verb and an auxiliary or modal, the auxiliary/modal raises, while the lexical verb remains in situ. Thus in English negation follows the auxiliary if it is present (AUX-Neg), but always precedes the main verb (Neg-V), as illustrated in example (23) and (24).

(23) He will not come to the party. (AUX-Neg-V)

(24) *'He comes not to the party.' *(V-Neg)

Target: 'He doesn't come to the party'

Before I elaborate the effects of the surface similarities and underlying differences of verb movement in regards to negation for the acquisition pattern of a German-English bilingual child, the next section reviews previous studies on this topic.

4.4 Previous investigations of German-English bilingual development of verb movement and negation

There are few studies investigating the simultaneous acquisition of English and German that have focused on negation in children's grammars (Döpke, 1998; 1999; 2000; Schelleter, 2000; Tracy, 1995). The focus of Tracy's (1995) study is primarily on language mixing and not the analysis of word order and its interaction with negation. Nevertheless, Tracy provides some interesting data regarding negation, which lead her to argue for an interplay of universal grammar (UG) and 'cognitive self-regulation' by the child. Tracy argues that UG makes functional projections available to the child, but these are not initially integrated into the grammar. Word order variation within the first developmental phase is because the position and status of functional categories differs across languages, and the child must discover the correct options for their language. Later, through self-regulated learning and language input from the environment, the child maps concrete lexical items, such as *no*, *not* and unanalyzed whole forms of negation like *don't* or *can't* (Bellugi, 1967) onto the functional categories provided by UG.

A similar mechanism of acquisition is proposed by Clahsen et al. (1996) in their Lexical Learning Hypothesis (LLH). The LLH claims that children only add more functional categories, which are understood as feature bundles rather than fixed set of projections (CP, IP, NegP, VP, etc.) to their existing internal grammar, if they receive enough information about the feature content of the head of the phrase in the positive input. Thus children are expected to learn language specific content of the syntactic head, i.e. inflectional morphology, through the input, as these are not specified by UG. Thus UG provides the child with all the necessary equipment to acquire language specific knowledge, while the input specifies the content of the heads. Hence the heads remain underspecified until the child has learned all the required features, accounting for different representations of child and adult grammar.

The most detailed description of cross-linguistic influence as it applies to negation is presented in a longitudinal study by Döpke (1998; 1999; 2000). Working within a usage-based framework, Döpke draws on MacWhinney's notion of cue competition (MacWhinney, 1987a) to explain cross-linguistic influence between the target languages. The competition model states that

children acquire language through on-line processing of cues in the input based on saliency, reliability and frequency, not through parameter setting as proposed by models of UG. Döpke argues that the cue competition is between right and left branching verb complexes (Döpke, 1998). While the underlying structure of the VP in German is head-final (XP-V), in English the VP is head-initial (V-XP). This dichotomy in the head-directionality of the verb phrase resulted in initial separation of the two languages in the bilingual children, while cue competition later on lead to non-target verb placement in German. Interestingly the bilingual children's English remained widely unaffected by the German input, arguably due to them being dominant in their English. After this period of partial confusion (children still produced mainly correct utterances, an indication of language separation not fusion into an unitary system), the children figured out which structures overlap and which differentiate the languages. Competition between the two structures V-XP and XP-V eventually dissipated due to overwhelming confirmation for the V-XP structure in the input to the child from both target languages, as German also provides evidence for verbs preceding their complements as a result of V2. Thus, Döpke predicts overuse of the English word order in the children's German, due to the overwhelming cue strength. Following a developmental phase showing a preference for V-XP structures, Döpke observes that the children seem to desperately search for a way to differentiate the languages again. During this period, the children use finite verbs, such as AUX-V-XP like (25) as well as verbs in the infinitive form in pre-complement position, as in (26).

(25) *Ich kann dive-e unter. [CW-G 3;07, from Döpke (1998)]

S AUX V_f X

'I can dive under.'

('I can dive under.')

(26) *Daddy lesen Buch. [CW-G 2;03, from Döpke (1998)]

S V_{nf} X.

'Daddy read book.'

('Daddy is reading a book.')

German utterances in which the finite verb follows the negation, as in (27) show that the child has not mastered the V2 syntax of German, as the inflected verb is not raised to the V2 position. On the other hand, if the child produces German utterances where the non-finite main verb precedes the negation, as illustrated

in (28), it indicates transfer to occur from English to German also. Döpke (1999) reports a total of thirty-one examples (CW:7; JH:2; NS:9; AS:13) where non-finite verbs preceded negation, making this the most prominent cross-linguistic structure in her corpora, accounting for 48% (31/64) of all non-adult like negations. However, as she notes, her data were “short-lived and therefore remained low in number” (p.165).

(27) *Hund nicht komm-t rein. [NS-G 2;07, from Döpke (1998)]

S NEG V_f X

‘Dog not comes in.’

(‘(The) dog doesn’t come in.’)

(28) *Ich sitz-ennicht hier.

S V_{nf} NEG X

‘I sit not here.’

(I’m not sitting here.)

Later in their development the bilingual children were able to use alternative sources of linguistic input for finiteness in German to disentangle the contrast in word order. As Döpke (1999) states, the “identification of the relevant syntactic function [of verb movement and finiteness is] a subsequent development” (p.169). Döpke’s data are contrast with the data presented in the current thesis. While her bilingual children displayed cross-linguistic influence in their German, and not in their English, Kayla acquires German at a rate similar to monolingual speaking children but shows a large variety of cross-linguistic structures in her English. However, it should be noted that all of Döpke’s subjects are slightly English dominant and there is little transfer of German in their English negation. This does not imply that her subjects’ English was unaffected, but presumably it was not prominent in the naturalistic speech samples she collected. Thus the differences in the directionality and amount of cross-linguistic structures found in the two target languages could, in part, be the result from different sampling methods, as this thesis uses data from elicitation production tasks as well as naturalistic speech samples.

An investigation of language mixing and transfer in the generative framework is presented by Schelletter (2000). Schelletter assumes that V2 word order in German is the product of parameter setting in early language acquisition. She describes 4 out of 10 non-adult like negative utterances in which her child participant used the German V2 word order in English, that is,

where negation followed the inflected main verb (V_{fin} -NEG). Schelletter proposes two possible analyses: either the child has mis-set the Agreement Parameter to the strong value in English (as is the case for German), allowing finite main verbs to move over negation or the child has analyzed negation as an adverb in both languages. Schelletter assumes agreement in English to be weak, which means main verbs do not move out of the VP, as only strong features trigger movement. Modal and auxiliary verbs are exceptional in that they can move to CP, as they do not assign thematic roles to their complements. Hence modals and auxiliaries can move beyond Agr, as in interrogatives, in which case they surface to the left of the subject, resembling German V2. Further, Schelletter assumes the dummy *do* to be generated under Agr, allowing it to move further up in the derivation. In interrogatives without any auxiliary or modal *do*-insertion takes place to host inflectional markers and the uninflected main verb is left in situ in the VP. The difference is illustrated in example (29) and (30).

(29) Mag er Pizza?

(30) *Likes he pizza?

‘Does he like pizza?’

An investigation of whether or not fronting of lexical verbs occurs in *wh*-questions and yes/no questions in the bilingual data revealed that children do not produce non-adult like forms like *‘Wants you grapes?’, where finite verbs have been moved to C, as is required by the German syntax. Therefore Schelletter discounts the possibility that children initially treat lexical verbs as auxiliaries, allowing them to raise to C in both target languages. Consequently children’s non-adult like use of negations is attributed to the use of adverbial negation, as she found adult like verb movement in interrogatives, but found non-adult like productions of sentential negation (V-Neg) in her bilingual child. She concludes that negative elements in both target languages are analyzed as adverbials rather than functional categories, due to the fact that lexical categories are supposed to precede the acquisition of functional categories (Radford, 1990). In sum, Schelletter concludes that word order violations involving the placement of the negative marker result from treating negation as an adverb, which is base generated under VP in line with other adverbials in German. She rejects the possibility that the Agreement Parameter is mis-set to strong in English, as bilingual children do not overgeneralize V-to-C movement

in English interrogatives, implying movement only up to I. This is a point I will come back to in chapter 7 when discussing interrogatives produced by Kayla.

4.5 Predictions for German-English bilingual development: Transfer of V2?

Cross-linguistic influence is an overarching term including three distinct manifestations of interaction between languages in any bilingual: transfer, acceleration and delay (Paradis & Genesee, 1996). In the following sections I will review the conditions for the occurrence of these manifestations of cross-linguistic influence, specifically concentrating on studies dealing with syntactic transfer in non-mixed utterances. Non-mixed utterances are understood as sentences containing only lexical items from one of the target languages in contrast to mixed utterances, where the matrix language cannot easily be determined making it impossible to discern the directionality of transfer. Transfer can be defined as a systemic influence at the level of competence (Kupisch, 2007). Here systemic is defined as long lasting, leading to a different syntactic representation (qualitative) or preference of use (quantitative), which results in a different rate of acquisition between monolingual and bilingual speakers.

Previous research on cross-linguistic influence has found distinct conditions that make transfer possible, besides the often controversially discussed factor of language dominance (Cantone et al., 2008; Kupisch, 2013; Meisel, 2007; Schlyter, 2001; Yip & Matthews, 2006). In short, the factors that have been proposed to promote transfer state that (i) structures at an interface are vulnerable to cross-linguistic influence, (ii) there has to be a certain degree of overlap between the languages and (iii) when children are presented with ambiguity in the input they prefer the less complex derivation, as defined by steps involved to generate the target structure. Two highly influential hypotheses that take these conditions into consideration have emerged in the last decade and will be exemplified herein: the Cross-linguistic Influence Hypothesis (Hulk & Müller, 2000) and the Derivational Complexity Hypothesis (Jakubowicz, 2006).

From the perspective of derivational complexity, transfer of German V2 properties to English structures seems surprising, as the child would produce a structure involving more movement steps (V-I-C) than the much simpler option

presented in the English syntax, namely non-movement. However, I will demonstrate that a combination of various factors makes this transfer plausible for the German-English bilingual child of the current study. The next sections consider both the Cross-linguistic Influence Hypothesis and the Derivational Complexity Hypothesis in more detail in order to formulate distinct predictions for the German-English acquisition context.

4.5.1 Transfer in the Cross-linguistic Influence Hypothesis

The Cross-linguistic Influence Hypothesis originally proposed by Hulk and Müller (2000) states that transfer is only possible if (i) the phenomenon vulnerable to cross-linguistic influence is situated at the syntax-pragmatic interface, involving the C-domain. More recent research has demonstrated that transfer is not restricted to phenomena at the interface of the syntax and pragmatics, as it may affect structures involving core syntax or the interface of syntax and semantics (Sorace & Serratrice, 2009). Therefore cross-linguistic influence can cause difficulties at the internal and/or external interfaces. As assumed by Clahsen, Penke and Parodi (1993) and Eubank (1996), I consider V2 movement in German to involve at least the syntax-semantics interface, since the C-domain is the landing site of verb movement.

In a second clause the Cross-linguistic Influence Hypothesis of Hulk and Müller claims that (ii) the languages have to display a certain amount of structural surface overlap to create ambiguity for the learner (Döpke, 1998; Hulk & Müller, 2000). This ambiguity is argued to be presented in the mixed distribution of auxiliaries and main verbs in English declaratives and interrogatives, as well as the behavior of *be* and *have* which resemble the German V2 word order, leading to overgeneralized verb movement patterns. Below I show how the syntax of the target languages can be taken as (surface) overlap, despite the fact that German is V2 and English is not.

The canonical word order in simple sentences of both languages is SVO and forms the vast majority of input to children. Consider the following simple sentences, all containing the same surface word order ((31)a-g).

- | | | |
|-----------------------|--------------------------|-------------------------|
| (31) a. X COP S | Here is my house. | Hier ist mein Haus. |
| b. S COP X | Oma ist alt. | Grandma is old. |
| c. WH COP S | Where is the station? | Wo ist der Bahnhof? |
| d. S V _f X | This belongs in the bag. | Das gehört in den Sack. |

- e. S AUX V_{nf} Daddy can work. Papa kann arbeiten.
 f. S AUX NEG V_{nf} You must not leave. Du darfst nicht gehen.
 g. V_f X Y Hand me the towel! Gib mir das Handtuch!

Notice that the similarity in word order conceals different syntactic derivations in the two languages. The different derivations emerge when negation (or adverbs) are introduced into the structure, as illustrated in example (32).

- (32) The duck doesn't swim.
 Die Ente schwimmt nicht.

German displays verb movement from V-I-C, generating V2 word order in subject-initial matrix clauses like (32). The V2 property leads to subject verb inversions in non-subject initial matrix clauses, *yes/no* and *wh*-questions. When negation is introduced to the main clause the finite verb can freely move over it, in order to fulfil the V2 requirement. This suggests that the negator *nicht* should be analysed as an adverb, mainly as it does not block verb movement (Hamann, 2000).

In contrast English is a residual V2 language in which main verbs stay in situ in the VP and only auxiliaries and modals undergo movement, and only in restricted contexts. Hence stylistic inversion, negative inversions and the behavior of *have* and *be* are structures that are identical on the surface to German V2. This said, stylistic and negative inversions are likely to remain low in numbers in the input received by children. Still, children acquiring both languages simultaneously have to realize that English main verbs never raise, despite the instances of V2 mentioned above.

As a consequence of this residual V2 effect, English finite auxiliary verbs move across negation and show subject-verb inversion in questions, whereas English main verbs never raise. Table 6 summarizes these distinctions in the verb placement exhibited by the two target languages of this study.

Table 6: Verb movement paradigms for German and English

Language	Movement of main verbs	Movement of auxiliary verbs/modals
German	✓	✓
English	×	✓

German is a rich agreement language, in which strong features trigger verb movement (at least) to I so that the finite verb precedes adverbs and negation in matrix clauses, regardless of its status as main or auxiliary verb. English on the other hand is a poor agreement language, as it only preserved person and number agreement in third person singular (3PS) contexts. Hence main verbs are left in situ, are not permitted to raise and morphological markers for inflection, which are generated in IP, get lowered onto the verb in sentences that do not require do-support. Do-support is inserted in negative sentences lacking a modal or auxiliary verb. This results in the word order of adverbs and negation preceding the finite verb, in sentences without any modals or auxiliaries.

There are no reports of monolingual English children raising finite main verbs over negation, yielding V-Neg word order, as in *'It fits not'. If these structures appear in the productions of a German-English bilingual child, it can be argued that these structures are due to the influence of the German V2 syntax, which would confirm the predictions of the Cross-linguistic Influence Hypothesis.

4.5.2 Transfer in the Derivational Complexity Hypothesis

Another approach claims derivational complexity to be the driving force in the occurrence of cross-linguistic structures (Jakubowicz, 2006; Jakubowicz & Strik, 2008a; Kupisch, 2013; Strik, 2011). Derivational complexity refers to the movement steps involved in arriving at the target structure. Jakubowicz (2006) and Jakubowicz and Strik (2008a) propose the following metric: (i) derivations with $\alpha+n$ steps are more complex than a structure involving only α steps to derive the target structure and (ii) Internal Merge of α is less complex than Internal Merge of $\alpha+\beta$. The general idea is that children acquire simpler structures with fewer movement steps earlier than more complex ones.

From a derivational complexity approach the double movement of German V2 syntax is more complex, when compared to the simple non-movement option provided by the English syntax. In German the verb moves out of the VP via IP, where it receives the morphological marking for finiteness, before it moves up to CP to fulfill the V2 requirement. To generate this structure children have to move the main verb twice ($\alpha+2$) and they have to merge the inflectional morphology onto the finite verb, resulting in a merged constituent that needs to move even higher in the derivation (internal merge of $\alpha+\beta$),

creating a highly complex structure. However, monolingual German speaking children acquire V2 with relative ease and at a very young age. In fact previous research demonstrated the nearly error-less acquisition of verb movement at around the age of two years, as soon as the first multi-word utterances emerge in children's speech (Meisel & Müller, 1992; Phillips, 2010; Poeppel & Wexler, 1993). This said, monolingual German speaking children do set the verb-movement parameter to [+raise] early, even though they sometimes fail to mark the raised verb as finite. This however has been argued to be due to an underspecification of the inflectional paradigm and subsequently the correct subject-verb agreement, not due to a lack of knowledge regarding verb-movement (Schütze, 2010).

In a bilingual German-English context the child is confronted with a less complex option regarding verb movement, as the English target language provides positive input for a non-movement analysis in affirmative declaratives. English main verbs stay in situ in the VP ($\alpha+o$) and receive their inflectional marking through affix lowering (internal merge of α). This is argued to be a less complex derivation, as no movement steps are involved, only internal merge of the inflectional morphology onto the verb. Given the simplicity of the derivation it seems surprising that monolingual English speaking children sometimes fail to display the adult-like inflectional morphology on the verb, resulting in root infinitives (Harris & Wexler, 1996). It can be argued that this is due to an underspecification of the functional category Infl(ection) (more details in chapter 5) which does not reveal anything about the verb-movement parameter in English speaking children. Further, monolingual English speaking children are not reported to ever raise a finite verb out of its base position in the VP, confirming the [-raise] setting for the verb-movement parameter to be in place early. This observation is central to the Very Early Parameter Setting (VEPS) account, which states that children have set all the parameters governing verb movement at the earliest stage in language development (Wexler, 1998).

In conclusion the Derivational Complexity Hypothesis predicts, that in a German-English bilingual context the child should prefer the non-movement option provided by the English target syntax, as it involves less movement steps. Thus utterances as *'It fits not', where the child raises a finite verb over negation are not predicted to occur, as V2 transfer is more complex in its derivation.

4.5.3 Summary of prediction(s)

The conditions stated in Hulk and Müller's (2000) Cross-linguistic Influence Hypothesis are met in the language pair German-English, making transfer of the verb-movement paradigm from German to English possible. First, verb movement involves the interfaces, as the verb is assumed to move up to C in V2 languages. Second, German and English have substantial overlap in their surface word order in declarative main clauses, as the canonical word order in simple sentences is SVO in both target languages, fulfilling the surface overlap condition of the Cross-linguistic Influence Hypothesis. Thus non-adult like utterances are predicted in which the bilingual child moves finite verbs over negation resulting in a V-Neg word order in the English target language due to the German influence.

In contrast the Derivational Complexity Hypothesis predicts no such transfer. Children are claimed to prefer less complex derivations, such as the non-movement option provided by the English syntax. In a bilingual setting the child should opt for the simpler analysis, whenever it is presented with ambiguity in the input. Therefore, verb movement over negation is not predicted on this account.

4.6 Findings from child data

The current study focuses on the development of simple negative sentences in the two languages, since any transfer of verb movement is easily detectable in these sentences. English main verbs remain in situ in VP, such that the dummy auxiliary *do* is inserted in negative sentences without a modal or an auxiliary verb. Therefore negation appears to the left of the lexical verb, yielding Neg-V word order. If bilingual German-English children take English to be a V2 language, we can predict early emergence of non-adult like negative V2 utterances such as *‘The duck swims not’ in which the main verb has raised over negation. This yields V-Neg word order, with the verb preceding negation, a structure that is not attested in monolingual English speaking children or adults. Therefore structures with post-verbal negations constitute a qualitative difference between monolinguals and the German-English bilingual child. Before turning to the evidence of transfer in the English target language I first review the German data gathered.

4.6.1 German data

In order to establish whether or not Kayla has successfully mastered V2 in German, the 3697 utterances in the corpus were examined and those utterances containing more than two words were extracted from the transcripts. This was necessary as only multiword utterances reveal the position of the verb in relation to other elements such as subjects or adverbs. After excluding one-word utterances, unintelligible utterances, imitations of adult utterances and direct repetitions of the previous utterance, 1051 German utterances remained for analysis, including 181 interrogatives (62 *wh*-questions and 119 yes/no questions). Further, imperatives, infinitives and embedded clauses were excluded from the analysis, leaving a total number of 621 clearly marked finite utterances. The output was searched for evidence of successful application of the verb movement requirement, i.e. verb movement in subject-initial declaratives with adverbs/negation. Results of this search are given in Table 7.

Table 7: Evidence of successful mastery of German verb movement

Evidence for V2		
Object-initial declaratives with negation	11/12	92%
Subject-initial declaratives with adverbs/negation	401/428	94%
Yes/No-questions	96/119	81%
Wh-questions	57/62	92%
Total	565/621	91%

To consider the directionality of possible transfer in the data I first investigated the German data containing negation, as word order violations are easily detectable in negated utterances. In total, 126 negative German utterances were suitable for analysis, out of which only 7 examples showed non-adult like use of negation. The non-adult like structures can be grouped into two different categories:

- a) the negator *nicht* was used instead of a form of *kein* (which accounts for 4/7 non-adult like uses of *nicht*), the negator used in adult German to signify constituent negation or
- b) the negator is placed in medial position preceding the non-finite verb element marked by *-en*, following the incorrectly inflected auxiliary *dürfen* (English *may*).

However, the second option under (b) is not directly an error of negation, but rather one displaying the immature inflectional paradigm of this particular auxiliary verb (2/7).

There is one utterance that could be interpreted as transfer from English to German. This example is given in (33).

(33) *'Das ist doch abgewaschen noch nicht.' (KAY 4;04.22)

'This is not washed yet.'

The V2 position of the sentence is correctly filled with the finite form of the verb *sein* (English *be*). However, the non-finite main verb also precedes the negation with *nicht*, illustrating the movement to a higher position. This is contrary to the predicted German structure (Clahsen et al., 1993; Déprez & Pierce, 1993) and could be an indicator of bidirectional influence. As this is only one case in the German corpus, I conclude that Kayla has successfully mastered the V2 syntax from the beginning of the study at aged 2;10 years, as she displays genuine V2 word order in her object-initial declaratives in 92% of all cases¹¹. This is to be expected, as German monolingual children are reported to have V2 in place early (Clahsen et al., 1993; Weissenborn, 2002) at around 2 years of age with an MLU of 1.75-2.25 (Meisel, 2007; 1986). At the beginning of the present study Kayla's MLU is already above the mentioned MLU, at a value of 3.34 during the first session (see chapter 3).

In a second step utterances containing clear violations of the V2 syntax, as they have been described in the German data of the German-English bilingual children observed by Döpke (2000), were searched for with CLAN. These violations include non-finite main verbs (morphologically marked with *-(e)n* in German) raised over negation or modals and non-finite verbs preceding the subject. However, such violations were literally nonexistent in the entire corpus. Thus, I conclude that the German data in the present study is unaffected by the English syntax.

4.6.2 English data

To investigate possible word order transfer to English, the non-adult negative sentences in the corpus were analyzed. Out of the 139 non-adult uses of

¹¹ Following Buring (1995), Hamann et al. (1998) describe object-initial declaratives to reveal genuine V2, as objects in the prefield position in German are obligatorily focused and thus pattern similar to *wh*-questions in regards to verb movement (i.e. 'Braun haben wir noch nicht' (KAY 4;03 years)).

negation Kayla produced, 105 tokens were in 3PS context. All utterances containing double inflection and bare verbs were counted as non-adult like and are termed +V in the table without any further specification of the finiteness of the verb, except for the column displaying *doesn't*. Here non-adult like counts included clearly finite verbs with the inflectional morpheme –s, like *'This doesn't fit-s', as the negative auxiliary already incorporates inflection. Thus doubling of inflection is counted as non-adult like, whereas the bare verb indicates adult like use of negation, as in 'It doesn't fit-Ø'.

It is striking that nearly half of the negations in 3PS contexts were non-adult like, occurring with the V2 word order V-Neg, as displayed in Figure 4. Figure 4 illustrates the prevalence of each non-adult like form attested in Kayla's English negations in 3PS contexts over the entire duration of the study. Transfer of V2 accounts for over 40% of all non-adult like negative sentences recorded in Kayla's corpus. These productions exhibiting V2 are frequent in the present corpus and confirm the predictions made by the Cross-linguistic Influence Hypothesis. Another observation from Figure 4 is that *doesn't* is not prevalent in the non-adult like negations, highlighting that once Kayla uses this negative form productively it is used in an adult like manner. The data analysis reveals that use of *doesn't* accounts for 42/65 (64,5%) of all adult like negations in phase V, while it is used non-adult like once, accounting for less than 2% (1/69) of all negative utterances during that developmental phase.

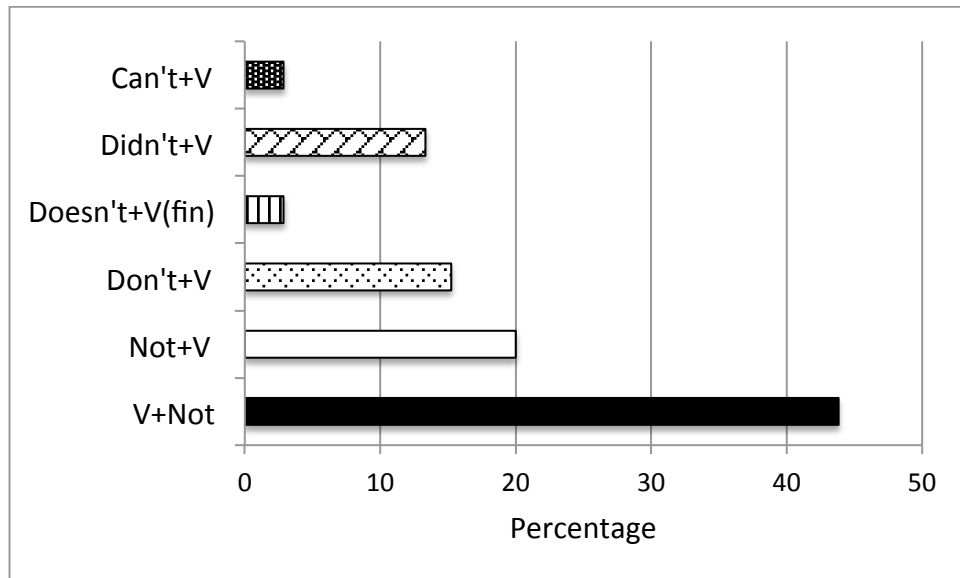


Figure 4: Overall prevalence of Kayla's non-adult like negations in third person singular (3PS) contexts

The structure of V-Neg, as in *'That opens not' (KAY 2;11 years) has only been reported to occur with very low frequencies in previous literature but is very prominent in the data presented here. Kayla uses the V2 structure with a variety of verbs (i.e. swim, work, jump, open, close, stick, etc.), most of them being stative verbs referring to general properties of an object, which are restricted to finite contexts (Hoekstra & Hyams, 1999). The high number of V2 structures and their rapid disappearance after Kayla adopts the [-raise] setting for English are illustrated in Figure 5. The first drop in occurrences of V2 transfer at age 3;01 is an artifact of data sampling, as Kayla produced an overall low number of negative utterances on that day, most of them being adult like uses of *not+present participle -ing*, a structure that is compatible with both target grammars (a point I will return to in chapter 6). The next drop of V2 transfer at age 3;07, 3;08 and 3;10 years is taken to indicate change in Kayla's underlying grammar. This change in her English syntax is challenged when she experiences her second language shift as her family moved to Germany for an extended period of thirteen months. The last increase at age 5;05 years results from a single utterance, which can be disregarded as performance error. This last incident of V2 transfer happens at the same time (within the same recording) when Kayla finally implements head negation in her English grammar, as indicated by the adult like use of the negative form *doesn't*.

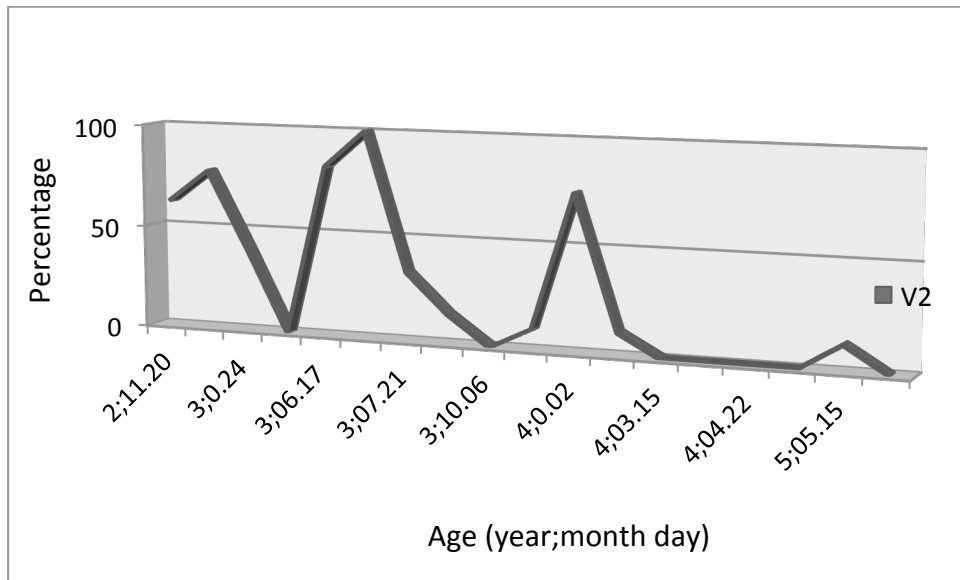


Figure 5: Percentage of V2 transfer by age

Despite its prevalence in the beginning of the study the non-target word order diminishes over time and the child shifts from using mainly the V2 word order V-Neg in Phase II and III (that is up to age 3;07 years), to the English word order Neg-V in Phase IV and V (from age 3;07 up to 5;07 years), as illustrated in Table 8.

Table 8: Kayla's non-adult like use (n=105) of negation in third person singular (3PS) contexts according to developmental phases

Phase	V+Not	Not+ V	Don't+ V	Doesn't +V _{fin}	Didn't+ V	Can't+ V
Phase II (2;10-3;01 years)	14/23 (60.9%)	7/23 (30.5%)	0	0	1/23 (4.3%)	1/23 (4.3%)
Phase III (3;01-3;07 years)	24/29 (82.7%)	4/29 (13.8%)	0	1/29 (3.5%)	0	0
Phase IV (3;07-5;05 years)	8/51 (15.7%)	10/51 (19.6%)	16/51 (31.3%)	2/51 (3.9%)	13/51 (25.6%)	2/51 (3.9%)
Phase V (5;05-5;07 years)	0	0	1/2 (50%)	1/2 (50%)	0	0

As can be seen in Table 8, Kayla predominantly uses the negator *not* during the first two phases (II and III) of her development. Non-adult like negation with *not* accounts for over 90 % in Phase II and up to 96% in Phase III. This high use of *not* is to be expected, as this is the time where Kayla overgeneralizes V2 in English, thus moving the main verb over negation. The change from the non-canonical word order V-Neg to the target word order Neg-V goes hand in hand

with an increase in the use of the clitic form of negation *n't*, such as in *'The duck don't/can't swims'. Productions of this kind are also attested in monolingual English-speaking children (Thornton & Tesan, 2013). While the non-adult use of clitic negation is largely absent in Phase II and III, it increases dramatically in Phase IV accounting for nearly one third of the data, as can be seen in Table 8. From about 3;07 years onwards, the clitic form of negation is used more productively, which in terms results in a higher number of non-adult like uses of *don't* and *didn't* during phase IV. This transition is not abrupt but more gradual, as Kayla fluctuates between developmental phases before she acquires do-support. I take this to indicate a change in her grammar, from the predominant use of the underlying V2 German grammar to converging on the English child grammar. Once the form *doesn't* becomes productive in Phase V, Kayla produces mainly adult like negations (n=66), displaying only 4/70 (5,7%) non-adult like utterances, which can be dismissed as performance errors.

4.7 Discussion

Contrary to previous studies of bilingual English-German children (Döpke, 1999; Schelletter, 2000; Tracy, 1995) the current results show a clear preference for V2 syntax, which is most prominent in the beginning, resulting in post-verbal negation with *not*. Lexical verbs raising over negation account for almost 44% of all non-adult like utterances within the entire investigation, confirming predictions from the Cross-linguistic Influence Hypothesis. Former studies also had relatively high numbers of cross-linguistic structures, however, the direction of transfer occurred mainly from English to German (Döpke, 1998; 1999). This raises the question of directionality in cross-linguistic influence.

One previously considered explanation for this is the difference in language dominance. Whereas Döpke (1998; 1999; 2000) observed children with a slight dominance in English (according to MLU_w values), Kayla is more advanced in her German, despite the fact that she spend most of the time throughout the study in Australia. However, as was pointed out in other studies (Döpke, 1999; Schelletter, 2000; Tracy, 1995) the cross-linguistic structures examined here, are visible to a more or less prevalent extent in all German-English bilingual children, regardless of dominance relations. Thus input in terms of language environment seems to only affect the quantity of the data, not the occurrence itself. Nevertheless, it remains unclear as to how language

dominance and the directionality of the observed transfer interact, an observation that requires more attention in future research.

The high prevalence of V2 transfer in the current study seems even more surprising, considering that the bilingual child under investigation prefers a more complex derivation, which arguably involves a lot more movement steps than the non-movement option provided by the English syntax. This is contrary to predictions of the Derivational Complexity Hypothesis and the principles of structural economy.

However, recall that English displays a mixed distribution in movement of main verbs and auxiliaries. English provides evidence for auxiliary verb movement to C in interrogatives, but does not allow the main verb to move out of the VP in simple matrix clauses. Further, English requires the insertion of *do*-support in the absence of a modal or auxiliary verb, as main verbs are not allowed to move out of VP. The operation of *do*-support is cross-linguistically unusual and has no parallel structure in German. Henry and Tangney (2001) propose that languages are easier to acquire if they display a consistent verb movement pattern. This is in line with an observation by Sorace (2009), who noticed bilingual children acquiring a Romance language and English to always resort to the more economical (providing one option that is always overtly pronounced) language in regards to use of pronouns, in this case English. Applied to verb movement, a language where all verbs undergo movement is easier to learn than a language with a mixed distribution. This makes the English verb movement paradigm less economical than the German one, where all main clauses and interrogatives display verb movement to C due to the V2 requirement. It follows that cues for word order are not as robust in English as they are in German, providing evidence for verbs *in situ* and verb raising in certain contexts to either I or C. While this mixed input does not pose a problem for monolingual language acquisition it might be difficult for a bilingual child to incorporate the mixed cues it receives from the two target languages. Hence, as a relief strategy (Müller, 2009), the German-English bilingual child might adopt the more salient analysis (even if it is the derivational more complex option) and extend it to both target languages, leading to cross-linguistic influence in the form of transfer. In this sense German is the less restrictive option (Sorace, 2011), as it always requires verb-raising, compared to English where raising of the main verb is required only under certain conditions. This makes English less

economical, as the child has to recognize in which sentences this movement is obligatory. Therefore transfer from German to English in the form of overgeneralization of the German V2 properties can be seen as more economical.

Further, Henry et al. (2001) note that the marked structure will be acquired if the cue for this construction is salient enough in the input. As for the marked word order option of V2, the cue children require to choose the right setting of the V2 parameter (B. D. Schwartz & Vikner, 1996) is assumed to be a phrasal category in the specifier of a CP with its head being a (finite) verb (Lightfoot, 2006; Westergaard, 2007b). This cue is highly frequent and salient in all V2 languages, as it is present in topicalizations, interrogatives and sentences containing adverbials, as illustrated in section 4.3. English provides further evidence for this cue, for example in yes/no questions. The overwhelming evidence for verb movement in both target languages can lead to overgeneralized V-to-C movement in a bilingual acquisition context, a claim that is in line with the Cross-linguistic Influence Hypothesis and borne out by the data presented in this chapter.

4.8 Conclusion

In this chapter I tested the predictions of the Cross-linguistic Influence Hypothesis and the Derivational Complexity Hypothesis for the acquisition of verb movement in negated matrix clauses in a German-English bilingual context. While the Cross-linguistic Influence Hypothesis predicts transfer from German to English due to the large surface overlap, resulting in an overgeneralization of the V2 requirement, the Derivational Complexity Hypothesis assumes the opposite. Here German-English bilingual children are predicted to adopt the English target syntax in both languages, as English provides a less complex derivation for negated matrix clauses with a non-movement option, compared to the double movement operation to derive V2.

The data gathered from naturalistic speech and elicitation tasks presented in this chapter confirm the prediction of the Cross-linguistic Influence Hypothesis. I demonstrated that English and German provide robust evidence for a verb raising analysis, which leads to overgeneralized V-to-C movement paradigm in English. This becomes evident in sentence featuring post-verbal negation, as in *'She wants it not' (KAY 4;01 years). This word order

has not been attested in monolingual English speaking children and can clearly be attributed to the influence of the simultaneous acquisition of German and English. As the cues for double verb movement are very consistent in German and also highly frequent in English (e.g. raising of auxiliaries in yes/no questions, behaviour of *be* and *have*), assuming verb movement up to C in both languages becomes a plausible option for the bilingual child. Even though V2 is the more complex derivation, as it involves more steps to arrive at the target structure, it is clearly preferred by the German-English bilingual child. I have argued that this linguistic behaviour results from economy considerations, as the child adopts the most salient analysis provided by the input and consistently uses it in both target languages. Further, I have demonstrated that overlap is sufficient to generate the V-C analysis in both target languages, confirming the predictions of the Cross-Linguistic Influence Hypothesis. Hence overgeneralized verb movement can be interpreted as a relief strategy to deal with the bilingual language acquisition context.

Chapter 5: Acceleration of Infl(ection)?

This chapter investigates whether or not cross-linguistic transfer of V2 to English in sentences like *'That opens not' (KAY 2;11 years) also has consequences for Kayla's acquisition of the functional category Inflection (Infl). In chapter 4, we saw that German exhibits a mixed agreement paradigm and strong features, which trigger the obligatory movement of the finite verb to the second position of the matrix clause, generating the V2 word order. The verbal features in the functional head C⁰ that trigger V2 are [+Tense] and [+AGR] (Chomsky, 1995a; Tesan, 2005; Weissenborn, 2002). This V2 structure is generated by moving V to I to C. As the verb moves through Infl, it satisfies the requirements of the inflectional morphology. Therefore it follows that the verbs have received all the required morphological markers for finiteness, as they have passed through IP.

A prediction that follows from the proposal that the V2 property is transferred to English is that transfer of V2 could also be detectable in the rate of verbal inflection in English. Since the finite verb moves out of the VP through Infl, the prediction is that there should be a high rate of inflection on the verb in V-Neg structures during this English V2 period, regardless of language external factors (Clahsen et al., 1993; Müller, 2008; Poeppel & Wexler, 1993; Sorace, 2011). This high rate of verbal inflection would contrast with monolingual English-speaking children who generally demonstrate quite high rates of root infinitives (RIs), as indicated by failure to provide the 3rd person singular morpheme on the main verb during this optional infinitive (OI) stage (Bonnesen, 2009; Phillips, 2010; Wexler, 1998). Thus first, while Kayla transfers V2, a high number of inflected verbs should be detectable.

After Kayla has adopted the [-raise] setting for the English verb-movement parameter and V2 transfer diminishes, there are two possible scenarios. One scenario is that she could now resemble monolingual English speaking children and start to produce RIs, like *'It not fit- \emptyset '. Thus the change in the verb movement parameter setting could result in a decreased use of inflectional markers and an increasing number of RIs. A second scenario is that the simultaneous acquisition of German and English could alter the path of the acquisition of the functional category Infl in a bilingual context, which has

previously been proposed in the Bilingual Bootstrapping Hypothesis (Gawlitze-Maiwald & Tracy, 1996).

In a case study of a German-English bilingual girl Gawlitze-Maiwald and Tracy (1996) observed that the child “pools her resources, taking and combining what is available to her in both languages, in a lexical as well as a structural way” (p. 920). First and foremost they noticed that the child produces mainly adult like utterances in both languages without any mixing, indicating early language separation in the bilingual child. Furthermore they found that the two languages develop at different rates in respect to specific constructions (e.g. *wh*-questions). In particular they observed that the language that is developing at a slower rate profits from the faster development of the other target language. In the same sense, I propose that the German V2 requirement could accelerate the speed of the acquisition of the English syntax involving Infl, such that RIs in the form of bare verbs do not emerge to the same extent as in monolingual children during the language acquisition process. However, if the immature linguistic system or performance limitations cause the non-adult use of inflectional morphology, acceleration of the acquisition of the syntactic category Infl in a bilingual context seems unlikely.

Acceleration can either be an effect of cross-linguistic influence in the language pair German-English (Gawlitze-Maiwald & Tracy, 1996; Paradis & Genesee, 1996), where the presence of a grammatical system A speeds up the acquisition of another grammatical system B or, alternatively, acceleration could result from processing effects which are a by-product of constantly dealing with two languages, A and B (Patuto, Repetto, & Müller, 2011). In this case, it could be said that bilingual children choose the less complex analysis for both of their two languages as a relief strategy (Müller, 2009), a claim that is compatible with the Derivational Complexity Hypothesis (Jakubowicz, 2006; Jakubowicz & Strik, 2008a). Here ‘less complex’ is defined as involving fewer steps to arrive at the targeted derivation. Thus omitting an inflectional marker is viewed as less complex, which predicts the preferred use of RIs.

I begin this investigation in section 5.1 by introducing the optional infinitive (OI) stage, before discussing the properties of OI in a German-English bilingual acquisition context. Specific consideration will be given to the interaction of Infl with the functional category Neg(ation) in both languages. The predictions for bilingual acquisition are laid out with special focus on

structural overlap and derivational complexity. Section 5.4 turns to the child data. In section 5.5 I discuss findings from the child data, before some concluding remarks in section 5.6.

5.1 The Optional Infinitive Stage (OI)

Children in the early stages of language acquisition are widely reported to produce utterances that are not compatible with the adult grammar. One well-studied phenomenon is the optional infinitive stage (OI), during which children typically allow (seemingly) free variation between the use of inflected and bare verbs in adult finite contexts (Bonnesen, 2009; Phillips, 2010; Pratt & Grinstead, 2007; Rizzi, 1993; Wexler, 1998; 2011). According to Wexler (2009; 1998; 2011), the OI stage manifests itself in English by optional use of morphemes associated with Tense and Agreement. An example that is often mentioned in the literature is the frequent omission of the present tense 3rd person agreement morpheme –s in child English, as in (34).

- (34) *He go home.
He go-INF home
'He goes-FIN home.'

The OI stage has been acclaimed to exist in many different languages, including Danish, Dutch, French, Faroese, Swedish, Russian, Icelandic, German and English (Wexler, 1998). RIs are most prominent during the age period of 2;6 to 3;00 years (Bobaljik & Thráinsson, 1998; Harris & Wexler, 1996; Lasnik, 2002; Phillips, 2010), with English and German being two languages where children are reported to use RIs extensively, and for the longest period of time (Austin, 2009; Pollock, 1989). An example for a German RI is provided under (35).

- (35) *Thorsten Ball haben. Target: Thorsten hat den Ball.
Thorsten ball have-INF Thorsten has-FIN the ball.
'Thorsten has-FIN the ball.'

Example (35) illustrates that German RIs take the form of an infinitive, clearly marked by the inflectional marker –en (Phillips, 2010; Poeppel & Wexler, 1993). Through contextual analysis Poeppel and Wexler (1993) demonstrate that Andreas refers to a finite context, as he claims to already have the ball - nevertheless he uses the infinitival form. While infinitives in a clause final

position conform to the adult grammar, inflected material should only occur in second position, as required by V2.

It is plausible to assume that Kayla might display RIs in the beginning of the study, as she falls within the required age period, being 2;10 years. In addition she is acquiring two languages where children are most often reported to have difficulties with the use of inflected and non-inflected verbs, making use of inflection seem optional. What is most puzzling about the OI stage is that children display RIs despite their apparent knowledge of the relevant grammatical principles, such as head-movement, feature checking, etc. (Bonnesen, 2009).

Optionality, in the sense of coexistence of adult like utterances and forms that are incompatible with the adult grammar, has been accounted for in many different ways within different theoretical frameworks. For reasons of brevity I will not discuss the constructivist approach at length and simply adopt a generative based account¹². Several different approaches are subsumed under the ‘continuity’ assumption. Continuity states that children have full syntactic competence with all the functional projections available as part of UG. As a consequence, any proposed language acquisition model should incorporate a mechanism that converts the rule system of the child into the adult system (Crain, 1991). Models based on syntactic knowledge that take the continuity assumption to guide their proposal in explaining the occurrence of RIs can be divided into (i) linguistic maturation accounts (Bonnesen, 2009; Rizzi, 1993; Wexler, 1998; 2011) and (ii) performance based explanations (Phillips, 2010). The next sections briefly review each account. Other models, such as the semantic account (Hoekstra & Hyams, 1998a; 1998b; Hyams, 1996) or discourse based accounts (Avrutin, 1999; Avrutin, Haverkort, & van Hout, 2001) will not be discussed in this thesis, as the focus is on syntactic development.

5.1.1 Linguistic Maturation

The most influential account of the OI stage is based on the work of Wexler (1998). His account incorporates findings from different languages, making it

¹² The usage-based account predicts non-finite forms to occur in finite contexts on the basis of frames available through the input. One frame that could lead to misinterpretation are questions like ‘Where does it go?’ (Theakston, Lieven, & Tomasello, 2003), where the subject is immediately followed by a non-finite verb. However, the usage-based account is unable to explain the accelerated acquisition of the functional category Infl in the bilingual child’s English, as there is no movement involved in creating the non-adult like utterances.

possible to gain an understanding of the cross-linguistic patterns in the use of RIs.

One explanation of children's use of root infinitives is introduced by Schütze and Wexler (1996). In their Agreement and Tense Omission Model (ATOM) they propose that children frequently omit either tense or agreement. Nevertheless they come to the conclusion that children have already mastered the relevant inflection features present in the adult grammar from very early on (i.e. –s for present tense, 3rd person singular, –ed for past and a – \emptyset morpheme as default, which has no features inherent). Under the ATOM children are claimed to always choose the morpheme that is most compatible with features specified in the mental lexicon for a specific node. However, a morpheme including a feature in the lexicon that is not supported by the node (either Tns or Agr) will not be inserted. To end up with a root infinitive sentence, children either omit Tns and Agr is present or vice versa. Hence, if Tns is present and Agr missing, the –s morpheme cannot be inserted at the Tns node, as it is also specified for agreement [+3rd person, + singular]. If Agr is present and Tns missing, the feature specifying tense [+present] is not supported by the syntactic node. In both cases children produce a non-adult like utterance displaying root infinitives, as in *'Mary like ice cream', because the default morpheme [– \emptyset] is the only one compatible with the node representation. The trigger for children to resolve their OI stage is believed to lie within the mastery of case assignment. Here Schütze and Wexler (1996) propose different default cases for subjects in different language. While German feature NOM case as default, English has ACC. This claim has been empirically strengthened, as German or Dutch children display almost no subject case errors, while this number is significantly higher in English speaking children. This cross-linguistic variation can be explained through the consequences of interaction between universally predefined principles of UG and the learned (correct) parameter-settings for a particular language, which can lead to different surface behaviour. This approach is suitable to explain the different timing of resolution of OI's in the bilingual child investigated here.

According to Wexler (1998) all children have set the basic parameters governing verb movement at the earliest observable stage. Children know whether their language requires V to I or V to C movement, whether it displays the word order VO or OV and whether the language they are acquiring a

language which permits null subjects or not. This observation is captured in the Very Early Parameter Setting (VEPS) approach, assuring fast and nearly flawless first language acquisition (Wexler, 1998). However, the claim is that parameters are subject to a unique checking constraint (UCC), which allows children to check the features of a subject NP only once. This checking restriction leads to problems, wherever two or more functional categories need to be checked. For RIs this means that children can only check one of the two features, either T or Agr, but not both simultaneously, with the result that they produce sentences with infinitives in contexts that require a finite verb form in the adult grammar. As a consequence of the UCC children should not be able to produce agreeing tensed forms. However, as children are able to produce and interpret finite utterances as well, something else (namely the *minimize violations rule*, which I will review in the next paragraph) guides the production of finite clauses in child grammar during the OI stage. Further Wexler (1998) proposes that languages which require the checking of only one feature (T or Agr) lack an OI stage, as the underspecification of one feature does not block a second necessary feature. For example, Spanish monolingual children show no evidence of an OI stage, as the syntax only requires checking of T such that the UCC has no influence on children's productions. It follows that only children acquiring languages requiring checking of both T and Agr experience difficulties in the acquisition process.

As Tesan (2005) points out, while this underspecification of either T or Agr accounts for the occurrence of RIs it cannot serve as an explanation for the observed optionality children display in producing finite alongside non-finite structures at the same developmental stage within one language. Here Wexler (1998) suggests the *minimize violation* rule. *Minimize violation* dictates that children choose a derivation, which violates as few grammatical properties as possible. If both derivations contain the same amount of "minimal violators, either one may be chosen" (p.64). With the UCC applying the child has to delete either T or Agr, as the non-deletion of one of these syntactic entities results in the violation of this constraint. Hence utterances as in (36) violate the UCC, as the sentence contains an agreeing tensed verb form.

(36) He likes football.

(37) (*)He like football.

In (37) the child produces a non-adult like utterance with the tensed morpheme –s missing on the finite verb. This utterance adheres to the UCC of child grammar but violates rules of the adult grammar, as a deleted feature (T or Agr) obscures the correct interpretation of the utterances as denoting present tense. Thus deletion of one feature violates the interpretative/conceptual component of adult grammars (Tesan, 2005). Hence both examples contain one violation and are considered to be equal in the child's grammar, given the minimize violations rule. Thus both productions are licenced in the child's OI grammar, making use of inflection seem optional. Once the linguistic system of the child matures the UCC is no longer active and the child can converge on the adult grammar, producing both features simultaneously.

Another linguistic account proposed by Rizzi (1993; 1994) claims that children permit truncation of structures, rather than projecting all layers of the syntax up to CP. The central claim of the truncation approach is that children do not obligatorily choose CP as the root of the clause structure. Ultimately, the child's linguistic system must mature before they, like adults, take CP to be the basic clause. Instead children can take a lower node, for example T to be the head of the root of the clause. In this case, the child's grammar would project only the nodes lower than T, omitting all higher projections (in this case Agr and C). Depending on the node the child takes as the root, their grammar projects either all layers (c.f. if C is selected as the root) producing adult like utterances, or a truncated structure projecting just T resulting in non-adult like structures (if T is the root). Thus the inconsistency in root selection of the root in child grammar accounts for the observed optionality in children's productions¹³.

In the case of RIs English-speaking children are assumed to optionally truncate below T, leading to non-finite clauses. Thus RIs are VPs with CP, AgrP and TP missing in the truncated structure. Given children truncate below T, they also omit NegP in negated sentences, which explains the initial use of just adverbial negation (more details follow in chapter 6), as an adverb can be adjoined to the VP (Jordens & Hoekstra, 1991; Rizzi, 1993). Now consider *wh-*

¹³ More recently Rizzi (2000) further investigated the grammatical option of subject drop in non Null Subject Languages, such as English. In a nutshell he proposes that the highest position of the tree (SpecC) is exempt from the identificational requirements normally applying to null elements in all other positions and can thus host null elements. This null element remains unidentified and only receives its meaning through discourse. Now, if children truncate the initial part of the structure (by omitting CP), subjectless declaratives such as **,__goes there* are a licensed variant of *,This goes there* in early grammars.

questions: following this approach, children who acquire a V2 language, where movement of the finite verb to SpecC is obligatory in *wh*-questions, should not display RIs when they produce adult like V2 utterances. It follows that movement to SpecC is only possible if CP is present in the child's grammar and if CP is present all other tree nodes project, resulting in the absence of OIs in *wh*-questions.

The English child data are in contrast to this general assumption, as a lot of young children produce non-finite *wh*-questions, such as *'What he eat?' or *'Where *e* go?' (Bromberg & Wexler, 1995). As demonstrated in the examples from previous studies, the subject position can either be filled or empty. While these interrogatives have a CP they are non-finite, contradicting the predictions of the truncation model. To explain these data, Rizzi (1993) proposes that the omission of the AUX in these structures results from phonetic omissions, and not the result of truncation during the OI stage. Thus children have full knowledge of the syntactic requirements of AUX, but are unable to pronounce the element associated with that category, leading to optional infinitives in their productions.

5.1.2 Performance limitations

Another proposal to explain children's non-adult like utterances during the OI stage claims children's optional use of Tense-related morphemes are a product of linguistic performance. Phillips (2010) claims that processing limitations differentiate children's grammars from adult grammars. Since processing capacity is generally considered to increase over time, this account explains the more gradual change observable in the child's syntax. In the data gathered from CHILDES transcripts in many different languages Phillips found non-adult like utterances where children frequently omitted a constituent, but hardly any cases of substitution, for example plural forms instead of singular. This observation is in line with findings from previous studies (cf. Bonnesen, 2009; Harris & Wexler, 1996; Poeppel & Wexler, 1993).

The central claim is that children have the same linguistic competence as adults, but children's use of the morphological knowledge is delayed due to a lack of automaticity in the retrieval of the correct morphological items. Phillips claims that as morphological access is not yet automatic in children, accessing a morphological item is more costly than the omission of a derivational step, for

example the lack of V-to-I (to-C) movement, leading to the production of RIs. In other words children have adult like knowledge of syntax, which is evident in the distribution of finite and non-finite verbs in V2 languages like German. This has been demonstrated to be the case for the German monolingual boy Andreas (Poeppel & Wexler, 1993). The difference from adult grammars is that children allow non-finite verbs to remain in situ and fail to mark them as finite in a clause final position, while the adult grammar does not allow root infinitives. However, the distribution of raised and non-raised verbs reveals that children's root infinitives can be interpreted as finite with the only difference that children have failed to merge the inflectional morphology onto the verb. As children's performance gets more consistent, due to a more automated retrieval of morphological markers, they produce fewer RIs. Thus, even though linguistic knowledge is innately specified as part of UG, children only gradually come to produce correct inflectional features as their grammatical competence develops. Phillips's (2010) performance limitation account explains the gradual change from the OI grammar to the required adult system. In addition it adequately captures cross-linguistic differences. For instance English children produce more RIs than their Spanish peers. This is claimed to result from the richness of the inflectional paradigm, where highly inflected languages facilitate the automatic access to inflectional affixes. Thus children speaking a language like Spanish, which has fewer null affixes when compared to English, are predicted to acquire the specifics of inflectional morphology at a faster rate, in terms producing fewer RIs.

5.2 Predictions for German-English bilingual development: Acceleration of Inflection?

According to Phillips (2010), children successfully use tense morphemes at around age 2 years in both English and German. However, RIs have been attested as a frequent non-adult like form in monolingual children of both target languages. Figure 6 illustrates the proportions of the use of RIs from the two monolingual English children Adam and Eve (from the Brown (1973) corpus in CHILDES) and the German monolingual girl Simone (studied by Miller, 1976).

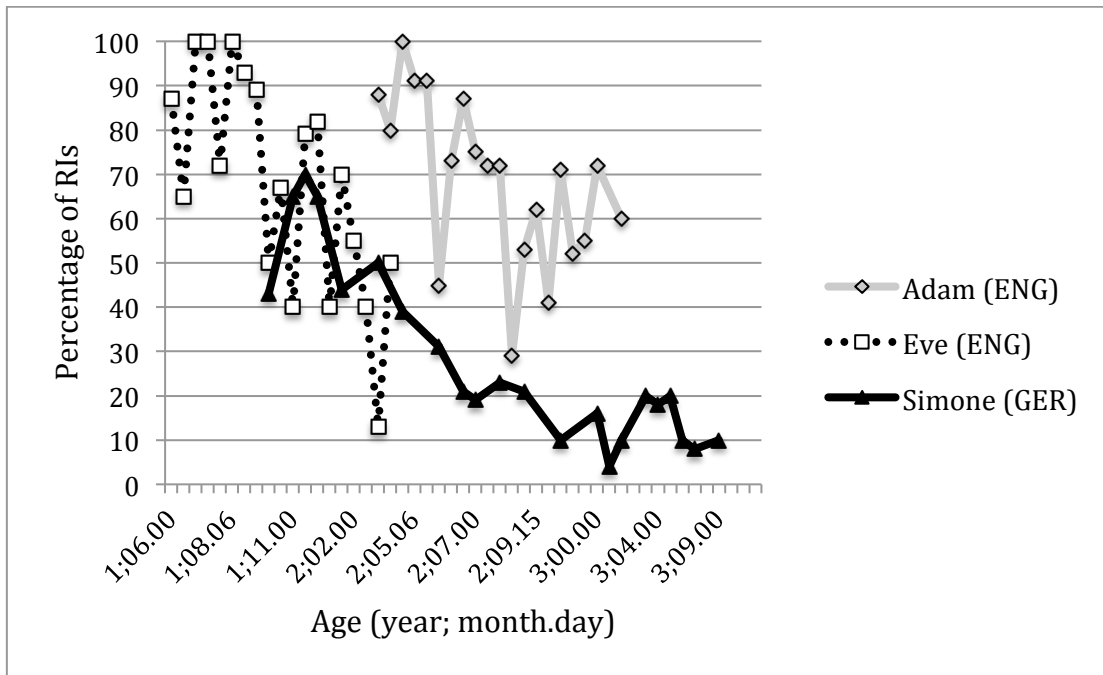


Figure 6: Proportions of root infinitives (RIs) in English (Adam and Eve) and German (Simone); adapted from Phillips (2010)

Figure 6 shows that RIs are used more frequently in the children acquiring English, ranging from 100% to 18%. The range for use of RIs by the German girl Simone is lower, from 70% to around 5%, arguably due to the fact that German has a richer inflectional paradigm than English (Phillips, 2010). Both, English and German display RIs in children's acquisition data for a prolonged period of time, being most prominent around the age of 2 and 2;6 years (Austin, 2009). With these figures in mind, I now turn to the German-English bilingual acquisition process.

If a child overgeneralizes the verb movement paradigm of the German syntax to English and chooses to raise verbs from V to I to C, they should always surface as finite with the required morphological marking. Thus, as long as V2 transfers, I predict a high rate of finite verbs in Kayla's developmental phases II and III, the phases where she has not adopted the targeted [-raise] setting of the verb movement parameter in English (see chapter 4 for details). Also during this V2 stage the negative structure (38) is predicted.

(38) *He swims not. $V_{fin} - Neg$

(39) *He swim- \emptyset not. $V_{\emptyset} - Neg$

In (38) the V2 requirement results in the raising of the finite verb over negation, resulting in the word order V-Neg. This has been demonstrated to be the case for the bilingual child of the current study. A follow up prediction is, that as long

as V2 is transferred only finite verbs should surface in second position, making utterances as (39) impossible.

However, once the bilingual child passed through the stage of V2 transfer and reset the verb movement parameter to [-raise], she could resemble the development of monolingual English-speaking children. Thus, theoretically RIs as in (40) become available and could be used frequently.

- (40) *He not swim-Ø. Neg – V-Ø

In addition, as long as the bilingual child has not fully acquired do-support, other non-adult like productions similar to monolingual English speaking children become an option. For example, structures like non-agreeing *don't* (41) and misplaced morphology (42) could, in principle, arise. More details regarding these structures will be given in chapter 6, which focuses on Kayla's use of negative markers.

- (41) *He don't swims. Neg - V_{fin}

- (42) *He -s don't swim-Ø/-s. inflection Neg - V-Ø/fin

In a bilingual acquisition context another scenario is plausible. Here transfer of the German V2 requirement to English could have an accelerating effect on the acquisition of the functional category Infl in English, previously dubbed ‘bilingual bootstrapping’ (Gawlitze-Maiwald & Tracy, 1996). Thus, even after the child adapts the verb movement parameter to the adult like setting, previous transfer of V2 could have a long lasting effect on the English language development. Mastery of V2 requires the child to expand the linguistic system beyond the VP to incorporate the left periphery. Therefore the bilingual child has acquired knowledge of higher projections, all the way up to CP. It can be assumed that expansion of the linguistic system has an effect on both target languages. This effect could become evident in a higher proportion of inflection markers in English, when compared to monolingual children, even after the stage of V2 transfer.

5.3 Findings from child data

The central question arising from the review sections is: Is there ample evidence for cross-linguistic influence in the form of accelerated acquisition of the functional category Infl in the bilingual child's language development? To answer this question the data analysis is done separately for the two target languages, starting with German. In this chapter I will review sentential

negation and affirmative utterances, as both these structures are informative in regards to Kayla's acquisition of the functional category Infl.

5.3.1 German data

V to C movement in V2 grammars is described as an absolute grammatical requirement in the sense that it is non-violable (Phillips, 2010). Thus as soon as the child has implemented V to C movement, the verb has to raise through I. This entails that the raised verb will always appear as finite. Hence it can be predicted that *wh*-questions, which require movement to C or sentences with overt subjects show no RIs. Analysis of the data reveals that Kayla has already full knowledge of the German V2 syntax at the beginning of the study at age 2;10 years. As the V2 grammar is successfully acquired, there were no RIs in Kayla's German data anymore. Thus raised verbs always included inflectional markings, while non-finite verbs marked by the default ending *-en* in singular contexts stayed in situ in the VP¹⁴. This is in line with results from monolingual children, who show complete knowledge of V2 as early as the beginning of the two-word stage, around the age of 2 years (Poeppel & Wexler, 1993).

Out of the 126 sentential negations only 7 (5,5%) were non-adult like. The analysis of these non-adult like German negative sentences revealed, that Kayla mostly used the incorrect negator (*kein* instead of *nicht* (4/7)), a pattern unattested in monolingual German speaking children (Stromswold & Zimmermann, 2000). However, 2 non-adult like productions occurred with the negator placed in medial position preceding the non-finite verb marked by *-en*, following the incorrectly inflected auxiliary *dürfen* (English *may*). An example is given in (43).

- (43) *'Du darfen nicht das hier alles mitnehmen.' (KAY 4;03)
 You may-INF not-NEG that here all take-INF.
 'You may not take all that.'

However, in chapter 4 this has been argued to illustrate the immature inflectional paradigm of this particular auxiliary verb, instead of reflecting lack of knowledge regarding negation. Further, except for the incorrectly inflected form of the auxiliary *dürfen*, this sentence is acceptable in the adult syntax with the correct intonation. Analysis shows that Kayla correctly positions the verb in

¹⁴ Diary data and private video recordings of Kayla before age 2;10 years confirm the analysis and show that she never went through an OI stage in her German development.

the second position, indicating raising of the finite verb as required by V2. However, the verb is clearly marked by the infinitive morpheme *-en*, instead of the required 2nd person singular *-st*. As the verb raises and the vowel changes from /ü/ to /a/, as is required within the agreement paradigm for the auxiliary *dürfen*, it indicates knowledge of agreement. From contextual analysis and intonation (the negator is stressed through pitch and length as a marker of contrast) it becomes clear that Kayla expresses the wish/desire that her mother leaves the toys where they are, instead of packing them away in the near future. Thus, I interpret the utterance as having a modal reading.

Out of the remaining (see chapter 3 for details about exclusion) 1051 German utterances, 181 suitable interrogatives (62 wh-questions and 119 yes/no-questions) were analyzed. There were no non-adult forms regarding the application of tense, as all raised verbs occurred in a tensed form. Non-adult like interrogatives included the lack of verb movement resulting in non-inverted questions (further details in chapter 7) and 3 (1,6%) interrogatives featured non-adult like agreement of the subject and the corresponding verb. Utterances as in (44) occur at a rate lower than 2% and can be disregarded as performance errors.

- (44) *'Was sind das hier?' (KAY 4;03 years)
What are-PL this-SG here?
'What are these?'

It can be concluded that Kayla has complete knowledge of tense and agreement in German, as indicated by mastery of the V2 requirement.

5.3.2 English data

Despite the fact that most of Kayla's English utterances are target like (c.f. 80% adult like interrogatives, almost 70% adult like negations), her English data show a greater variety of non-adult like structures. This observation is further confirmed by Kayla's use of inflection. The analysis of Kayla's English data is split into several subgroups, following the line of predictions (V2 transfer versus no V2 transfer and affirmative versus negative contexts). First I will review Kayla's linguistic behavior in affirmative and negative contexts, during the stage where she transfers V2 (phase II and III, as demonstrated in chapter 4). These findings will be compared with an analysis of her affirmative and negative productions after V2 transfer is eliminated.

To examine Kayla's language development in affirmative contexts, I used CLAN to search for multiword utterances containing at least a subject and a main verb as its complement in 3PS contexts. The count was restricted to main verbs (excluding modals, auxiliaries and 'be-support') in order to be as conservative as possible. As reviewed in the previous sections, only utterances in 3PS context reveal whether or not the child correctly applies the English inflectional paradigm, making it possible to understand the development of tense and agreement. The search yielded 286 affirmative utterances available for further analysis of use of inflectional morphology, 71 during the stage of V2 transfer (age 2;10 to 3;07 years) and 215 in the phases thereafter (until age 5;07 years).

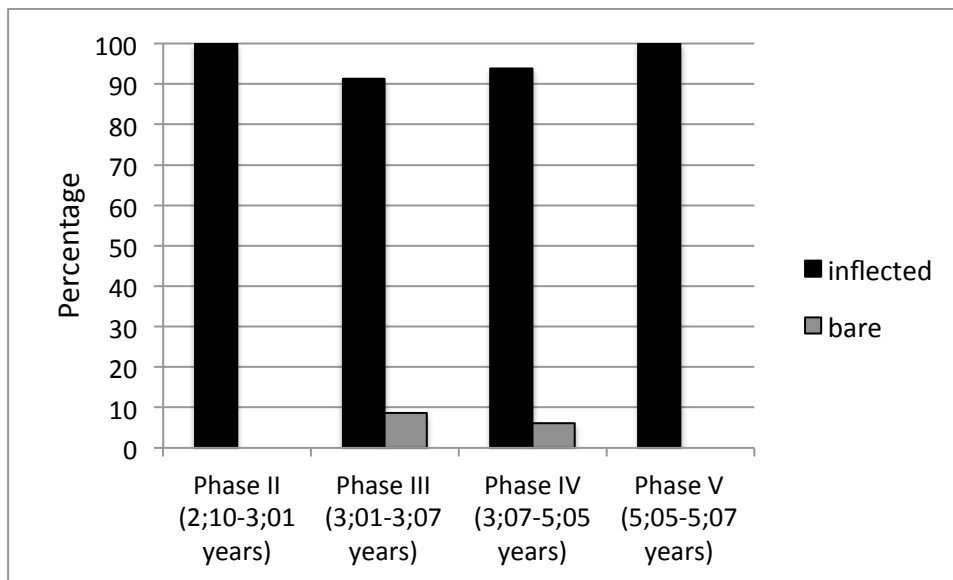


Figure 7: Use of overt inflection versus omission of the morpheme-s in Kayla's English affirmative utterances in 3PS contexts

Figure 7 illustrates the data in affirmative contexts. These confirm the first prediction and show that Kayla exclusively uses overt inflectional morphology for finite verbs in her developmental phase II (age 2;10 to 3;01 years), a phase of prominent V2 transfer. All raised main verbs (100%) are marked with the morphological marker -s, as has been predicted due to transfer of the V-C movement via I. In phase III (3;01-3;07 years) the rate of overt finiteness remains very high, still accounting for over 91% of her productions. However, there are 5 (5/58=9%) examples displaying omission of inflectional morphology in finite contexts resulting in RIs. The greater variability in phase III can be attributed to changes in the underlying grammar. This seems to be a phase of great transition, thus the higher rate of non-adult like utterances can

be explained through higher variation of structures, while the child tries to arrive at the appropriate target structure. Thus we can confidently conclude that Kayla's high rate of finite verbs results from V2 transfer in phase II, while decrease of V2 transfer in the following phases opens up a variety of different scenarios accounting for non-adult like productions, including the appearance of RIs.

Another possibility is the claim of maturation, linked to linguistic performance. As children mature, their grammar matures and they become more adult-like in their productions. For Kayla we would expect that she matures out of the RI stage and produces high rates of inflection in her English. As her inflection rate is adult-like during phase II, we do not expect a reduced usage of inflection in phase III, IV or V. However, here the opposite seems to be the case, as Kayla regresses from producing inflected utterances to taking a step backwards and producing root infinitives in her English again, while this grammatical option is already non-existent in her German. This strengthens the analysis of V2 transfer causing the high rates of inflection, not linguistic maturation. As soon as V2 diminishes and the verb is no longer moved up to C (via I), English root infinitives surface again¹⁵. This however is only a problem if the development of inflection is indeed guided by linguistic maturation, a claim that is still discussed controversially within the literature.

The results for negative contexts show a similar development. Out of the 6153 gathered productions, 334 sentential negations were available for further analysis. Out of the 139 non-adult uses of negation she produced, 105 tokens were in 3PS context. In line with findings from the affirmative utterances, Kayla produces sentential negation with overt inflection in 96% in phase II and 97% in phase III, as can be seen in Figure 8. In sentential negations the proportion of RIs is slightly higher than in affirmative contexts during the stage of V2 transfer. This general observation has been previously been noted in typically developing English-speaking children and children with specific language impairment. Here RIs occur in phase II and III, but remain very low in number accounting for under 4% (2/52) of her productions. Importantly no apparent violations of the V2 constraint were attested in Kayla's sentential negation. Utterances such

¹⁵ It remains puzzling that RIs 're-'surface in English at a stage where they have disappeared in the German production data, given the RI stage is linked to maturation of the linguistic system. The data presented here indicate that both languages develop independently in regards to production of RIs.

as *'It fit- \emptyset not' (*V bare + not*), where a raised verb displays no overt inflection are absent during the stage of V2 transfer.

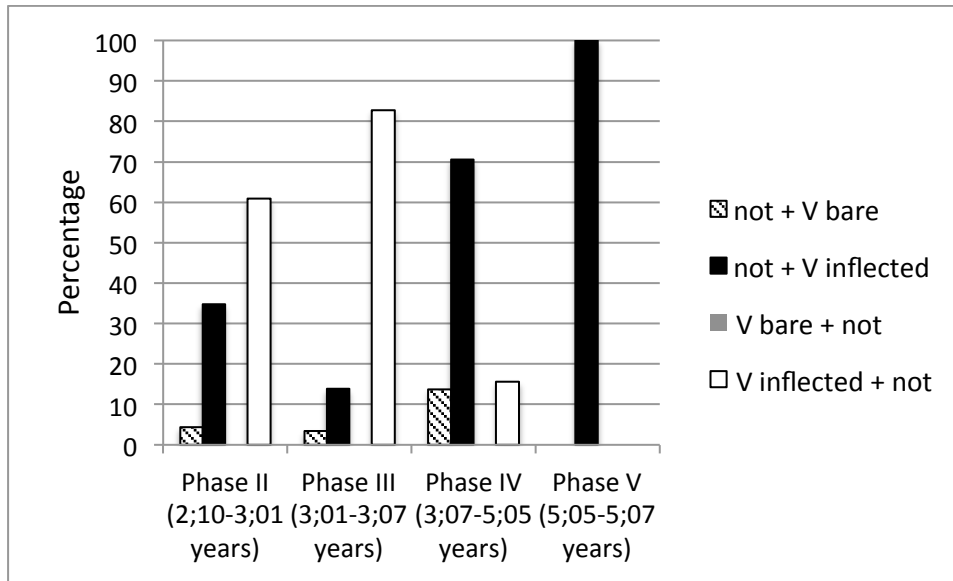


Figure 8: Rate of inflected versus bare verbs (RIs) in Kayla's sentential negation

Interestingly RIs are most frequently used during phase IV, after V2 transfer dissipates, constituting 6% (11/181) in affirmative and 14% (7/51) in negative productions. This is in line with the predictions regarding V2 transfer and the use of finite morphology. Only after a [-raise] setting is adopted for English the bilingual child starts to produce RIs, as she does not move the verb to C (via I) anymore. Note that the use of RIs is higher in sentential negation when compared to the affirmative contexts, as was the case during the stage of V2 transfer. However, the overall rate of overt inflection during phase IV is still at 92% (214/232), highlighting that even though RIs are possible, the bilingual child prefers the use of overt inflectional markers. In addition RIs are unattested in both, affirmative and negative utterances, in phase V. Thus overall Kayla's development during the stage of V2 transfer differs from monolingual English-speaking children, as she raises main verbs and displays a much higher rate of inflection. Even after V2 transfer diminishes, the use of inflected verbs remains high, which indicates an accelerating effect in the acquisition of the functional projection Infl. I will return to this observation in the discussion.

The most prominent non-adult like structure in phase IV is the use of inflected verbs after negation. Utterances like (45) seemingly violate the head movement constraint (HMC), as affixal inflection is lowered over another head, namely negation. This structure accounts for a little over 70% of non-target like

productions in phase IV and is the only remaining non-adult like structure present in phase V, when do-support is acquired. Only 2 such non-adult like productions were counted in phase V, constituting under 1,5% (2/139) of all non-adult like negations.

(45) *'It not open-s.' (KAY 3;10 years)

In the next chapter I propose an analysis for these structures, demonstrating that the child still adheres to principles of UG in the generation of such non-adult like forms. Thus for now, I will leave these aside.

Structures displaying misplaced morphology, as in *'Mickey –s not fit-s in there' (KAY 4;01 years), were also attested in Kayla's English data¹⁶. Here the inflectional morphology appears twice, once on the finite verb and once as an orphan higher up in the derivation. Table 9 shows the frequency of this kind of structure within the finite negated utterances in the word order Neg-V.

Table 9: Misplaced morphology in Kayla's non-adult like negations (Neg-V)

	Misplaced morphology in Neg-V _{fin}
Phase II	4/23
(2;10-3;01 years)	(17.5%)
Phase III	1/29
(3;01-3;07 years)	(3.5%)
Phase IV	15/51
(3;07-5;05 years)	(29%)
Phase V	1/2
(5;05-5;07 years)	(50%)

It becomes evident that although this structure is not very frequent overall it constitutes an important non-adult form during phase IV. This further provides evidence for the importance of this developmental stage, as phase IV is characterized by the transition to adult-like negation with the correct application of do-support. Thus phase IV seems to constitute an intermediate stage, where a variety of non-adult like structures can be attested.

¹⁶ The example was recorded in a task where different animals were tested to see whether or not they fit through the door of a dolls house. Out of this context the utterance ‚Mickey-s not fit-s in here' cannot be interpreted as a genitive subject.

Figure 9 shows the use of inflected verbs and RIs in Kayla's overall development. It becomes evident that during the stage where she transfers the V2 requirement to English, almost all main verbs receive overt inflectional markings. This confirms the prediction of V2 transfer affecting the rate of inflection, as the verb has to move through I on the way up to C, collecting all the necessary markers on the way. Even after V2 transfer is eliminated the child continues to display a high rate of inflection, even though RIs do become available, as is noticeable in the occasional use of these non-adult like structures. However, they remain low in appearance throughout the entire study, peaking during phase IV. This late peak can be explained with the greater variety in structures Kayla tries during this stage due to the major transitions in her grammar (e.g. V2 to non-V2). Once do-support is fully implemented and used productive at phase V, RIs disappear.

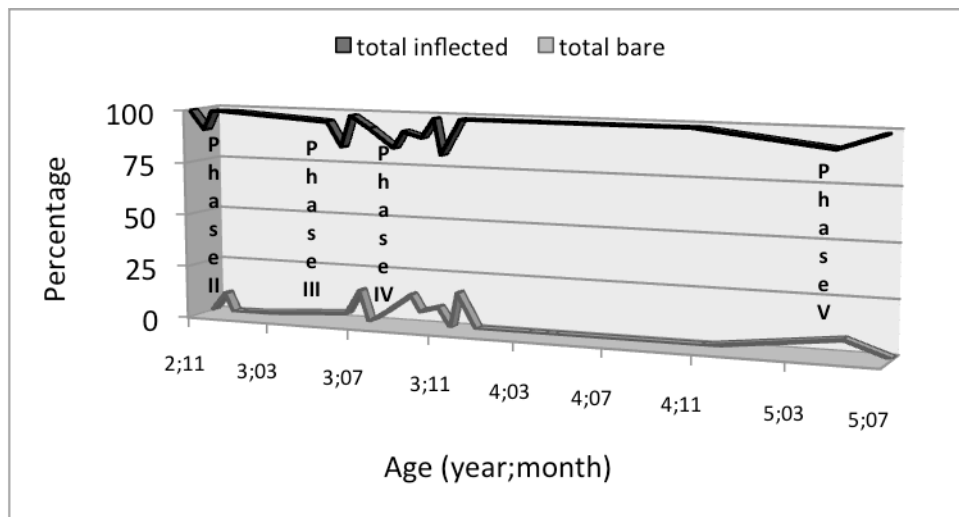


Figure 9: Proportion of Kayla's use of overt inflection and bare verbs (RIs) in 3PS contexts

When the rate of Kayla's omitted inflectional morphology in her English productions is compared to the monolingual children it can be seen that she behaves similarly to the German girl Simone, also producing far fewer RIs than the monolingual English-speaking child Adam. This is illustrated in Figure 10, the reprinted version of Figure 6 with Kayla's data included in the picture.

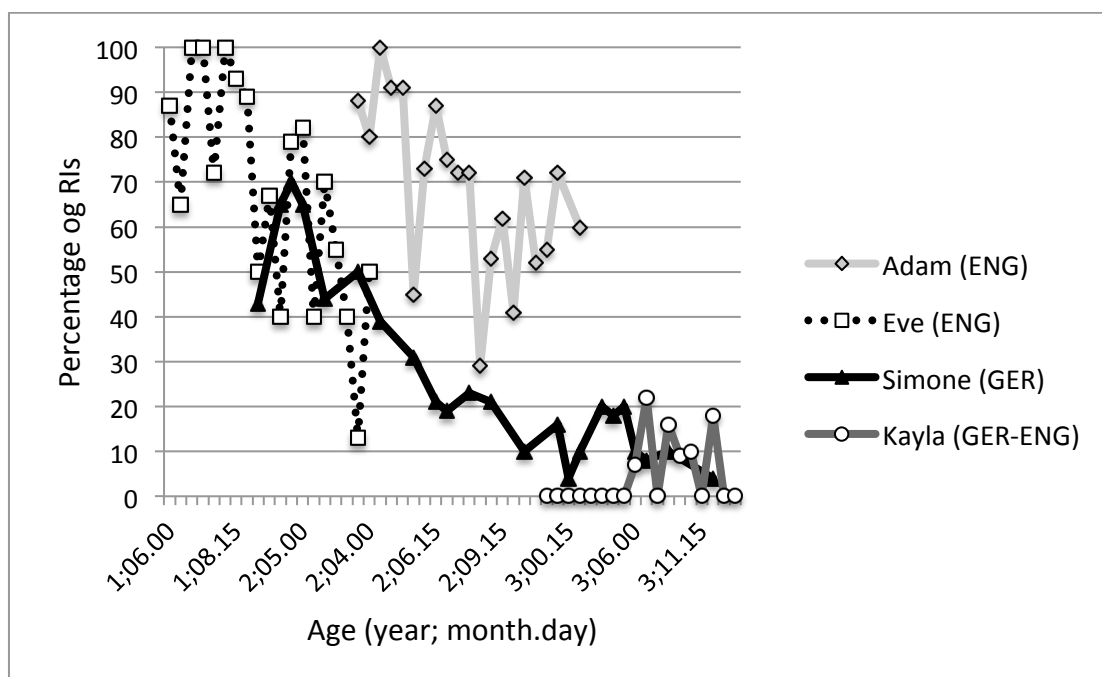


Figure 10: Proportions of root infinitives (RIs) in English (Adam and Eve) and German (Simone); adapted from Phillips (2010) in comparison to Kayla

5.4 Discussion

This chapter investigated a follow up prediction resulting from the observed transfer of the German V-C movement to English. Two scenarios for the acquisition of the functional category Infl have been proposed. The first scenario predicted a high rate of overt inflection only during the V2 stage, due to verbs raising through I on the way out of the VP up to C. Once V2 transfer dissipates this accelerating effect should decrease, making room for use of RIs, a typical structure of children's development in the OI stage. As the child's linguistic system matures, RIs should gradually be replaced with more adult like productions, mirroring the development of monolingual English speaking children. This scenario was not borne out by the data. Instead the data support the second scenario. Here, as in the first scenario, transfer of V2 was predicted to result in a higher rate of use of inflectional marker *-s* in 3PS contexts, due to V-C movement. However, once the bilingual child passed the stage of V2 transfer, the rate of inflection was predicted to remain high and RIs seemed unlikely, which would provide evidence for a long lasting effect of the V2 transfer on the child's English grammar.

The results of the analysis of the English data confirm the prediction of the second scenario. Once the bilingual child has set the parameter to [+ verb raising] the production of non-adult like forms, as *'The duck swims not', where

the child raises main verbs over negation producing the V2 word order become a plausible option. The overt realization of the inflectional morphology follows directly from the application of the V2 grammar, where the strong features of the verb do project.

Even after the verb-movement parameter is adjusted to [-raise], Kayla produces a high rate of inflected verbs (92% in phase IV and 100% in phase V). However, the overuse of inflectional markings sometimes results in non-adult like negations, such as *'It don't swims'. This structure was attested in almost 70% of Kayla's sentential negations during phase IV (age 3;07-5;05 years). As long as Kayla has no do-support available, which is marked by the absence of inflected *does/doesn't*, she generates a variety of structures including misplaced morphology, medial negation, non-agreeing *don't*, etc., mirroring the development of monolingual English speaking children (further details in chapter 6). However, as demonstrated in chapter 4, do-support is still unavailable to Kayla at that developmental stage and is only used productively in phase V, where these non-adult like forms disappear.

Monolingual German speaking children acquiring the V2 constraint also produce RIs, as has been demonstrated in numerous previous studies (Clahsen, 1990a; Hoekstra & Hyams, 1998a; Schütze, 2010; Weissenborn, 2002). Once German monolingual children are exposed to the triggers for V2 they adjust the parameter setting to [+raise], which is accompanied by the abandonment of RIs in finite sentences. This has been confirmed in Kayla's German data, as they do not display RIs and raised verbs are always clearly marked finite by the relevant tense and agreement morphology.

The English data also provide evidence for the early acquisition of tense, as non-adult like utterances in the form of RIs occurred in just 6% (9/105) of all non-adult like negations and in 9% (16/286) of all affirmative contexts in 3PS contexts produced by Kayla. This is a much lower rate than that of English monolingual children during the OI stage who typically produce RIs in anywhere from 20% to 100% of their utterances, with a mean amount of 78% between the age 2;03 and 2;06 years (Phillips, 2010). Interestingly most of the RIs occurred at a developmental stage, where Kayla already passed the stage of V2-transfer and predominantly used the English target word order. Thus, only once the child switched the agreement setting to weak, not triggering verb movement out of the VP any more, RIs became productive in the English

grammar. Further analysis of the RIs revealed, that Kayla restricted all RIs to modal references, a fact than can be attributed to the German influence on the English target language, as monolingual English speaking children display such a restriction on just 13% of their RIs (Hoekstra & Hyams, 1999).

When we look at the structures Kayla tries out to arrive at the target structure, it can be seen that Kayla adds something to the derivation, instead of deleting something. This goes against the prediction of simplifying a derivation, as proposed by the Derivational Complexity Hypothesis (Jakubowicz, 2006). Instead the data gathered seem to favour the assumptions of the Cross-linguistic Influence Hypothesis (Hulk & Müller, 2000a), as overlap of the two target languages results in V2 transfer. This transfer in turn results in a high rate of inflectional morphology in the English target language, as predicted by the Bilingual Bootstrapping Hypothesis (Gawlitze-Maiwald & Tracy, 1996). Further there is a clear quantitative difference in the rate of verbal inflection between monolinguals and the bilingual child studied. Kayla displays verbal inflection in 94% of her non-adult like negations, while monolingual English children are reported to use inflected and non-inflected verbs interchangeably during the pre-do-support stage, both averaging around 50%. Whether the morpheme joins the verb through verb raising or lowering of the affix does not matter for this observation. The important point is, that the early setting of the V2 parameter in the bilingual child results in a much higher rate of verbal inflectional morphology and the near absence of RIs, which has also been attested in Kayla's affirmative utterances. This preference for overt inflectional morphology contrasts English monolingual children during the OI stage. Importantly this cross-linguistic influence is still observable at a stage where V2 no longer transfers. Thus the early setting of the verb-movement parameter to [+raise] had a lasting influence on the functional category Infl.

5.5 Conclusion

In this chapter I proposed that the transfer of V2 from German to English, as demonstrated in chapter 4, has an accelerating effect on the acquisition of the functional category of Infl. I specifically predicted a faster acquisition of the tense and agreement paradigm, as German V2 can only be successfully applied once children have specified these two nodes of the syntactic tree. I demonstrated that as long as Kayla transfers V2 to English, this

is reflected in the rates of inflection used, as well as the (in-)ability to produce true RIs. As German V2 can only be applied successfully once the tense and agreement node of the functional category Infl are specified, it was predicted that Kayla should produce overt markings of finiteness at a higher rate than her monolingual English speaking peers at that developmental stage. Following the proposal of the Bilingual Bootstrapping Hypothesis (Gawlitze-Maiwald & Tracy, 1996), transfer of V2 has been argued to have a long lasting effect on the English target language, resulting in the accelerated acquisition of the functional projection Infl. In addition, due to higher inflection rates, RIs became implausible. These predictions are borne out by the data presented in this chapter.

As long as Kayla transferred the German V2 requirement to English only finite verbs moved out of the VP. This is expected, as in V2 languages verbs raise from V to I to C, picking up inflection on the way, which is overtly spelled out at LF. As predicted the rates of inflected main verbs in Kayla's data is much higher than that of previous studies investigating monolingual English speaking children. Importantly, this observation holds, even after Kayla has adopted the English target word order and arguably set the verb-movement parameter to [-raise].

It can be concluded, that the application of the V2 grammar in English serves as an accelerator for the specification of the T and Agr node in the English syntax. This is evident, as Kayla shows very little evidence for an OI stage. If a stage of optionality can be attested at all, it is very short lived, lasting only 6 weeks. This rather sudden change supports the parametric approach to language acquisition, as there is no prolonged intermediate stage of variable use of the options provided by the grammar. However, the constant use of verbal inflection generates non-adult like structures in the form of (i) misplaced morphology (*'He -s don't swim-ø/s') and (ii) affix lowering over negation (*'It not open-s') in the developmental stage after V2 transfer and before do-support is acquired. The next chapter focuses on the generation of and retraction from these structures, which have also been attested in monolingual English speaking children (Thornton & Rombough, 2014; Thornton & Tesan, 2013). In summary, Kayla produces the same non-adult like structures as her monolingual English peers. However, the proportion of overtly pronounced inflectional morphology in 3PS contexts in Kayla's English is much higher than for monolingual

children, even after she successfully reset the verb movement parameter. This serves as evidence for an acceleration effect in the acquisition of the functional projection Infl in Kayla's English, arguably resulting from the simultaneous exposure to German.

Chapter 6: Delay of head negation?

After considering the language specific properties of verb movement in the German V2 syntax, its transfer to English in a bilingual context and the implications for the acquisition of the functional category of Infl(ection) in English, I now turn the debate to the status of the sentential negative modifier itself. This chapter concentrates on the acquisition of the functional category for negation (NegP), which I will demonstrate to be delayed in a German-English bilingual context. Following from Hulk and Müller's (2000) Cross-linguistic Influence Hypothesis, I will argue that this delay can also be attributed to overlap in the two target languages and economy considerations (Sorace & Serratrice, 2009). In this thesis the term economy is used in the sense of Hernry and Tangney (2001), where a linguistic phenomenon displaying more consistency across different contexts is viewed as more economical. Bentzen (2013) also uses the term in this sense to describe syntactic structures that provide less variability. As defined in chapter 2.3.2, a language is less economical if it provides multiple, optional constructions. Thus economy is not to be confused with complexity, as this is reserved for the derivation of a particular syntactic structure, following Jakubowicz (2011) and the Derivational Complexity Hypothesis. In Jakubowicz structures that involve fewer steps to arrive at the target utterance are called less complex compared to others involving more steps, which are defined as derivationally more complex.

Delay is typically classified as a speed-reduced acquisition rate whereby bilinguals reach adult like performance of some grammatical properties later than their monolingual peers, usually measured in age or MLU values (Paradis & Genesee, 1996; Patuto et al., 2011). This reduction in speed results from either the influence of language A on language B in the acquisition of certain language specific properties (i.e. determiner use (Cornips & Hulk, 2013) or dative case marking (Schmitz, 2006)) or is accounted for in terms of a higher processing load as an effect of bilingualism itself (Toribio, 2004). In the first case there are two conditions which have been debated controversially in the literature: the effect of (surface) overlap versus derivational complexity. While some studies claim that overlapping surface strings in the two target languages leads to overuse of certain properties of language A in language B, resulting in delay of

the acquisition of that structure in language B due to the correction process, others have found no such evidence. Instead they conclude, that surface overlap makes cross-linguistic influence possible, but not necessary (Sorace, 2011).

For example, Pirvulescu et al. (2012) found French-English bilingual children, aged 3 to 5 years, to omit objects at a higher rate in French than their monolingual peers, regardless of the fact that both target languages do not typically allow object drop. They propose that bilingual children, due to reduced input, retain the default option made available by UG for a prolonged period of time, compared to their monolingual counterparts, leading to a noticeable delay in the acquisition pattern of language specific structures. Another study by Sorace et al. (2009) supports this idea, as bilingual children generally take longer to sort out specific form-function mappings, which she has demonstrated in the use of pronominal choice in [-Topic Shift] context in Spanish-Italian and English-Italian bilingual children. Despite the fact that the language pairs they investigated show different levels of structural overlap, all bilingual children performed less accurately in an acceptability judgement task than their monolingual peers. These findings suggest that delayed acquisition might be an artefact of bilingualism itself, not necessarily being attributed to the language combination and effects of cross-linguistic influence.

In this current thesis I argue against the assumption that the non-adult like negative productions of the German-English bilingual child are an artefact of bilingualism, as monolingual children show the same effects in their development of negation. Previous studies have demonstrated that monolingual English speaking children also acquire the negative head with clitic *n't* later than adverbial negation with *not*. They also display misplaced morphology in the stage before do-support is acquired (Tesan, 2005; Thornton & Tesan, 2013). In addition monolingual children, just like bilinguals, are reported to use negation as an adverb and both groups resolve non-adult like productions once the negative form *doesn't* is used productively. The only difference between the developmental patterns of these target groups is quantitative in nature. While monolingual children converge on adult like negation around the age of 3 to 3,06 years (Stromswold, 1996), the bilingual child of the current study displays non-adult like forms up to the age of 5;05 years. Thus the bilingual context only serves to keep the default setting of adverbial negation active for a longer period of time, arguably due to the constant positive reinforcement of adverbial

negation through the exposure to German. Here economy considerations play an important role in explaining the prolonged use of adverbial negation and the delay in the acquisition of head negation with the clitic *n't*.

The goal of this chapter is to chart the bilingual child's developmental path of acquisition of the clitic form of negation. I will explain some non-adult like structures that the child produces along the way.

(46) *It not swims. (KAY 3;11 years)

(47) *It don't jumps. (KAY 4;01 years)

I will demonstrate that productions as in (46) and (47) can be generated in bilingual and monolingual contexts alike, through application of a simple parameter-setting model (Wexler, 1998). Thus, as monolingual children display the same difficulties, I stress the fact that delay in the acquisition of head negation is not an artifact of bilingualism itself (Toribio, 2004).

Before exploring the differences in German and English negation, I will briefly introduce some theoretical background on negation in general (6.1). In addition this first section will lay the ground for the sections to come by introducing Zeijlstra's Formal Flexible Feature Hypothesis (FFFH) and his Negative Concord Parameter (2007a; 2004). The next sections introduce the debate about the classification of the negators *nicht* and *not* for the two target languages German (6.2) and English (6.3) in more detail. Section 6.4 outlines the acquisition challenge, leading to the predictions in a German-English bilingual context. Finally in section 6.6 I argue that an analysis of *not/nicht* as negative adverbs is preferable, as it best accounts for the data presented in section 6.5. Section 6.7 concludes this chapter.

6.1 Negation, the Neg-Criterion, a NegP and the Negative Concord Parameter

Negation, denying the truth-value of an affirmative statement, is inherent to every natural language. Negation can have scope over the entire sentence (sentential negation) or affect only single constituents (constituent negation). In addition, there exists considerable variation in the way negation is expressed in the different languages of the world (Jäger, 2008). The form of the negative element can either be a single (i.e. German *nicht*) or a bipartite particle (i.e. French *ne...pas*). This particle can either attach to the finite verb, occur on its own following the finite verb or stand syntactically independent of the verb.

Traditionally research focuses on the position of the verb in relation to the negative particle to follow the path of acquisition of finiteness and verb movement phenomena. It has been demonstrated that German children raise finite verbs across negation to the IP, while infinitives stay in situ in the VP below. Hence German children make a distinction between finite and non-finite verbs from early on (around the age of 2 years) and they instantiate a higher projection for the verb to raise to, at least an IP (Hamann, 1996). In addition negative sentences host at least one more functional projection, a negation phrase (NegP), which is marked by the presence of the negator *nicht*. This however still leaves two choices: either *nicht* constitutes a head (parallel to the French negative particle *ne*) or it is a specifier (like French *pas*)¹⁷. In French this NegP is headed by *ne*, while a second negative constituent like *pas* is in a clear dependency relation to this negative head (Déprez & Pierce, 1993). These dependency relations have been captured by the Neg Criterion (Haegemann, 1997), a well formedness condition at the level of logical form (LF). The Neg Criterion can be recast in the following way (Hamann, 1993, p.74):

- a) A Neg-operator must be in a Spec-head configuration with an X⁰ [Neg].
- b) An X⁰ [Neg] must be in a Spec-head configuration with a Neg-operator.

In languages such as West Flemish and German (Hamann, 1993), the Neg Criterion is assumed to apply at the level of surface-structure (S), an observation that seems to be related to properties of scrambling in these languages, as children's early negations sometimes display unscrambled objects. On the basis of utterances as 'brauche ich den nicht' (need I that not; 'I don't need that') Hamann concludes that children initially only have one position available for either the subject or the object to move to (Hamann, 2000, p. cv). This leads to the following syntactic structure illustrated in Figure 11.

¹⁷ I will return to the debate of the status of the German negator *nicht* in section 6.2.

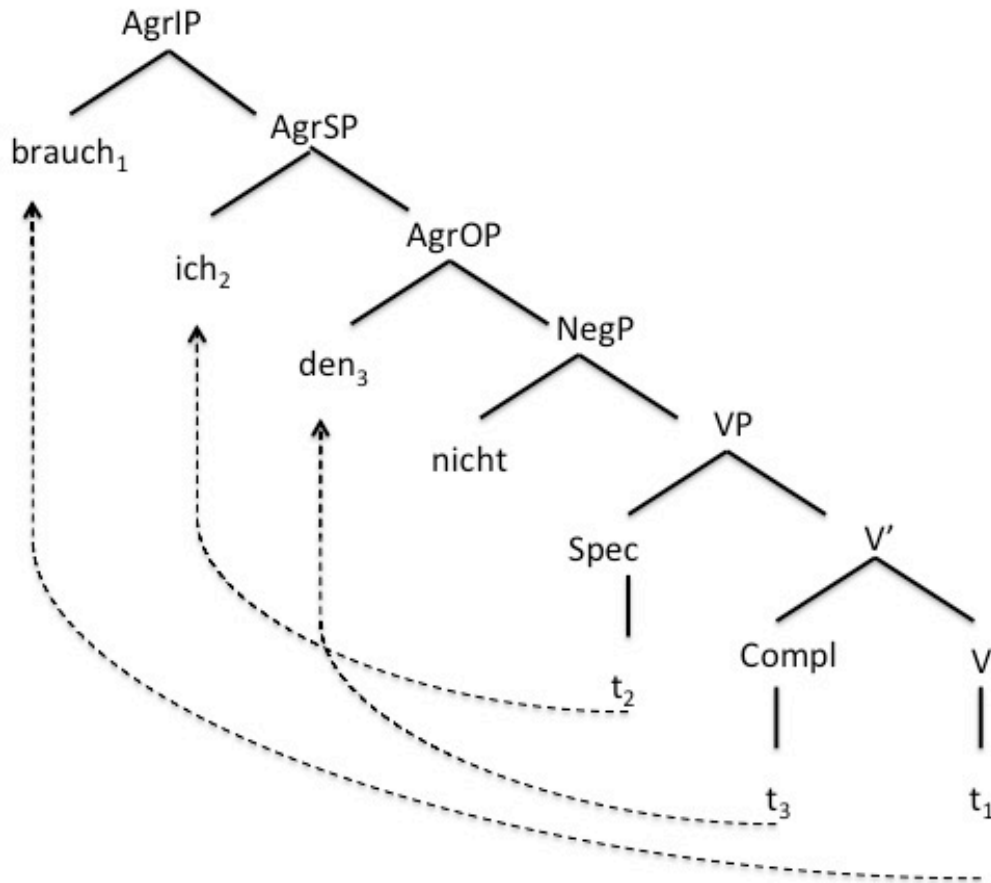


Figure 11: V1 structure with object scrambling (adapted from Hamann, 2000, p. 448)

In adult German unscrambled objects are left in their base position for reasons of focus or they can be interpreted as constituent negations. A syntactic structure as in Figure 11 also predicts the occurrence of productions featuring V1, where the subject moves to SpecIP (here Spec, AgrSP) in finite sentences and the object has been scrambled over negation up to AgrOP, the extended NegP projection, while the verb has moved higher to another AgGR position. This is observable in the data up to the age of 3 years, and can also be observed in the diary data of Kayla. Utterances as *‘Reads daddy the book not’ (KAY, 2;09 years) and *‘Fits Lara the skirt not over here’ (KAY 3;04 years) from Kayla’s diary data and *‘Weiß ich das nicht’ (know I that not)(KAY 3;05 years) provide evidence for non-adult like utterances in her English and German featuring the V1 structure, parallel to the productions of her German monolingual peers at that developmental stage. Further Hamann found a significant number of productions featuring negation with infinitives in her German monolingual subjects, a structure that is compatible with an adverb-analysis of the negator *nicht*. She argues that as an adverb *nicht* could “become the specifier of PoIP

thus colouring it as a NegP [fulfilling the Neg Criterion], it could occur as the specifier of DPs thus admitting constituent negation for any NP to be negated [and] it could simply adjoin to VP in the first phase [parallel to] the acquisition of *auch*.” (Hamann, 2000, p. 462). This analysis fits the German data, explaining unscrambled objects in early negative sentences, as well as lack of NC and the occurrence of Neg topicalization. Later in their development children converge on the adult grammar and leave unscrambled objects in their base position for reasons of case assignment, focus or use of constituent negation.

Zeijlstra (2007a; 2004) takes a slightly different approach. However the analysis of Hamann (2000) can easily be reinterpreted to be consistent with his account. First, I introduce Zeijlstra’s proposal, and then I will show how Hamann’s proposal is compatible with it. First, Zeijlstra (2004) proposes that there is a parameter for negation, the Negative Concord Parameter, which divides languages into those with an adverbial form of negation and those with a head form. The parameter has a default setting, which is to take negation as an adverb, which would be classified as semantic negation. Semantic negation involves a negative operator with the semantic feature [Neg] that is interpreted directly in the semantic component. The operator could be a negative adverb adjoined to *v*P, as shown in Figure 12. In negative concord languages, the negative elements do not correspond one-to-one with negative operators, so the negative markers need to be licensed in the syntax; this necessitates postulating a NegP projection. The different syntactic representations are shown in Figure 12.

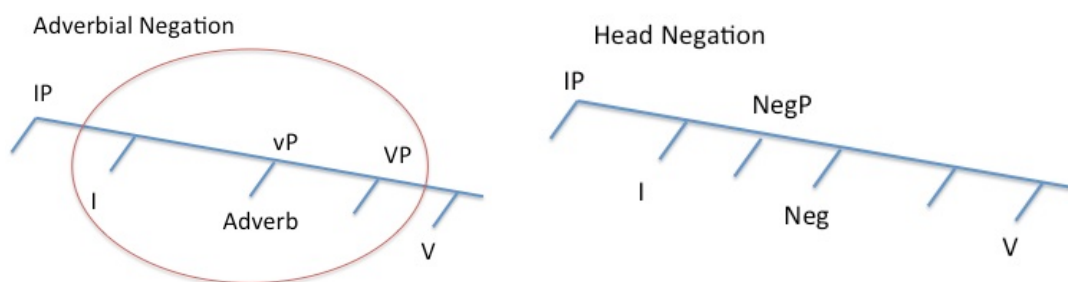


Figure 12: Syntactic representation of adverbial negation adjoined to little *v* versus head negation

Using adverbial negation requires no additional NegP functional category, which yields a more economical derivation.

This economy assumption is also reflected in Zeijlstra's Formal Flexible Feature Hypothesis (Zeijlstra, 2007a), which argues that "a particular feature [F] can only be analyzed as a formal feature able to create a functional projection FP if and only if there are (substantial) instances of doubling effects (multiple morphological manifestations of a single semantic operator) with respect to F present in language input during first language acquisition" (Zeijlstra, 2007, p.262). It follows that if children are only exposed to negative elements that correspond to a negation in the semantics they will take these as negative operators [Neg], that do not trigger the instantiation of a NegP in the phrase structure. However, if the language is not consistent with this default option, the child has to come across evidence in the input that the language requires a functional projection for syntactic negation. According to the FFFH, the positive evidence needed to change the setting of the Negative Concord Parameter to head negation is substantial instances of doubling effects with respect to this feature in the input children receive during first language acquisition. For negation to be incorporated in to the child's grammar as a functional projection NegP, the language input requires instances of negative concord (NC) (Zeijlstra, 2007b).

In NC languages two negative elements do not cancel each other out, but yield one semantic negation, as in (48). This single semantic reading of negation from multiple negative elements tells the child that the multiple negative markers (i.e. negative polarity items) do not all have the force of a negative operator, as there is always just one negative operator per clause permitted. This leads to the conclusion that one negative element can be interpreted in the semantic component as negative, while the second one can only be non-negative. Hence the latter carries an uninterpretable feature [uNeg] and the negative operator carries an interpretable formal feature [iNeg] to create a checking relation and not just the semantic feature [Neg] (Zeijlstra, 2007a).

(48) 'We don't need no education'.

Thus, before the learner comes across such doubling in the syntactic component, Zeijlstra proposes that there is no need in the child's grammar to form a functional category NegP, as negation can simply be interpreted at the level of semantics. Thus later, and only if the input requires it, children are able to incorporate a head form of negation into their grammar, at which point they add a functional category NegP into the functional hierarchy of projections.

Data from language acquisition support Zeijlstra's proposal. Children acquiring a negative concord language, like some varieties of English (e.g. Belfast English or African American English) or Czech, do not receive a negative marker in their input with a one-to-one correspondence with the negative operator. Here some additional negative markers (i.e. *n*-words) appear in the representation, which however do not have the force of a negative operator. As these negative markers have to be licensed in the syntactic component in negative concord languages, the child has to instantiate a functional category NegP. The clue for children to incorporate a NegP lies within syntactic doubling in NC and its consequences for the syntax. Thus children acquiring a NC language, such as Spanish or Italian are soon exposed to NC sentences and can quickly reset the parameter (Zeijlstra, 2004). However, neither Standard High German nor Standard English feature NC, a problem for the bilingual child of the current study.

Recall that Hamann (2000) claims that children go through an initial phase of treating negation as adverbial (before they converge on the adult grammar incorporating negation in the specifier position of NegP). If we reinterpret Hamann's claim in the light of Zeijlstra's theory (2007a), which assumes a NegP only for languages with negative heads and NC, these two approaches complement each other in assuming adverbial negation to serve as a default option in child grammar. Children acquiring German, for instance, are only exposed to adverbial negation, as the negative adverb serves as a single negative operator it can be interpreted in the semantics. In the following sections I will demonstrate that this is the case for German negation with *nicht* (as argued below in section 6.2) and for English negation with *not* and developmental unanalyzed forms of *don't+V/can't+V* (section 6.3). Hence the bilingual child does not need to check features in the syntactic component and no NegP is needed. However, English is an exceptional case to the binary classification of Zeijlstra's Negative Concord Parameter, as it features adverbial negation with *not* and head negation with the clitic *n't*. Thus children acquiring English have to add head negation to the already existing default adverbial negation on the basis of positive evidence in the input, as they eventually do converge on the adult grammar (see section 6.3 for details). Hence, taking a closer look at the status of the relevant negators in both target languages is necessary, before introducing the consequences of these theoretical

assumptions for the bilingual language acquisition of German and English in section 6.4,

6.2 The status of German negator *nicht* (not) in child grammar

Following Haegemann (1997) and Hamann (2000), I will assume that the German negator *nicht* is not a head in Standard High German, and is, in fact a negative adverb instead, mainly as it does not block verb movement up to C. This proposal is supported by the acquisition data and eliminates some problems of the current linguistic theory concerning verb-movement and negation.

It has often been proposed in the acquisition literature that *nicht* heads its own projection, the NegP in child German (Bayer, 1990; Clahsen, 1983). However, more recently Hamann (2000) presented acquisition data, which support the assumption of *nicht* being a negative adverb, a maximal projection, rather than a head. The decision about the classification of *nicht* in child German is complicated by the ongoing debate about the status of *nicht* in adult German. Bayer (1990) investigated Bavarian, a dialect exhibiting Negative Concord (NC), in which case *nicht* is indeed a head. On the other side researchers such as Haegemann (1997) and Hamann (2000) have demonstrated that the negative sentential modifier *nicht* is clearly misclassified as a head in Standard High German, mainly as it does not block verb movement.

Assuming German *nicht* to be a head has wide reaching consequences within the framework of generative grammar, as the verb would have to move over another head in the process of V-to-C movement. Thus the V2 requirement, where the finite verb moves out of the VP over NegP via IP all the way up to CP, would result in violation of the Head Movement Constraint (HMC) and more generally the Empty Category Principle (ECP) (Hamann, 2000). These potential problems are sidestepped, if *nicht* is classified as an adverb and is thus a maximal projection in child grammar. Hamann (2000) tested the assumption that children initially treat *nicht* as an adverb. She recounted root infinitives occurring in negative verbal contexts of several monolingual German children from previous studies in the literature. Her data demonstrate children's early knowledge of verb movement across negation around the age of 2 years. In addition she shows that children in fact treat the

negative particle *nicht* as an adverb, licensing root infinitives and finite verbs in sentential negations at the same time in the early grammar. Hamann (2000) concludes that children initially treat the negator *nicht* as an adverb (i.e. adjunction), while she assumes a NegP and a specifier status of *nicht* for adult German. The trigger for children to converge on the adult grammar is proposed to be related to the maturation of case assignment.

In sum, V-to-C movement and the fact that Standard High German lacks NC even in child grammar (Hamann, 2000) supports the proposal that the German negator *nicht* is indeed an adverb. This is the analysis I will assume in this thesis, as classifying *nicht* as negative adverb allows to explain non-adult like English utterances produced by our bilingual child, such as *'It don't/not fits'.

6.3 The status of the English negator *not* and negative auxiliaries in child grammar

Since the work of Pollock (1989) adult English has frequently been analyzed as having a maximal projection NegP, with the negator *not* or the clitic *n't* heading this functional projection. English is a non verb-raising language, and thematic verbs remain in situ in VP. Negation therefore appears to the left of the main verb or sentence-medial adverb. Sentences without modals or auxiliary verbs require the insertion of do-support. Do-support is needed as a host for the otherwise stranded inflectional marker, as main verbs remain in situ in VP and inflectional markers are prohibited to move down over clitic negation to merge with the verb, as the clitic *n't* constitutes a head in adult English. These movement restrictions are captured by the Head Movement Constraint (HMC) (Travis, 1984), a principle of UG.

In contrast to adult English, production data from monolingual children reveal that, at least in child grammar, the English negator *not* is also better analyzed as an adverb. Samples from children's speech show apparent violations of the HMC (Chomsky, 1994), evident in non-adult like utterances like *'This don't/not fits.' (Tesan & Thornton, 2007) or my own data *'Mickey –s not fits in there.' (KAY 4;01 years). The examples illustrate that children produce utterances that are not consistent with the view that *not* is a head, as they apparently lower inflectional markers over negation. Thornton and Tesan (2013) argue that the presence of such utterances indicate children use *not* as an

adverb. A syntactic representation of this non-adult like utterance is given in Figure 13. Here the adverb *not* is assumed to be adjoined to the VP, following Zeijlstra's (2007a) account.

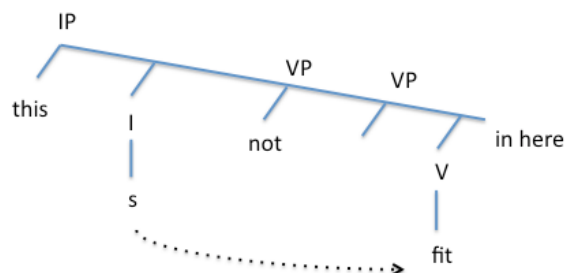


Figure 13: Movement of inflectional affix over negation in child English

The observable movement of inflectional morphology seemingly violates the HMC. Proposing that children initially treat all negation as adverbs sidesteps this violation of UG.

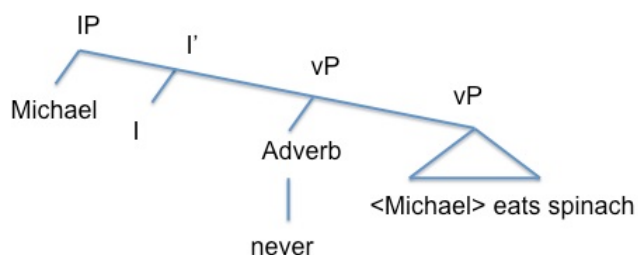


Figure 14: Syntactic representation of the adverb *never* intervening between T/Infl and the verb

In Figure 14 the adverb *never* intervenes between T/Infl and V, illustrating that adverbs attach lower in the structure than T/Infl. Still, if *not* is used as an adverb children might generate it at little *v*, parallel to the adverb *never* in sentences containing an auxiliary. Thus, they do not need a NegP. This analysis leads to the proposal of a two way split for English negation, where *not* is a negative adverb, while negation with the clitic *n't* constitutes a head (Haegeman & Zanuttini, 1991; Thornton & Tesan, 2013; Zeijlstra, 2004).

In her ground breaking work, Bellugi (1967) had previously observed that monolingual English speaking children acquire negation with the negative auxiliaries later than negation with *no/not*. This observation is recast by Thornton and Tesan (2013) as children acquire the adverb form of negation before they acquire the head form of negation and add the functional projection NegP to their grammar. The proposal is that all children initially take negation to be an adverb, following Zeijlstra's (2007a) Formal Flexible Feature

Hypothesis (FFFH). English is an exceptional case, however, because it has both an adverbial form of negation and a head form, so English speaking children need to add a head form of negation while still retaining adverbial negation. This change in the grammar cannot be accommodated with a switch in the parameter value, as simply switching to head negation would not allow adverbial negation to be part of the grammar. However, the adult grammar allows both options, while preferring the head form of negation, at least in colloquial speech. Thus English-speaking children start with adverbial negation and later they add head negation on the basis of positive evidence provided in the input, rather than switching the parameter value to another setting (Thornton & Tesa, 2013).

As long as children lack a NegP their negative sentences do not always confirm to the adult syntax. Non-adult like English utterances such as *'It not swim' are typical for monolingual speaking children, who omit inflection in negative contexts in as much as 80% of the time in the Optional Infinitive Stage (Harris & Wexler, 1996; Phillips, 2010). Despite the high omission of inflection, ungrammatical utterances with an inflected main verb such as *'This not opens' have also been attested in the pre-do-support stage in previous studies investigating monolingual English speaking children (Thornton & Tesa, 2013). These examples illustrate that monolingual children, in the stage before do-support is acquired, use adverbial negation instead of the more usual head negation. Here morphological affixes are lowered over negation so that the main verb displays inflectional morphology (Bobaljik, 1995). This is only compatible with an analysis of negation as an adverb.

If children acquiring English need to gain mastery of a head form of negation in addition to the adverb *not*, they need to be exposed to positive input that will bring about this change. According to Zeijlstra, as we have seen, the critical input is sentences with negative concord. The problem is that children exposed to Standard English are not confronted with NC in their input. Thus they receive no positive evidence of this kind that would trigger a change in the grammar. Positive data from another source must be used before they can add the head form of negation to their grammar, as English-speaking children still converge from initially using adverbial negation to adding head negation at a later stage in their development.

The proposal emerging from Thornton and Tesan's (2013) observation is that for children acquiring Standard English, instead of NC, the positive evidence used by children to add the clitic form of negation is do-support and negative auxiliary verbs. In particular, they claim that the negative auxiliary verb *doesn't* is likely to be the form that is most informative for children. This is because the third person agreement -s is internal to the word, thus providing salient information that the piece on the end of the word, *n't* is a morpheme on its own. As we know, there are also many other negative auxiliary verbs, but children appear to have some difficulty in segmenting these into *AUX* + *n't*. However, positive data to confirm the analysis of *n't* constituting a head in the adult grammar is provided to English speaking children through the use of auxiliary verbs, as pointed out by Thornton and Tesan (2013). Their findings demonstrate that typically-developing English monolingual children also display some delay in the acquisition of the clitic form of negation, as it is acquired relatively late. They observed that children's ungrammatical use of adverbial *not* or the unanalyzed wholes *don't+V/can't+V* with misplaced morphology subsides once children are able to use the construction of do-support productively. This has been confirmed in child data from elicitation tasks presented by (Thornton & Rombough, 2014), who tested this claim in 25 monolingual English speaking 2 to 3-year-olds (mean age 2;11 years). Interestingly the bilingual child in the current investigation displays the same error patterns during the acquisition of negation as monolingual English speaking children. They also produce utterances as "It not fit; It not fits; It's not fit; It's not fits" with misplaced morphology and the adverbial negator *not*, until they productively use the form *doesn't*.

Thus, following the proposal of Thornton and Tesan (2013), only negation with third person present tense and use of do-support suggests that children have analyzed the structure and are able to break it down into its components *do(e)+s+n't*. It is now that children have the required tools to integrate a functional projection NegP with *n't* as its head, while *not* remains an adverb. Before children master this operation, negation is used as either an unanalyzed whole (Bellugi, 1967; Cameron-Faulkner, Lieven, & Theakston, 2007) or the parameter value for negation is still set to the default position (Thornton & Tesan, 2013; Zeijlstra, 2007a).

6.4 Predictions for German-English bilingual development: Delay of head negation?

Bilingual children are exposed to a greater variety of syntactic options in their input, as they acquire two languages simultaneously. This circumstance gives the potential for cross-linguistic transfer across their two languages, as proposed by Hulk and Müller (2000). This was demonstrated in chapter 4, where it was shown that the bilingual child overgeneralized the V2 properties of German in English and produced utterances in which lexical verbs freely move over negation. Thus utterances as in (49) are expected to occur in the early data, where the child raises the verb over negation, resulting in ungrammatical sentences (see chapter 4 and 5).

(49) *He swims not.

The second factor leading to non-adult like utterances as in (49) is the child's analysis of negative elements as adverbs, a lexical category rather than a functional one (Zeijlstra, 2007a). In this case the child might even assign the negators *not* and the clitic *n't* each a different status. While the former is treated as an adverb allowing verbs to raise and affixes to lower across it, the latter requires children to formulate a NegP with the clitic being the head of the functional projection and thus blocking affix lowering onto the verb and verb movement up to C. Here the acquisition of do-support plays a vital role, especially the third person singular form *doesn't*, as it forces children to analyze the structure as *do* plus inflection for third person singular –s plus the clitic negation *n't* (Thornton & Tesan, 2007).

Before the children acquire do-support they might use negative auxiliaries as unanalyzed forms in which case we should see non-adult like utterances such as shown in (50), where inflection freely moves over the negation, as has been shown for monolingual children by Bellugi (1967) or Cameron-Faulkner and colleagues (2007).

(50) *It don't works.

This is similar to an account introduced by Schütze (2010), claiming that it is not children's misanalysis of negation causing non-target like utterances in negative contexts, but rather their immature knowledge of the English inflectional system. In his account children are assumed to have complete knowledge of the components of negative auxiliaries as combining *do*+ *n't*, so

children are not assumed to treat these structures as unanalyzed wholes. Here non-adult like forms like the one in example (50) are claimed to result from the omission of agreement features, as is typical for children during the OI stage.

Another strategy bilingual children might exhibit to avoid the tricky operation of do-support in 3rd person singular contexts is the use of *not+present participle -ing*. Utterances as (51) are acceptable in adult English and an effective way of avoiding the form *doesn't*.

(51) It is not working.

In addition they conform to the German syntax and therefore represent a way to maintain V2 properties within English. This use of negation allows the child to use negation adverbial without deviating from the adult grammar. Thus children using this strategy to cope with 3rd person singular negation productively have no need to formulate a functional projection NegP, as the positive input from the adult grammar confirms their use of the adverb form of negation.

Again, only after *doesn't* becomes productive in the children's grammar are they able to formulate a NegP (Thornton & Tesan, 2007; Zeijlstra, 2007a) and add a negative head with clitic *n't*. In this case the data would have to provide a clear picture of a shift from preferential adverbial use with the negators *not* and chunked forms of *don't+V/can't+V* to negation as a functional category, as soon as the negative auxiliary verbs, especially *doesn't*, become productive features in the children's grammar. Non-adult like forms displaying misplaced morphology in the form of affix lowering over clitics and raising of lexical verbs over negation should subside completely. Therefore once do-support is fully acquired utterances as (52) are not predicted anymore, as the child has incorporated a head negation at that state. These non-adult like forms are only expected as transitional forms (lasting for a short time period and remaining low in number of occurrence).

(52) *It doesn't swims.

As long as the bilingual child exhibits post-verbal negation and raises the main verb we can say, that she has not acquired that English is not a V2 language, yet. Also, if the child treats negation as an adverb, lowering of inflectional affixes over negation to the main verb is to be expected. As soon as the negative form *doesn't* is used productive all other non-adult like forms

should be eliminated mirroring the development of monolingual children, as this is believed to signal the incorporation of a functional projection NegP.

6.5 Findings from child data

6.5.1 German data

It has been demonstrated in previous chapters that Kayla has completely mastered the German V2 requirement in regards to V-to-C movement, finiteness and placement of the verb in relation to the negator. As argued in section 6.1, German has only adverbial negation with the negator *nicht*. Hence double verb movement to the second position of the sentence is not blocked and does not violate any principles of UG. Therefore the German data is not investigated in this chapter, as German does not feature head negation.

6.5.2 English data

Once Kayla no longer transfers the V2 word order to English, displaying non-adult like negations as *'It fits not', she starts to resemble the developmental pattern of her English monolingual peers. The transition from V2 to non-V2 is rather quick and occurs at the age around 3;07 years from phase III to phase IV (see chapter 4 for details). Just like monolingual English speaking children Kayla displays several non-adult like forms of negation in the stage after transfer of V2 and before do-support is acquired (e.g. non-agreeing *don't*, misplaced morphology and lowering of inflectional markers over negation). In line with studies on monolingual English language development, Kayla also starts with adverbial negation before she is able to incorporate a functional category NegP with head negation in the form of clitic *n't* into her grammar (Thornton & Tesan, 2013).

As can be seen in

Table 10, the only adult-like clitic form of negation in phase II appears in the form *can't*. While phase III shows a greater variety of negative auxiliary verbs that incorporate *n't*, the form *doesn't* is still completely absent during that stage. *Doesn't* only slowly enters the picture at the end of phase IV, when it is used correctly in 3 utterances. Thus *doesn't* is the last negative auxiliary to be used productively and acquired late, only after age 5;05 years. Once it becomes productive in phase V all other negations suddenly disappear, making *doesn't* the preferred form of negation in 3PS context.

Table 10: Kayla's adult like negations (n=112) according to developmental phases

Phase	AUX not+V	Didn't+ V	Can't+ V	Doesn't+ V	is not+ V-ing
Phase II (2;10-3;01 years)	0	0	4 (66,7%)	0	2 (33,3%)
Phase III (3;01-3;07 years)	5 (38,5%)	1 (7,7%)	6 (46,1%)	0	1 (7,7%)
Phase IV (3;07-5;05 years)	15 (30%)	5 (10%)	9 (18%)	3 (6%)	18 (36%)
Phase V (5;05-5;07 years)	0	0	0	38 (88,4%)	5 (11,6%)
Total	20 (17,8%)	6 (5,3%)	19 (17%)	41 (36,7%)	26 (23,2%)

The only other form that is correctly used throughout the study, as shown in

Table 10, is the use of *not* in combination with present participle. This confirms my prediction, as *not+present participle -ing* adheres to both target grammars. Utterances as 'This is not working' display raising of the auxiliary and sentential negation with the negator *not*. Even though the English utterance is grammatical, the use of present progressive is pragmatically inappropriate, as it has the notion of an ongoing event, rather than describing the state of an object. Recall from chapter 3 that the elicitation tasks were carried out with transitive verbs, testing properties of objects. For example Kayla had to decide whether or not the markers she pulled out of a bag one by one work by testing them on a piece of paper. As the answer involves describing a general property of that item, the use of *doesn't* is preferred over the option with *not+present participle*. However, as predicted by the Cross-linguistic Influence Hypothesis by Hulk and Müller (2000) Kayla avoids the use of do-support. Do-support has no parallel in the German syntax, while adverbial negation with *not* in child English parallels the use of German negation with *nicht*. Thus using *not + present participle* allows Kayla to keep raising the verb and negating with an adverb as is the case for German, whilst producing adult like¹⁸ negations in English.

¹⁸ While the use of *present progressive -ing + not* results in syntactically correct utterances, its use is restricted in English. Even though this syntactic construction is effective in avoiding do-support in 3PS contexts, it sometimes resulted in pragmatically inappropriate utterances. For

Following Zeijlstra (2007a) I predicted an early preference for adverbial negation, as it marks the default setting for the NC-parameter. Utterances with V-C generating *'That works not', inflection moving over negation to merge with the verb like *'It can't jump-s', as well as the use of the single negator *not* and an inflected main verb like *'This not open-s' were counted as constituting adverbial negation. If clitic negation appeared with an uninflected verb as in *'He don't fit', it has also been coded as use of adverbial negation during the time that Kayla clearly has the default setting of the NC parameter active, as *don't*, *can't*, *didn't*, etc. would constitute negative adverbs in this developmental stage. Figure 15 demonstrates Kayla's use of adverbial and head negation.

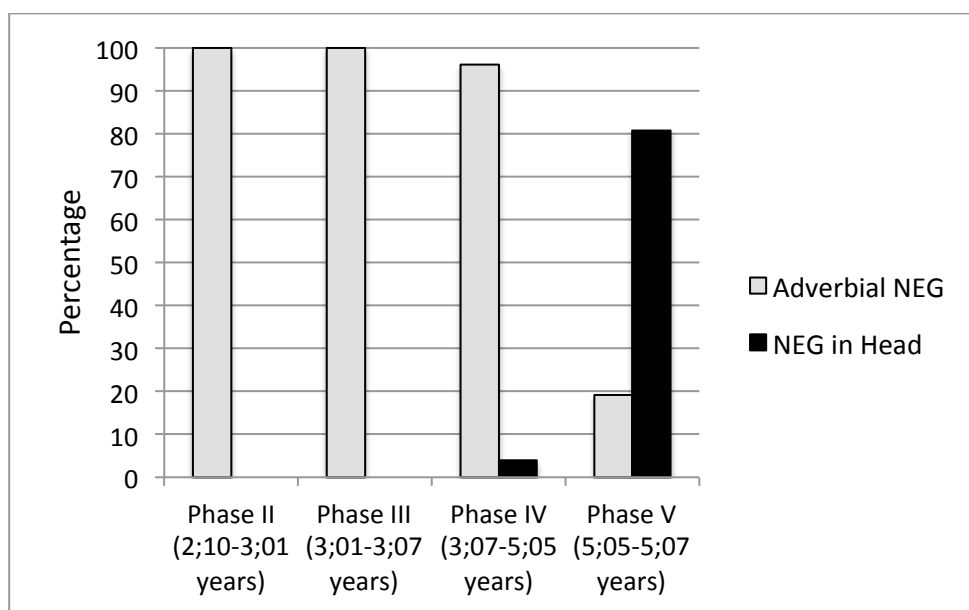


Figure 15: Kayla's overall use of head versus adverbial negation

As can be seen in Figure 15, Kayla uses only adverbial negation during phase II and III, while use of head negation with other clitics remains unattested. Even though head negation is available at phases IV too, it is not before phase V when head negation suddenly becomes the negative construction most used, totalling 80% at that stage. The figure above represents a very clear picture. However, even if negative auxiliaries with no clear marking of inflection moved over negation as in *'He don't fit' are included in a more conservative count indicative of constituting negative heads, the pattern remains largely the same, as is illustrated below.

example in an elicitation task testing whether or not things sink to the bottom of a bowl of water, Kayla produced *'It's not swimming' instead of the targeted 'It doesn't sink'.

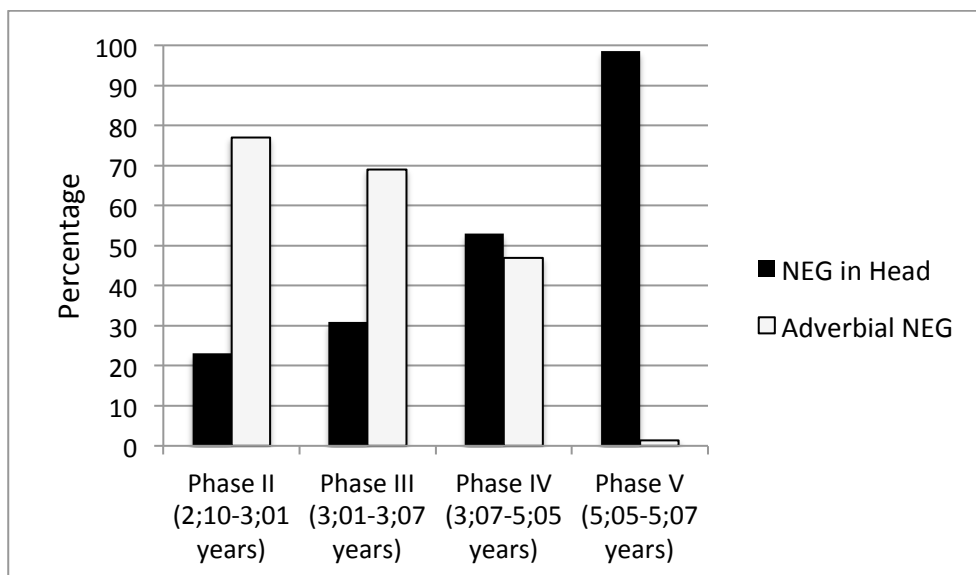


Figure 16: Conservative count of Kayla's overall use of head versus adverbial negation

If the data for phase V are recounted, as displayed in Figure 16, it becomes evident that after the negative form *doesn't* is productive the preference for head negation even increases to 98%. Concurrently non-adult like negations and the use of adverbial negation with *not* dissipate. Again, the change happens quite suddenly, as it takes less than 3 months to implement the new functional projection, finally converging to the adult grammar.

According to Thornton and Tesan (2013) the trigger to incorporate a NegP into the English grammar is the successful application of the negative form *doesn't*. Following their proposal I predicted that once *doesn't* becomes productive children have acquired all the elements to form a functional category NegP with the clitic *n't* heading the projection. While the use of misplaced morphology, verb movement over negation and affix lowering down to the verb still display the use of adverbial negation, the use of *doesn't* implies that Kayla has decomposed the complex into *do* plus third person singular *-s* and clitic negation *n't*. Figure 17 illustrates Kayla's use of *doesn't* and negation followed by an inflected verb as in *'It don't/not jumps', which I argued to display adverbial negation (see section 6.2). It becomes evident that once *doesn't* is used productively all non-adult like utterances with adverbial negation diminish.

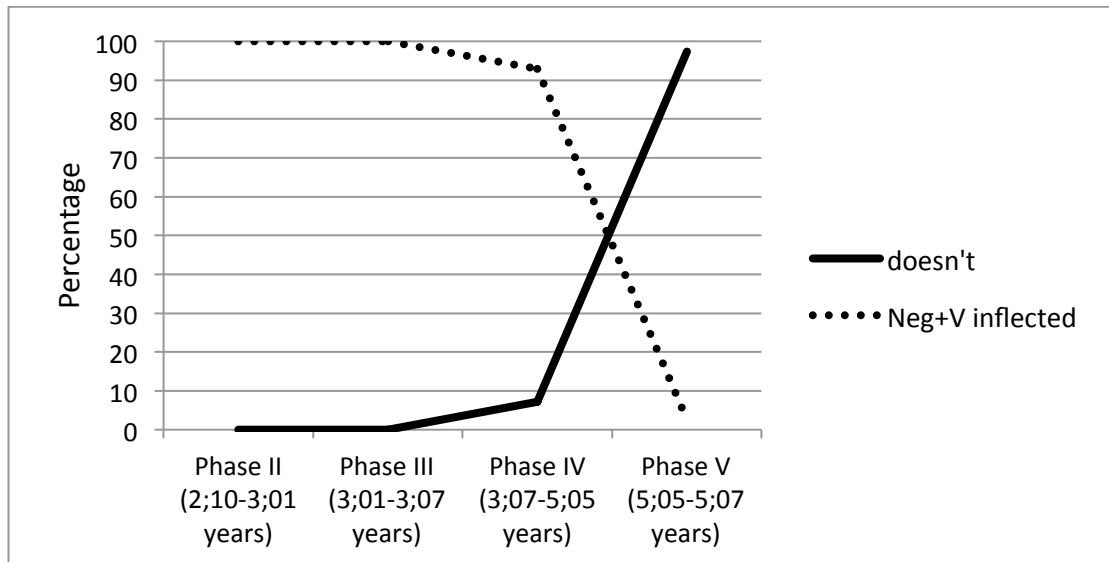


Figure 17: Use of *doesn't* compared with the ungrammatical option *Neg+V_{fin}*

Finally, once Kayla acquires *do*-support and is able to successfully use the form *doesn't*, she is able to incorporate a functional category NegP with clitic *n't* heading the projection. Figure 18 displays her change of preference for the negation with the negative adverb *not* to negation with the clitic *n't* in 3PS contexts. The figure also illustrates that both options, negation with a contracted negative auxiliary with the clitic affix *n't* and adverbial negation with *not* coincide in the English grammar. Here all forms of negation with a clitic affix *n't* attached have been subsumed under the category *n't+V*, regardless of their status as unanalysed whole forms or head negations, as this distinction is already presented in Figure 15.

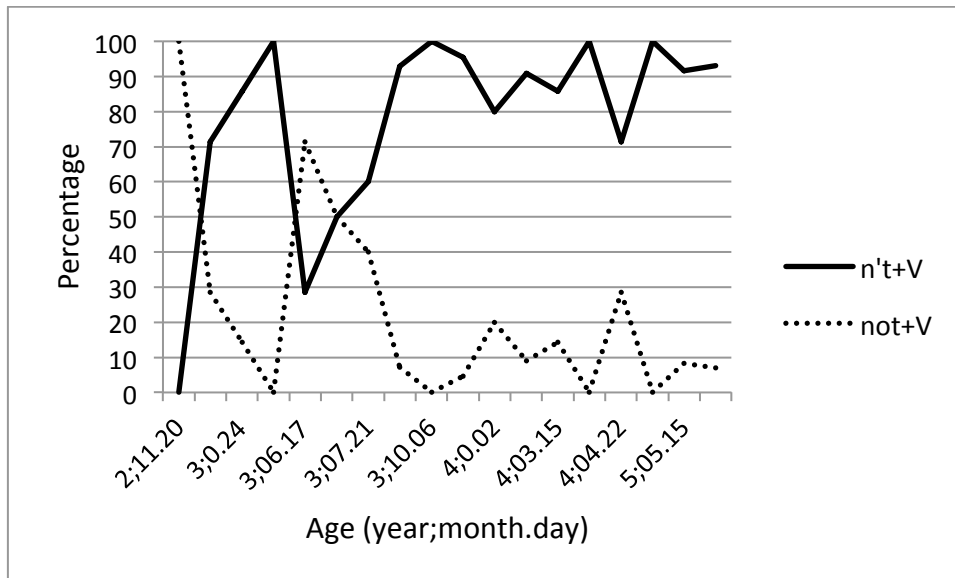


Figure 18: Kayla's overall use of clitic *n't* versus negation with *not*

This confirms Thornton and Tesan's (2007) observation and shows that Kayla behaves just like her monolingual English speaking peers, after she has transitioned from transferring V2 to the English word order in matrix clauses with sentential negation. Transfer of V2 is still present at age 3;09 years, while at 3;10 years Kayla suddenly displays only target like word order (see chapter 4 for details). As soon as transfer of V2 fades out, the preference in the use of adverbial negation with *not* shifts to mainly using clitics thereafter. However, even after adding a functional category NegP with *n't* as its head, adverbial negation with the negator *not* is still available. This undermines the assumption of added difficulty in the acquisition of English negation, as the English syntax displays two forms of negation, while German features only semantic negation with the negative adverb *nicht*. Further children seem to have difficulties in finding the data in the input that triggers the implementation of head negation, which could be related to the fact that children acquiring Standard English are not exposed to NC. Thus they find it hard to figure out the morphological decomposition of negative auxiliaries for a while. This added difficulty explains the delay, not only in a bilingual context but also the late acquisition of clitic negation in monolingual children.

6.6 Discussion

The findings from the English child data suggest, that Kayla initially treats all negative markers as an adverb. This confirms the first prediction, as in addition to the overlap in verb movement, the input from both languages feature

adverbial use of negation with *not*. English monolingual children also use developmental non-adult like negations with inflection freely moving over the negative clitic *n't* down to the verb, as in *'It don't open-s.' (Schelleter, 2000; Schütze, 2010; Thornton & Tesan, 2007). These movements seemingly violate the HMC of Universal Grammar (UG), unless children assign negation an adverbial status (Chomsky, 1994; Pollock, 1989; Thornton & Tesan, 2007; Zeijlstra, 2007a; 2004). This analysis works fine for Kayla as it is supported by the German input she receives. It is also fine for English monolingual children, as they are using a possible cross-linguistic option made available by UG (Crain & Pietroski, 2001; Crain, Gardner, Gualmini, & Rabbin, 2002; Thornton, 2007). So there is nothing in the input prohibiting the emergence of adverbial negation with clitic *n't*, as there is no negative input available to the bilingual child.

In English monolingual children it has been observed by Thornton and Tesan (2007; 2013), that adverbial negation almost completely subsides once children acquire the form of *doesn't* – an indication of correct analysis of the negative auxiliary with *do*-support and negation as a head in the form of *n't* – even though the adverbial *not* still exists as a possible form of negation. This observation is confirmed by the present bilingual child's English data. However, there is a substantial delay in the acquisition of *do*-support compared to monolingual English children. While English monolingual children reach adult-like negation around the age of 3 to 3;06 years (Stromswold, 1996) or even earlier (Thornton & Rombough, 2014), the form of *doesn't*, which signals addition of head negation and thus the instantiation of a functional projection NegP in the child's grammar, is not used productively by Kayla before age 5;05 years.

Kayla changes her grammar quite suddenly, in a timeframe of less than 8 weeks, confirming a simple parametric approach where the parameter value is argued to be re-set within a timeframe of 3 months the most (Thornton & Tesan, 2007). If change is implemented at a slower rate, parameter (re-)setting, which is often metaphorically compared to turning a switch to 'on' or 'off', cannot adequately explain the development and a maturational account with more gradual changes in acquisition seems more plausible. Why children tend to change their preference for the type of negation used so quickly and how this correlates with the acquisition of *do*-support is a question that remains unanswered at this stage. In addition to the sudden preference for the form

doesn't, after adding the head negation to the grammar, children display a drastic decrease (almost non-use) in the use of adverbial negation, besides the fact that English features both options. Future research will have to discern the mechanisms guiding the change of grammar and the change of preference.

From earlier examples and the overview of the results section it becomes evident that Kayla does not master the operation of *do*-support, until phase V. The lack of this syntactic form in examples like (53)-(56) has received various explanations.

- | | |
|---------------------------------------------------|--------------------------|
| (53) *'This not fits in here.' | (Thornton & Tesan, 2007) |
| (54) *'This don't jumps.' | (KAY 4;01.00) |
| (55) *'It's didn't floats.' | (KAY 3;00.24) |
| (56) *'I want to read books but I can't reading.' | (KAY 5;05.15) |

While Harris and Wexler (1996) attributed such non-adult like negations to performance errors, this type of non-adult like structure occurs in over 28.9% (22/76 tokens) of preverbal uses of *not* in Kayla's corpus. I argue that this structure cannot be pushed aside as noise. Instead it constitutes a legitimate structure in children's early grammar of English, as children treat *not* as an adverb, thus adhering to UG.

Schütze's (2010) claim of alternating use of *don't* and *doesn't*, as a result from underspecification of the inflectional features, is not confirmed by the data of the present corpus. The current data do not support this analysis, as Kayla clearly prefers *not* as her negative marker and non-adult like uses of *doesn't* are widely unattested. *Don't* as a negator however, is used quite frequently, also in non-adult like utterances. On a second note Schütze claimed that children sense that the distribution of negation with *not* is different from the use of negative auxiliaries, even though they have not analysed them as *AUX* plus the clitic form of head negation *n't*. The data presented here support this analysis, as there are only four examples of *n't+ing* in Kayla's data (accounting for less than 1%) of her non-adult like negations. However, the structure of *not+ing* is far more frequent, as shown in

Table 10.

- | | |
|--------------------------|---------------|
| (57) 'It's not working.' | (KAY 5;05.15) |
|--------------------------|---------------|

Examples such as (57) are a good solution for a bilingual German-English child, as it adheres to both target grammars. The use of *not* with a progressive participle is a structure also used in adult English and it conforms to the

adverbial use of negation, like in German. Children adopting this structure are able to navigate around do-support without violating either of their grammars and without having to instantiate a NegP. This adds to our conclusion supporting the FFFH (Zeijlstra, 2007a; 2004), claiming that children initially treat all negations as adverbial before adding *n't* as a head of the functional projection NegP into their grammar.

However, the trigger to form a functional category Neg with the clitic *n't* as a syntactic head is not exposure to NC, as proposed by Zeijlstra, but negative auxiliary verbs. Specifically the form *doesn't* is a signpost of successful implementation of the adult English negation in the child's grammar, as it wears its analysis on its sleeve: *do* plus third person singular inflection *-s* plus *n't* as a negative head. This hypothesis can be confirmed in the bilingual child's data. Once *doesn't* is used productively other non-adult like negations in simple matrix clauses disappear.

6.7 Conclusion

In this chapter, I predicted the German-English bilingual child to show a delay in the acquisition of head negation, while adverbial negation, the default setting for the NC-parameter, is present from the beginning of the study. This delay was argued to result from overlap of the two target languages, as defined by the Cross-linguistic Influence Hypothesis, where one structure (adverbial negation) that is present in both languages, English and German, is overused in the one of the languages, here English, in a syntactic context that allows two possible analyses (adverbial and head negation). On economy grounds, following Henry and Tangney (2001) and Sorace and Serratrice (2009), it becomes plausible for the bilingual child to only adopt the option that is available in both target languages, in this case adverbial negation. Hence acquisition of the second possible analysis (head negation) was predicted to be delayed. Special attention has been paid to the acquisition of the form *doesn't*, as according to Thornton and Tesan (2013), production of this particular negative auxiliary verb signals that the child has acquired the clitic form of negation and the NegP functional projection.

Data provided in this chapter confirm the assumption of a default setting for the NC-parameter. All children start out with adverbial negation and only instantiate a functional category NegP if it is needed by the target grammar.

This is in line with Zeijlstra's FFFH (2007a). However, the trigger for incorporating head negation with the clitic *n't* in English is not NC but the acquisition of do-support, as proposed by Thornton and Tesan (2013). Once children are able to use the form *doesn't* productively they have all the required elements to implement a NegP in the English syntax. This becomes evident in the sudden decrease of non-adult like negations in the form of misplaced morphology and movement of inflectional affixes over negation.

Further the data presented here show a substantial delay of the acquisition of a NegP by the bilingual child. As proposed by Hulk and Müller (2000), Kayla adopts the less complex analysis, in this case adverbial negation, and applies it to both grammars. Here the bilingual context serves as a boost to the use of adverbial negation, as it gets constantly reinforced by the German input and the input Kayla receives from her monolingual English peers in the pre-do-support stage.

In addition the bilingual context hinders the acquisition of do-support, as it has no parallel in the German syntax. To avoid this tricky operation Kayla frequently uses *not+present participle* constructions. While this strategy results in generation of adult like utterances that adhere to both target grammars, it often results in pragmatically inappropriate productions. The use of present participle constructions denotes an ongoing event rather than a general property of an item. Nevertheless, it is an effective way to avoid do-support in 3PS negative contexts. This, in addition to the reinforcement of adverbial negation, explains the long time it takes for Kayla to finally instantiate a NegP with clitic *n't* as its head. Therefore it can be concluded that all negation is used adverbial, before a functional projection NegP is added to the negative adverb *not*, making negation a formal flexible feature in child English.

As Kayla shows a similar developmental pattern to that of her monolingual peers, who also display misplaced morphology and affix lowering over negation, I do not attribute her non-adult like utterances (after she refrains from transferring V2) to effects of bilingualism itself. The bilingual context only prolongs the time of acquisition of do-support and thus the instantiation of a functional category NegP in English, through constant reinforcement of the adverbial use of negation in German and child English of the pre-do-support stage.

Chapter 7: What about Interrogatives?

Thus far the analysis of the non-adult like forms in sentential negation reveals that the bilingual child chooses the most economic option available out of the two target languages provided in the input. However, the most economic option is not congruent with the least complex in terms of derivational complexity. The driving force in generating the cross-linguistic structures in simple negated matrix clauses is overlap, a factor singled out by Hulk and Müller (2000). As the non-adult like structures seen in negation result from the interaction of both target languages, cross-linguistic influence should be evident in other syntactic structures, which also display a certain degree of surface overlap. To further test this general claim, the present chapter examines Kayla's acquisition of (negative) interrogatives.

First I set out the background in regards to (surface) overlap and complexity of a derivation for interrogatives. Here I review the syntax of interrogatives in German and English respectively to establish that the two languages show substantial surface overlap, as this is a condition for cross-linguistic influence (Hulk & Müller, 2000). The second section discusses non-adult like structures previously found in monolingual children of both target languages and the developmental steps involved in arriving at the target adult syntax. Here special attention is paid to derivational complexity of interrogatives, as complexity also claimed to constrain the development in monolingual first language acquisition in this domain (Strik, 2011). In Section 7.3, the cross-linguistic structures that could potentially occur in an English-German bilingual context are presented, followed by the results in the next section. The results of the current study are followed by a discussion, again focusing on overlap versus derivational complexity in the generation of cross-linguistic structures. I will demonstrate that non-adult like structures involving transfer of V2 as in *'Likes you marbles?' (KAY 3;01 years), a seemingly more complex derivation featuring verb movement of the finite verb, are generated on the basis of overlap and principles of economy, not derivational complexity (Bentzen, 2013). The same analysis is adopted to explain the generation of interrogatives involving adverbial negation as *'Why it didn't works?' (KAY 3;08 years). Concluding remarks are given in the final section 7.6 of this chapter.

7.1 Overlap and complexity in interrogatives

As in the previous chapters on sentential negation, this chapter focuses on two highly influential proposals aiming to account for children's generation of cross-linguistic structures during bilingual first language acquisition. These are the Cross-linguistic Influence Hypothesis by Hulk and Müller (2000) and the Derivational Complexity Hypothesis proposed by Jakubowicz (2003; 2006).

The Cross-linguistic Influence Hypothesis claims that there are two factors that are responsible for the occurrence of cross-linguistic structures: (i) (surface) overlap and (ii) the involvement of the syntax-pragmatics interface in the generation of the structure under investigation. However, more recent research has demonstrated that cross-linguistic influence is not necessarily restricted to interface phenomena (Perez-Leroux, Pirvulescu, & Roberge, 2011). The first condition however, has been singled out in other studies as one of the key factors in manifesting cross-linguistic influence, resulting in either transfer, delay or acceleration of a certain grammatical structure (Paradis & Genesee, 1996). Condition (i) states that properties of language A can easily be adopted in language B, if language B confirms one of the multiple analyses for a particular syntactic construction available in language A. Hulk and Müller (2000) demonstrate that bilingual French/Italian and Dutch/German children indeed license the non-adult like discourse strategy using empty objects more often than their monolingual peers acquiring a Romance language. They argue that this is due to the constant reinforcement of this licensing default strategy in Dutch/German, both languages that allow topic drop. They reach the conclusion that the existence of topic drop as a discourse licensing strategy in Dutch/German leads to the facilitation of object drop in the Romance languages in turn. More recently Matthews and Yip (2011) argued that overlap is not restricted to the underlying syntax, but rather, is situated at the surface level. They extend Hulk and Müller's earlier proposal in the following way: overlap exists if language A provides evidence for two analyses while language B provides an isomorphic variant confirming one of the analyses of language A (Yip & Matthews, 2009). Thus, not just overlap in the existence of a certain syntactic structure in both target languages, but rather surface word order for this structure has to be considered as a trigger for cross-linguistic influence as well. Now consider the following examples:

(58) a) Ist er ein Student?

‘Is he a student?’

b) Wo ist der Bahnhof?

‘Where is the station?’

Both, the yes/no-question in (58)a and the *wh*-question in (58)b exhibit the same word order in the two target languages English and German. This is due to the fact, that English auxiliaries are raised to C in the CP in simple matrix questions, demonstrating movement parallel to the German V2 requirement.

In English, however, this movement to a higher position is restricted to auxiliaries and the verbs *be* and *have*, as they exhibit residual V2 in English. This is a crucial point, as this overlap in the verb movement paradigm could result in the overuse of V-to-C movement. As Henry and Tangney (2001) note, it is simpler to learn a language in which all verbs move, compared to a language with a mixed pattern. In theory this inconsistency in the verb movement paradigm could lead to overuse of V-to-C movement in monolingual English speaking children, although this is not attested in this population. Nevertheless, raising of main verbs in English, which is prohibited by the adult syntax, may become a plausible option for a German-English bilingual child. This is argued to be due to the overlap of movement behaviour of German and English auxiliaries, which constantly reinforces the analysis of generalized movement of main verbs in matrix clauses in English. While the English grammar provides ambiguous cues for verb movement, the German system is very consistent. Therefore adopting a generalized verb movement paradigm could be more economical for the bilingual child. While children generally distinguish auxiliaries from main verbs early on, as has been previously found in studies examining Aux-support/Aux-omissions in the OI stage and the non-occurrence of infinitival forms (see chapter 4 for more details), bilingual children could be more sensitive to these inconsistencies. However, a more genuinely ambiguous input is presented in the occurrence of modals in C in English interrogatives. As modals behave like main verbs in German and like auxiliaries in English, a German-English bilingual child could face categorization problems. Hence, before the child clearly distinguishes both verb types, modals in C in English interrogatives might trigger overuse of V to C movement in other contexts as well.

In interrogatives the two languages under discussion here show another parallel: both exhibit subject-auxiliary-inversion (SAI) in simple matrix questions, as illustrated in (59).

(59) Du kannst kommen.

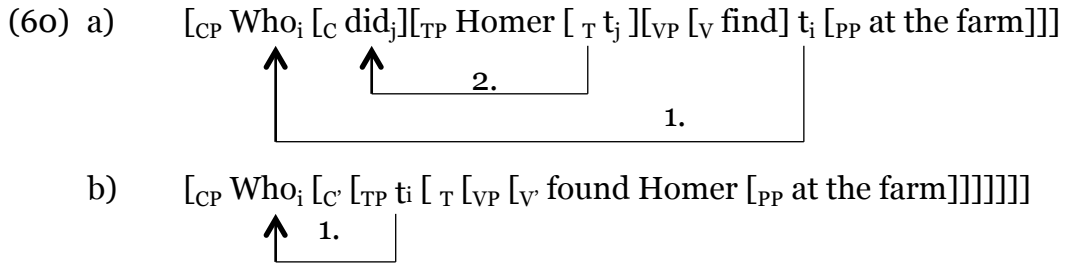
Kannst du kommen?

‘You can come.

‘Can you come?’

Recall that German features V2, thus the finite verb, be it an auxiliary or main verb, has to raise to the second position of the sentence in declaratives. In yes/no questions the inflected main verb also undergoes movement up to C, leading to the word order V_{fin}-S-O, as in ‘Magst du Weintrauben?’ (‘Do you like grapes?’). In English main verbs do not undergo such movement, but stay in situ in the VP. Instead do-support is inserted to host the otherwise stranded inflectional morphology and to undergo the required movement to C, leading to the adult like utterance ‘Does he smell good?’. Before do-support is used adult-like, English-speaking monolingual children are reported to frequently omit do-insertion or the copula (Bellugi, 1967). While these non-adult like forms are also available to the bilingual child, another option is plausible: raising of a finite main verb, as in *‘Likes you grapes?’.

The same surface overlap can be attested in *wh*-questions, as demonstrated in example (58)b. In *wh*-questions a *wh*-word is raised to the specifier position of the CP, leaving a trace behind in the verb internal argument (Rizzi, 1996). This operation is the same for subject and object *wh*-questions in German and English. For *wh*-object questions the second step involves either do-support or raising of forms of *be*. This is sometimes referred to as ‘be-support’ (Rowland & Theakston, 2009), as the auxiliary *be* behaves in a similar way (undergoing inversion, fronting, etc.) to *do* in question formation, as in ‘Is the baby sleep now?’ versus ‘Does the baby sleep now?’. Young children sometimes replace the later emerging *do* with forms of *be* in the pre-do-support stage, as in *‘Are you like the milk?’ (KAY, 5;05 years). In do-support contexts *do* bears the question features to C, as illustrated in (60)a.



In subject *wh*-questions as in (60)b do-support is not triggered and main verbs undergo covert movement from V to T to check tense and agreement, as in ‘Who found Homer at the farm?’ (Rizzi, 1996; van der Lely et al., 2011). It can be argued, that *wh*-object questions are more complex in the sense of the matrix proposed by Jakubowicz (2006; 2011) in the Derivational Complexity Hypothesis. As illustrated in (60)a) and b) subject and object *wh*-questions are derived through moving the *wh*-operator from its original position in TP/IP to the specifier position of the complementizer phrase (CP), indicated by the number 1.. The moved constituent leaves a *wh*-trace, marked *t*. This is the first step of the derivation. Now, in contrast to subject *wh*-questions, object *wh*-questions involve a second mandatory step, the so-called T-to-C dependency (van der Lely et al., 2011). Here whatever occupies T/I has to move to C. In case of T/I hosting a silent morpheme carrying tense and question features, do-insertion takes place to bear these features, labelled step 2. in the example above.

The Derivational Complexity Hypothesis states that (i) derivations with $\alpha+n$ steps are more complex than a structure involving only α steps to arrive at the required target construction. In this sense do-insertion in *wh*-object questions, before undergoing SAI, involves an extra derivational operation compared to covert V to T movement of the main verb in *wh*-subject questions. Thus *wh*-subject questions should be acquired earlier than the more complex *wh*-object questions (Jakubowicz, 2011). In a second condition the Derivational Complexity Hypothesis states that (ii) Internal Merge of α is less complex than Internal Merge of $\alpha+\beta$. In this sense the insertion of a dummy verb is viewed as less complex than raising of the finite verb from V to T (or possibly C) (Strik, 2011; van der Linden & Hulk, 2005; van Kampen, 2004). The general claim is that structures with fewer derivational steps are acquired earlier than operations involving more steps. However, regardless of the complexity of the structure typically developing monolingual English speaking children acquire

subject and object *wh*-questions at roughly the same time, around the age of 3 years (or earlier) (van der Lely et al., 2011). Furthermore monolingual English speaking children are reported to acquire complex long-distance (LD) questions early (Stromswold, 1995; Thornton, 1990). Thus the influence of derivational complexity in a monolingual acquisition context remains questionable.

In bilingual language acquisition derivational complexity has been argued to determine cross-linguistic influence (Perez-Leroux et al., 2009; Serratrice, 2013). Here the general idea is that less complex structures are more vulnerable to transfer than more complex ones. Here ‘less complex’ is defined as involving fewer computational steps to arrive at the target utterance. Therefore, if a structure in language A represents a step in the derivation of an functional analogue structure of language B, this structure becomes vulnerable to transfer (Strik, 2012a). Importantly derivational complexity is understood as a condition for grammatical transfer, instead of viewing both, L1 transfer and complexity, independently from one another. This enables the following predictions: (all other things being equal) *wh*-in-situ constructions should emerge before all others according to clause (i) of the Derivational Complexity Hypothesis, as no movement is required. Further, following from clause (ii), structures where only one constituent is moved (i.e. the *wh*-word in English) are acquired before more complex structures involving additional insertions or movement of multiple arguments. Thus, structures where the *wh*-word and the finite verb move (i.e. German *wh*-questions) are less preferred and should be the last to be acquired. This can be tested in a German-English bilingual context, where German V2 provides a derivational more complex analysis, compared to the simpler non-movement option provided by the English target syntax. Thus transfer of V-to-C movement from German to English becomes unlikely, a prediction that is not borne out by the data presented in this thesis, as has already been demonstrated with simple negated matrix clauses.

7.2 Acquisition of German and English interrogatives

German is a V2 language, head final and with SOV word order (Besten & Edmondson, 1983; Zwart, 1997). Evidence for this classic analysis comes from the position of verb particles in matrix clauses, negation and the asymmetry of inversion in matrix and embedded contexts. For *wh*-interrogatives *wh*-fronting is obligatory as is the case for subject-verb-inversion. There is no differentiation

between pronominal and nominal subjects or between main and auxiliary verbs in matrix interrogatives. *Wh*-in-situ is restricted to echo questions, just like in English. Medial-*wh* constructions in German have been analysed as partial movement, where the *wh*-word *was* is base generated as an expletive in the specifier position of the matrix CP and further down replaced by the contentful *wh*-phrase at the embedded clause at LF (Felser, 2001), as in ‘Was glaubst du wen Maria liebt?’ (What do you think who Maria loves?). *Wh*-copying, where an exact copy of the embedded *wh*-word appears also in SpecCP of the matrix question, is restricted to dialectal variants of German, for example Bavarian (Felser, 2004), although a variant of long-distance *wh*-copying as in (61) is attested in Standard High German as well.

(61) Wer glaubst du wer Recht hat?

Who thinks you who right has?

‘Who do you think is right?’

(adapted from (Höhle, 2000))

This however, does not pattern exactly the same as in other languages that allow true *wh*-copying. I will not discuss this in greater detail here. It is important to keep in mind that Kayla, who acquires Standard High German, should allow partial *wh*-movement but not *wh*-copying.

As V2 is acquired early (Clahsen et al., 1993), German children show inversion and raising of the *wh*-word well before the age of 3 years. Schmerse et al. (2013) demonstrated in a study with monolingual German speaking children in the age range from 2;0 to 3;0 years, that non-inversion errors remained very low in occurrence. In contrast omission of the initial *wh*-word or the fronted verb were quite frequent, accounting for up to 30% of all non-adult like structures produced. Similar findings are reported for other V2 languages, such as Dutch (Strik, 2011; 2012b; van Kampen, 2010), Norwegian (Westergaard, 2009a) or Swedish (Santelmann, 2004). Further Strik (2008) gathered data of Dutch monolinguals between 3 and 4 years of age in an elicitation study, who produced verb doubling structures in nearly 8% of all non-adult like productions or inserted a dummy verb *doen* (do) or *gaan* (go) as often as 7%, a structure that is hardly attested in standard Dutch. In line with Zuckerman (2001) she argues that insertion of the dummy verb is a more economical option, compared to the more complex V to C movement.

These studies highlight the fact that even though V2 is acquired early, children show great variability in the implementation of this grammatical

omission of the auxiliary, i.e. *'What he doing?' (Rizzi, 1996; Rowland, 2007; Rowland, Pine, Lieven, & Theakston, 2005; Stromswold, 1990). Many of these non-adult like forms have also been demonstrated to exist in simple yes/no questions (Valian, Lasser, & Mandelbaum, 1992). However, none of these studies have reported subject-verb inversion with finite verbs, as in *'What wants you eat?' or *'Likes you marbles?'.

In addition to the above listed non-adult like forms in simple matrix questions, medial-*wh* construction have been attested to occur in monolingual English speaking children's long-distance questions, despite the fact that the English adult grammar does not support such an analysis (Thornton, 1995). In adult English the moved *wh*-word leaves a trace that marks the initial position of the raised argument, functioning as a placeholder such that the intermediate complementizer position remains empty, as in 'Who_i do you think _i loves Maria?' While this is true for adult syntax, children are reported to sometimes spell out a copy of the moved element, leading to non-adult like doubling of the *wh*-word, illustrated in (65).

(65) *'Who do you think who is under there?' (Thornton, 1995)

Importantly English monolingual children typically use an exact copy of the *wh*-word, instead of the partial movement option attested for German. Only two out of twenty-one children tested by Thornton (1995) used partial movement in *wh*-questions. However, this syntactic option was used sparingly.

7.3 Predictions for German-English bilingual development

7.3.1 V2 in interrogatives?

Simple *wh*-questions and yes/no questions display the same word order in both target languages, leading to surface overlap. The difference is that English main verbs do not move out of the VP and do-support must be used instead. The only exception is the behaviour of *be* and *have*, which resemble V2 in English, as they are allowed to raise. This is parallel with the German syntax, as in (66).

(66) Is he a student?

'Ist er ein Student?'

If V2 is overgeneralized, a prediction made available by the Cross-linguistic Influence Hypothesis, the child should also allow verb fronting of main verbs in English yes/no questions. Thus, non-adult like utterances as

*'Comes he today?' become a plausible option for the bilingual child. As the bilingual child could easily overextend the V-to-C movement option to all interrogative contexts due to the large surface overlap, non-adult like *wh*-questions like *'What wants you?' with raised finite verbs are also predicted to occur in the stage before *do*-support is fully acquired.

In negative interrogatives transfer of V2 could lead to the non-adult like word order V-Neg, that has already been attested for simple negated sentences (see chapter 4). Therefore negative yes/no questions in the form of *'Likes you not broccoli?' are plausible. For negative *wh*-questions the influence of the German grammar could surface in non-adult like utterances as in *'What likes he not?'. Thus structures involving raising of the finite verb, non-inversion or the use of adverbial negation with *not* indicate cross-linguistic influence as source for the generation of non-adult like utterances.

In contrast the Derivational Complexity Hypothesis predicts the preference of less complex structures, such as the non-movement option provided by the English syntax. Thus raising of the finite verb is unlikely. Instead the bilingual child should display non-inversion and root infinitive (RI) structures as in (67) and (68).

(67) *Where he can go?

(68) *What she like- \emptyset ?

For negative questions the use of adverbial negation is argued to involve fewer steps in the derivation, compared to the option with *do*-insertion. However, raising of the finite verb is less preferred than leaving the verb in situ. Therefore structures as *'What he don't/not like- \emptyset ?', where the non-finite verb is left in situ and the child uses an unanalyzed negative auxiliary are predicted by the Derivational Complexity Hypothesis, while utterances as *'What likes he not?' are unpredicted.

7.3.2 Inflection in interrogatives?

As the Cross-linguistic Influence Hypothesis predicts V2 transfer in interrogative contexts, the same acceleration of overt inflectional morphology that has been previously demonstrated to occur in negated utterances can be expected. Again, the accelerated acquisition of the functional category Infl should result in a less pronounced OI stage in Kayla's English interrogatives. As the German V2 grammar requires the finite verb to raise from V to C movement

(via I), raised verbs should always be overtly marked for inflection. Before do-support is acquired and the bilingual child still transfers V2, non-adult like yes/no questions as in (69) and *wh*-questions as (70) are to be expected.

(69) *Like-s he marbles?

(70) *What want-s you eat?

In both examples the main verb has left its base position in the VP and is raised to C. During this double raising the main verb passed through IP and picked up the required inflectional morphology. It follows that V2 transfer makes structures as *'Like- \emptyset he marbles?', with a bare raised verb highly unlikely.

In regards to inflection in negative interrogatives the bilingual child under investigation should display the same developmental progression as in negated main clauses. First transfer of V2 predicts the word order V-Neg as in (71). As outlined above, V2 requires only movement of the finite verb. Thus utterances as \emptyset are not predicted to occur.

(71) Makes it not a noise?

(72) *Make- \emptyset it not a noise?

Second, before do-support is fully mastered non-adult like forms similar to monolingual English speaking children are to be expected. Thus non-agreeing *don't* (73) and misplaced morphology (74) are predicted to also occur in interrogative structures, as long as the child has not fully analyzed the negative auxiliaries.

(73) *What he don't like-s?

(74) *Why it-s didn't work-s?

Once do-support is fully integrated into the bilingual child's syntax all non-adult like forms should subside. Clear evidence for mastery of do-support is the correct use of the form *doesn't*, as the child has identified all the components: *do* plus third person singular *-s* plus the clitic head negation *n't*. Therefore non-adult like structures with *doesn't* should remain very low in appearance.

7.3.3 Adverbial negation in negative interrogatives?

Just as with sentential negation Kayla should progress from raising the main verb to leaving it in situ. For negative questions it can be predicted that Kayla starts out with adverbial negation, producing utterances as in (75).

(75) *Comes he not?

The adverbial status of the negator becomes evident as inflectional affixes freely move over negation, a movement that would be blocked by UG if the child assumes negation to constitute a head. However, assuming adverbial negation as a default setting has an economy flavour.

In a similar fashion, if *don't* is classified as an unanalysed auxiliary, structures with raised non-agreeing *don't* are predicted, illustrated in example (76).

(76) *What he don't wants?

Non-adult like use of *don't* as negative adverb is plausible, as children are assumed to use the early negative auxiliaries *can't*, *don't* and *didn't* as unanalysed wholes. In Schütze's (2010) account on non-agreeing *don't* he proposes an underspecified functional category Infl and the clitic nature of *n't* to cause the lack of agreement. He states that a negative head under Infl blocks affix lowering onto V, triggering do-support as a host for the otherwise stranded affix. However, in addition to the inflectional morphology, -s in third person singular contexts, the clitic *n't* is also in need of a host. Thus neither the lexical verb nor the auxiliary *do* are expected to show correct agreement, as the result from the underspecification of Infl. Children display non-agreeing *don't* before they are able to sandwich the stranded -s morpheme between the auxiliary *do* and the clitic *n't*, generating the adult form *do(e)+s+n't*. In addition the underspecification account predicts that children should not display non-agreement in utterances where there is no negative clitic. Thus structures as *'Do she like it?' are unpredicted (Miller, 2013).

Due to the use of adverbial negation Kayla might generate double negations as *'What didn't Miss Piggy don't like to do?' (Matt, aged 4;3 years in Gausti et al., 1995) before she acquires do-support and is able to converge to the adult structure. In these non-adult like utterances we find agreement with *didn't* high up in the structure, while the negative auxiliary lower down in the structure lacks agreement, resulting in non-agreeing *don't* (Guasti et al., 1995). However, once do-support, specifically the form *doesn't* is productive, all non-adult like forms like aux-doubling, misplaced morphology, non-inversions and the use of non-agreeing negative auxiliaries should subside completely.

7.4 Findings from child data

7.4.1 German data

Overall Kayla produced 181 interrogatives in her German recordings. These were split in 119 yes/no questions and 62 *wh*-questions. Analysis of the yes/no questions shows, that Kayla produced 96 (81%) adult like utterances. 18 of the remaining 23 non-adult like yes/no questions had to be excluded, as analysis revealed that 8 utterances were incomplete, 1 included a language switch from German to English in the middle of the question and 9 had to be reclassified as declaratives. These declaratives were misclassified as interrogatives, as Kayla extended her utterance by a periphrastic ‘okay?’ at the end of her production. The clear question intonation led to the transcription of the utterance as an interrogative, which is signed by the question mark in the transcriptions. Question marks were searched for by CLAN to derive the corpus. Analysis of the context in which these utterances appeared within the video recordings confirmed the declarative reading. Thus, Kayla produced only 5 non-adult like yes/no questions, which are listed under (77).

- | | | |
|---------|--------------------------------------------------|------------------|
| (77) a) | *Kannst du <u>mal das</u> halten? | (KAY 3;05 years) |
| | ‘Can you hold this?’ | |
| b) | *Darf ich <u>das nur</u> nehmen? | (KAY 3;06 years) |
| | ‘May I only take this?’ | |
| c) | *Hast du was anderes <u>mitebringt für uns</u> ? | (KAY 4;04 years) |
| | ‘Did you bring something else for us?’ | |
| d) | *Willst du <u>übernachten hier</u> ? | (KAY 4;04 years) |
| | ‘Do you want to stay here?’ | |
| e) | * <u>Sind das</u> von Hannah? | (KAY 2;11 years) |
| | ‘Are these from Hannah?’ | |

While (77)a)-d) involve non-inversion of the modal particle and the object ((77)a) and b) or of the verb and the modal particle ((77)c and d) resulting in non-adult like word order, example (77)e) displays non-adult like agreement. This is the only non-agreement error and can be disregarded as performance error. The placement of modal particles, similar to the placement of negation, has been demonstrated to be problematic in German-English bilingual children (Döpke, 1999). As modal particles surface to the right of its complement in German, but not in English, it can be argued that the non-adult like word order

in 20c) and 20d) is generated due to the influence of the English syntax. However, as was the case with sentential negation, the influence of the English language on the German target syntax remains marginal, accounting for under 2% (2/119) of all yes/no questions.

The 62 *wh*-questions of Kayla's corpus show 57 adult like productions, which account for 92%. Again, only 5 non-adult like utterance were recorded. Out of these non-adult like utterances 3 display omission of the verb. In contrast to previous studies Kayla omits the main verb, as in (78), not the copula or an auxiliary. Verb omissions account for 5% of non-adult like forms in Kayla's *wh*-questions, whereas Schmerse et al. (2013) report this to occur at a rate of more than 15% of all *wh*-interrogatives in German monolingual children, similar to the 19% reported in Clahsen, Kursawe and Penke (1995). Another difference to previous findings from monolingual populations is that Kayla never omits the question word, a non-adult like form which is reported to occur in up to 24% of all *was* (what) questions (Schmerse et al., 2013). However, all children recorded in this earlier study were below the age of 3;0 years. Thus, I conclude that Kayla's low omission rates are due to her being older and cannot be attributed to bilingualism itself.

- (78) *'Wo kann ich die Spielkarten (X) Mama?' (KAY 4;01 years)
'Where can I (X) the cards, Mum?'

Under (79) I have listed the examples, which could result from cross-linguistic influence of the English syntax on the German target word order.

- (79) a) *'Warum ist der steckt fest?' (KAY 3;09 years)
'Why is he stuck?'
- b) *'Warum haben wir weniger Karten jetzt?' (KAY 4;01 years)
'Why do we have less cards now?'

In ((79)a) Kayla does not adhere to the V2 requirement of the German syntax. Instead she inserts the auxiliary *ist* (third person singular from *sein/be*), resembling the English 'be-support' (Rowland & Theakston, 2009). In (22b), just as with yes/no questions, Kayla places the modal particle in a position where they would normally surface in the English word order, instead of the correct position immediately following the verb complement. However, these examples remain extremely rare. This leads to the conclusion that the German syntax is largely uninfluenced by the simultaneous acquisition of English and

German, an observation that is in direct contrast to the findings from the English data reviewed in the following section.

7.4.2 English data

As was the case with sentential negation, most of Kayla's English utterances are target like. Out of the 424 interrogatives produced, the majority were correct, while only a fifth of the data displayed non-adult like forms. The distribution of adult-like and non-adult like questions in each developmental phase remains quite equal throughout the study, as is displayed in Table 11. However, there is a slight increase in non-adult like productions in phase III, accentuating the findings from previous chapters that this period is indeed a time of transition and change in the underlying syntax, for example the time of re-setting the verb-movement parameter.

Table 11: Kayla's adult like (n=337) and non-adult like (n=87) interrogatives in English

Phase	Adult like	Non-adult like
Phase II	31/40	9/40
(2;10-3;01 years)	(77,5%)	(22,5%)
Phase III	47/66	19/66
(3;01-3;07 years)	(71,2%)	(28,8%)
Phase IV	208/256	48/256
(3;07-5;50 years)	(81,3%)	(18,7%)
Phase V	47/58	11/58
(5;05-5;07 years)	(81%)	(19%)
Total	337 (79,5%)	87 (20,5%)

Overall Kayla produced 375 positive and 49 negative interrogatives. This imbalance is due to the late emergence of negative questions in Kayla's corpus. The first negative question appears at age 3;08 years, the beginning of phase IV, after Kayla has crossed the MLU_w mark of 3.75. This is in line with previous studies, which report negative questions to be present in the productions once the children are able to produce longer utterances, with a mean of 4.0 words per utterance (Ambridge & Rowland, 2009). In total Kayla produced 5 adult-like negative interrogatives, accounting for 10%. All these correct utterances used the adverbial negator *not* in combination with an auxiliary, as in 'Why are you not tired anymore?' (KAY 3;08 years). While the use of adverbial negation results in grammatical sentences, it is not the preferred English target structure to generate a negative interrogative. The exception is the verb *be*. Negation with

not is very natural in combination with the verb *be*, possibly due to the fact that *be* often contracts.

Furthermore the current corpus consists of 198 yes/no questions, 220 *wh*-questions and 6 long-distance questions (LD). LD-questions appear in the corpus only at phase V, near the end of the data collection for the current study between age 5;05 and 5;07 years. Five (83%) of these LD-questions display a medial-*wh*, as in (80).

(80) *'Who do you think who is in the box?' (KAY 5;07 years)

This reduplication effect of *wh*-copying is allowed in some varieties of German, such as the southern dialect Bavarian (Felser, 2001). Standard German however only permits partial *wh*-movement. In all the examples from Kayla's corpus she uses an exact copy of the *wh*-word, indicating *wh*-copying and not just partial movement. One possible explanation¹⁹ for keeping all *wh*-copies is the reduction processing costs, as the *wh*-phrase is kept alive in the working memory (Jakubowicz, 2011). This is pertinent in LD-questions, where the number of derivational steps the *wh*-phrase has to pass on its way to the left periphery of the matrix CP exceeds the limit of the working memory capacity. As this capacity matures over time, non-adult like LD-questions are expected to be more prevalent at a younger age, than later on in the development (Jakubowicz, 2011). However, as *wh*-fronting is available from the start, adult like LD-questions are expected to emerge at the same time as medial-*wh* constructions. As the data reveal, there is no example of a medial-*wh* in combination with an infinitive or a *that* complementizer, partially confirming findings from monolingual English speaking children (Stromswold, 1995; Thornton, 1995). In addition all LD-questions feature inversion, leading to the adult like word order in these highly complex structures, while simple matrix object and subject interrogatives at that stage still lack SAI in up to 18%.

Analysis of the non-adult like structures reveals that Kayla passes through the same developmental stages outlined in the previous chapters, as can be seen in Figure 19.

¹⁹ Thornton (1995) argues against a processing account in her dissertation. She claims that children's medial-*wh* questions are related to children's concept of the Empty Category Principle (ECP). Furthermore she proposes that medial-*wh* constructions are better understood as long distance movement structures, where children overtly pronounce the *wh*-trace from the cyclical movement of the *wh*-phrase up to the matrix CP. Either account is able to explain the data at hand.

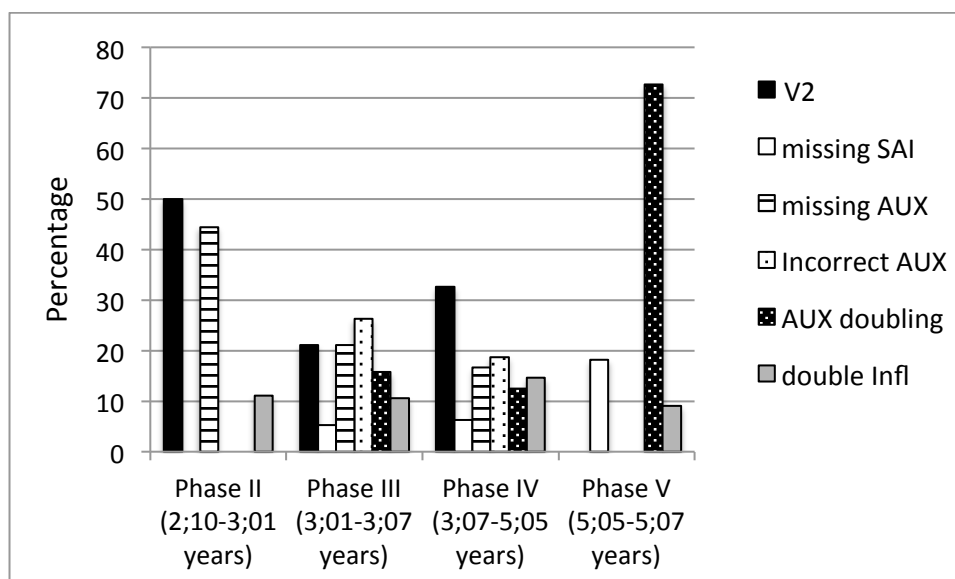


Figure 19: Non-adult like forms in Kayla's English interrogatives

First, in phase II, III and the beginning of phase IV, she transfers V2 in interrogative contexts as well, generating yes/no questions where the finite verb has raised as in *'Got you a dog?' (KAY 3;11 years). This raising appears with a limited number of verbs, mainly being restricted to *have*, *be*, *like* and *want*. The only exceptions are provided in (81).

- (81) *'Got you a dog?' (KAY 3;11 years)
 *'Smells it good?' (KAY 4;00 years)
 *'Makes it a noise?' (KAY 4;00 years)

In addition transfer of V2 occurs only in yes/no questions. The only counterexample is provided in (82).

- (82) *'What wants you to eat?' (KAY 3;06 years)

The other 23 cases of V2 in interrogatives involve yes/no questions. Mirroring the findings regarding sentential negation, all non-adult like interrogatives featuring V2 in 3PS contexts display clear inflectional morphology, as the verb passes through Infl in the process of V-C. The remaining 74% feature a bare verb in second person singular contexts, as in *'Have you some friends?'²⁰ (KAY 5;05 years) in the pre-do-support stage.

Even though transfer of V2 is the most prevalent structure in the non-adult like interrogatives, accounting for 26%, it remains low in number

²⁰ Utterances as *'Have you some friends' are acceptable in British English. One might argue that these examples point to a lexical problem, not a parameter setting. However, as Kayla displays this kind of error only in the pre-do-support stage, with a range of verbs and at a time when she also transfers V2 in affirmative contexts, a parameter setting analysis seems more plausible.

appearing in only 5% of all (affirmative and negative) interrogatives. Transfer of V2 is strongest in the beginning of the study at phase II, where it accounts for half of the non-adult like interrogatives, and suddenly disappears in phase V, after *do*-support is acquired. This is parallel to the pattern found in sentential negation, where Kayla also transfers V2 before she is able to decompose the form ‘doesn’t’ into its components and adds head negation to the already existing adverbial form of negation (see chapter 4 for details). In addition transfer of V2 is restricted to positive interrogatives and does not appear in negative questions at all, supposedly as negative interrogatives emerge later in the development. Negative questions first appear in phase IV, where transfer of V2 already fades out.

While misplaced morphology is quite frequent in sentential negation, it only appears four times within interrogatives, as in example (83).

(83) *‘Why it didn’t works?’ (KAY 3;08 years)

In line with the predictions outlined in section 7.3, these non-adult like utterances are restricted to adverbial *not* and unanalysed wholes of clitic negation, as *don’t* and *didn’t*. Once *doesn’t* is used, and Kayla has decomposed it into the three components *do+(e)s+n’t*, the lowering of an inflectional affix over another head becomes impossible. This is borne out by the data, as there are no appearances of affix lowering over negation in negative interrogatives once *doesn’t* is used productively. However, there are two examples of AUX doubling, even with the form *doesn’t*, as illustrated in (84).

(84) *‘Where do you doesn’t go?’ (KAY 5;07 years)

*‘What are you doesn’t drink?’ (KAY 5;07 years)

It is important to note that utterances as (84) are never found in combination with the progressive verb form as in *‘What are you doesn’t drinking?’, a combination that becomes plausible under the assumption of ‘doesn’t’ being an adverb like the negator ‘not’ as in ‘Why is she not sleeping?’. The absence of the combination ‘doesn’t+-ing’ provides evidence against a chunking analysis. This finding is in line with results presented by Bellugi (1967).

The non-adult like form that is most prominent within interrogatives, besides transfer of V2, is doubling of the auxiliary, closely followed by omission of the auxiliary verb, both counting up to 20%. This can be seen in Figure 20, illustrating the prevalence of the non-adult like structures featured in Kayla’s corpus.

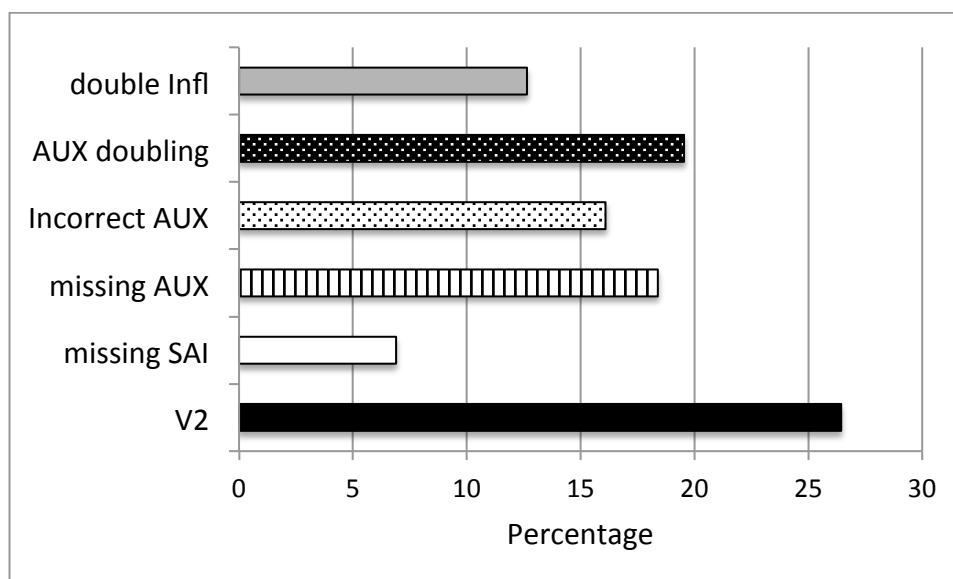


Figure 20: Types of non-adult like structures in Kayla's English interrogatives (n=424)

While AUX doubling, as in **'Why are the sheep are coming?'* (KAY 3;06 years) is completely absent in phase II of Kayla's development, it is the structure accounting for almost 73% of the non-adult like utterances in phase V (see Figure 19 for details). Thornton (1995) reports monolingual English speaking children to exhibit AUX doubling quite frequently in negative questions. Kayla's increase in AUX doubling structures can also be attributed to the use of this construction in negative interrogatives, such as **'What do you don't like to eat?'* (KAY 4;01 years). Importantly, non-adult like forms in which Kayla doubles a negative auxiliary, as in **'What doesn't she doesn't like?'* remain unattested in the corpus, confirming Guasti et al. (1995). In her negative interrogatives, the simple AUX doubling structure accounts for almost 30%, while 60% of her non-adult like negative interrogatives displayed non-inversion of the kind in (85).

(85) **'What game you don't like to play?'* (KAY 5;05 years)

The number for AUX doubling is in line with findings from monolingual English speaking children, who are reported to display this structure in up to 40% of all non-adult like forms (Guasti et al., 1995; Thornton, 1995). Non-inversion however, is reported to a lesser extend in monolingual children, accounting for roughly 20% of all non-adult like forms in children's negative interrogatives (Guasti et al., 1995). This discrepancy can be explained through the influence of the German syntax. Whereas German negation surfaces in a position following the subject (S-NEG) in negative interrogatives, English SAI results in the word

order NEG-S. Thus, the bilingual child prefers the non-inverted word order in negative interrogatives, as the data confirm.

The increase of AUX doubling constructions is in stark contrast to the use of AUX omissions in Kayla's interrogatives, as *'What in there?' (KAY 3;0 years) which diminish over time decreasing from 44% in phase II to being absent in phase V. Overall AUX omissions in Kayla's corpus reveal a prevalence of under 20% in all interrogative contexts, a number that is lower than in respective counts on monolingual English speaking children.

7.5 Discussion

The idea that children prefer less complex constructions, ones that involve fewer movement to derive the target structure, has been proposed in previous work (Anderssen & Westergaard, 2010; Jakubowicz & Nash, 2001; Strik, 2011). However, as has been the case in simple negated matrix clauses, transfer of V2 can also be attested in interrogative contexts. It becomes evident that the German-English bilingual child transfers the derivational more complex V2 analysis to the English target language, a language that displays a less complex non-movement option. Specifically Kayla frequently raises finite main verbs in yes/no questions and *wh*-questions, making V2 transfer the most prominent non-adult like structure.

Further, Bloom (1990) proposes omission (verb-omission, *wh*-word omission, non-inversion) to be a cognitive strategy to reduce the processing load by reducing the complexity of the construction. However, the data reveal that non-adult like forms resulting from omission remain low in number, with AUX omission totalling 18% and non-inversion counting for under 7% of all interrogative structures. Rather non-adult like utterances resulting from co-mission in the form of AUX doubling (20%) or double inflections (13%) are much more prevalent in the corpus. Thus the child constantly uses more complex structures, often adding something to the structure, instead of reducing complexity through use of omission.

The results obtained in interrogative contexts imply that overlap is a valid source for generating cross-linguistic structures. As has been demonstrated to be the case in simple negative matrix clauses, the child adopts the analysis that is most robustly presented through the cues provided in the input (Anderssen & Westergaard, 2010; Westergaard, 2008a). This is also the case in interrogative

contexts. There are two inconsistencies the German-English bilingual child in particular has to deal with: verb movement and the status of negation. While monolingual children are also exposed to these inconsistencies, the bilingual child becomes especially vulnerable for cross-linguistic influence due to constant reinforcement of the incorrect analysis by the other language she is exposed to. Thus ambiguities such as variable word order are much more prone to lead to non-adult like productions in a bilingual context, even though the misanalysis is available to monolingual children as well (Amaral & Roeper, 2014; Miller, 2013; Serratrice, 2014). Thus, even though it seems surprising at first that Kayla adopts the more complex V2 analysis, it reveals her sensitivity for principles of economy.

As Henry and Tangney (2001) point out, languages with consistent verb movement patterns are easier to acquire than languages in which some verbs move and others do not. The German V2 property requires all finite verbs, be it an auxiliary or a main verb, to move to the second position of the matrix clause. In contrast English does not allow such movement for main verbs, but for auxiliaries. As a residual V2 language the verbs *be* and *have* are also allowed to raise. This inconsistency makes English verb movement much more variable than the German counterpart. In a bilingual context the V2 pattern gets constantly reinforced by English auxiliaries, *be* and *have*. Thus V2 is easily overgeneralized, leading to non-adult like word order patterns in simple negative declaratives and interrogative contexts. In this sense V2 transfer is even a more economical option for the bilingual child, regardless of the derivational complexity of the structure (Bentzen, 2013).

The same analysis can be applied to the use of adverbial negation in interrogatives. German features only adverbial negation with the negator *nicht* (not), while English provides two options: the negative adverb *not* and head negation with the negative clitic *n't*. The acquisition of head negation is also reported to be late in monolingual English speaking children (Thornton & Tesan, 2013). Thus overextension of adverbial negation in both target languages becomes plausible, due to the robust presence of the cue in both target languages. In the bilingual context another difficulty enters the picture: do-support. This operation is only present in the English target language and has no parallel structure in German. While in simple declaratives the auxiliary verb

raises to serve as a host for inflection, do-support is needed to generate an adult-like interrogative, as illustrated in (86).

(86) He has five friends.

*Has he five friends?

Does he have five friends?

This is further complicated when negation is added to the derivation, adding to the inconsistency experienced by the bilingual child, making this domain especially vulnerable to cross-linguistic influence.

Regarding the *wh*-copying in LD-questions exemplified by Kayla in her English data, it could be argued that performance limitations and processing costs involved cause non-adult like utterances (Jakubowicz, 2011). 4/6 of Kayla's LD-questions featured a double spell out of the *wh*-word. There is only one counterexample, in which Kayla drops the second copy, illustrated in (87).

(87) *'Who do you thinking is in the box?' (KAY, 5;05 years)

One LD-question contained no *wh*-copy and lead to the adult like production of 'What kind of animal do you think is in the box?' (KAY, 5;07 years).

To account for multiple spell out of *wh*-words Chomsky (2005) stresses the differences between semantic and phonetic interfaces. While at the semantic interface all copies of the *wh*-word are processed at no cost involved, due to the operation being universal and thus costless, processing all copies at the phonetic interface creates conflict between two other universal requirements. These requirements are (i) ease of processing and (ii) minimization of the computation. Processing would be easiest if all copies were spelled out, as multiple appearances of the *wh*-word keep it alive in the working memory. However, the second condition requires the deletion of all unnecessary copies to minimize complexity of the structure. Thus, unless certain syntactical conditions force the pronunciation of a lower copy, only one *wh*-word is spelled out. While this is true for Standard English and Standard High German, the target languages of the current study, there are exceptions to the rule, one being a German dialect, Bavarian.

7.6 Conclusion

Regardless of the variable input Kayla is exposed to, the results indicate that she progresses through similar stages in the acquisition of interrogative contexts than for the development of simple negated matrix clauses. I demonstrated that

V-to-C movement patterns and the preferred use of adverbial negation arises from the simultaneous acquisition of German and English. Consistency of cues provided by the input plays a significant role in the generation of cross-linguistic structures, wherever the target languages show a certain degree of overlap. This confirms the Cross-linguistic Influence Hypothesis. However, cross-linguistic influence is neither restricted to the syntax-pragmatic interface nor to underlying deep syntax, but rather surface overlap is sufficient enough to generate transfer. This further strengthens the adaptation of the Cross-linguistic Influence Hypotheses made by Yip and Matthews (2009).

After V2 transfer subsides, Kayla starts to behave more like a monolingual English-speaking child. Her path of acquisition remains more or less the same than that for her monolingual peers, besides the fact that the timing might be different.

The data indicate that the bilingual child becomes more vulnerable to inconsistencies in the input, than monolingual children who are exposed to the same variable cues. There is still very little research available on variable input and the effects on monolingual language acquisition, yet even less for children growing up in a multilingual environment. Thus it remains up to future research to discern the importance of input types (variable versus consistent (Miller, 2013)) and level of variability (frequency of forms and number of overt variants (Anderssen & Westergaard, 2010)) for the different grammatical phenomena to be acquired (i.e. plural markings, negation, subject-verb-agreement, etc.).

Chapter 8: Synopsis and Outlook

This thesis has been designed to further promote our understanding of the processes involved in (bilingual) first language acquisition. With new data at hand from a German-English bilingual child, I investigated possible interactions of the two language systems. In contrast to previous studies investigating German-English bilingual children's language acquisition, the newly derived corpus comprises of naturalistic speech data, as well as elicited productions. This ensured a robust sample of structures that are not used very frequently in young children's speech. In addition, elicitation resulted in a reliable sample size, despite the limitations of this being a case study. Another advantage lies in the way the data were sampled, as they include two language shifts when the child moved from Australia to Germany and back again. This permitted monitoring the influence of external factors on the acquisition process, a fact that contributes to the uniqueness of the obtained data. As has been discussed in chapter 2 and demonstrated for Kayla's language development in chapter 3, language external factors only had a quantitative effect on the occurrence of cross-linguistic structures, leading to a very prolonged use of the non-adult like structures discussed within the relevant chapters. This effect allowed to intensively study the different syntactic options exploited by Kayla during the course of acquisition. Specific attention has been paid to the acquisition of sentential negation and (negative) interrogatives, as these structures directly reveal the underlying syntax and make it possible to detect cross-linguistic influence.

Three different manifestations of cross-linguistic influence have previously been proposed in the literature: transfer, acceleration and/or delay (Paradis & Genesee, 1996). In this dissertation I have shown that all three types of cross-linguistic influence can be attested in the German-English bilingual language development of Kayla. Further I hope to have demonstrated that the Cross-linguistic Influence Hypothesis (Hulk & Müller, 2000) is suitable to account for the observed quirks during bilingual language acquisition of Kayla, while the Derivational Complexity Hypothesis (Jakubowicz, 2006; 2011; 2008a) does not adequately explain her language development.

The major finding in chapter 4 is the observation that surface overlap in the two target languages triggers the observed transfer of the German V2 requirement to the English target language. In particular I have provided evidence against the claim of the Derivational Complexity Hypothesis, as the child under investigation clearly prefers the derivationally more complex verb-raising analysis provided by the German syntax, compared to the simpler non-movement option in English. This became evident in the frequent use of post-verbal negation as in *'That fits not in here.', where a main verb raised over negation to appear in the second position of the matrix clause, accounting for more than 80% of non-adult like utterances during phase III (age 3;01-3;07) of Kayla's development. This structure is not attested in monolingual children. Hence I conclude that this non-adult like form of negation is attributed to the simultaneous acquisition of German and English, constituting a qualitative difference between monolingual and bilingual language acquisition.

In chapter 5 I argued for an accelerated acquisition of the functional category Infl(ection), as a direct consequence of the V2 transfer. V2 is derived through a double head movement of the verb from V to C, inevitably passing through I on the way. Hence I argued that V2 transfer should also result in a high rate of inflected verbs. The data provide evidence for this claim, as Kayla always (100%) overtly realizes the inflectional morpheme –s in 3PS contexts on the raised main verb during the developmental stage where she transfers V2 to English. Even after Kayla successfully re-sets the verb-movement parameter in English to the [-raise] value this observation holds, as she keeps producing inflected main verbs in the VP resulting in non-adult like utterances like *'That not swims' in as much as 70% during phase IV (age 3;07-5;05), a stage where V2 transfer already diminishes. Thus I proposed that transfer of V2 had an accelerating effect on the specification of the T and Agr nodes in English, resulting in an accelerated acquisition of the functional category Infl.

The cross-linguistic influence of simultaneously learning German and English also resulted in the third manifestation, noticeable as substantial delay in the acquisition of English head negation, as demonstrated in chapter 6. The overlap of German syntax and child English in its use of adverbial negation, resulted in constant reinforcement of this form of negation, making it the preferred option. This became evident in utterances as *'It not/don't opens', where inflectional morphology was moved over negation to adjoin to the verb,

which remained in situ in the VP. This movement option is prohibited in adult English, as it violates the Head Movement Constraint after a NegP has been instantiated. Following Thornton and Tesan (2013) I take the implementation of a functional category of Neg(ation) to result in the addition of head negation with the clitic *n't* heading the projection to the adverbial negator *not* that is available as a default option, according to Zeijlstra's (2007a; 2004) Negative-Concord Parameter. However, this change is argued to follow from the successful use of the negative form *doesn't* and not the doubling effects presented by Negative Concord (NC), as NC is absent in the input to children acquiring Standard English. Instead, as soon as children use the form *doesn't* productively they have decomposed the negative auxiliaries into its three components: *do* plus third person singular *-s* plus the clitic negation *n't*. This enables children to master English negation and the tricky operation of do-support.

In chapter 7 Kayla's development of (negative) interrogatives became the focus of investigation to test whether or not the observed manifestations of cross-linguistic influence could also be found in other structures. The English data from the new corpus revealed that transfer of the verb-movement paradigm, acceleration of the functional category Infl and delay in the acquisition of head negation with the clitic *n't* can be attested in (negative) interrogatives as well. Again, in line with Hulk and Müller's (2000) proposal I attested surface overlap and ambiguity in the input to be the driving force of overgeneralizing German V2 and adverbial negation in English. The raising of auxiliaries and the behaviour of the verbs *be* and *have* and modals in English interrogatives result in a constant reinforcement of the V-C analysis provided by the German target syntax. While monolingual English-speaking children are also exposed to these inconsistent cues, the bilingual child is much more sensitive to this kind of variability in the input. Following Henry and Tangney (2001) I assume acquisition of a consistent verb movement pattern to be easier to acquire than a pattern in which some verbs move while others do not. As the German V2 property requires all finite verbs to move to the second position of the sentence, regardless of verb type, German can be viewed as more economical (providing fewer variability) in regards to verb movement, when compared to English. English, being a residual V2 language, allows auxiliaries and the verbs *be* and *have* to raise in interrogatives, while main verbs are

prohibited from this kind of movement (showing greater variability in the input). Thus in line with Bentzen (2013) I concluded that adopting a double verb movement analysis in both target languages can be understood on economical grounds, even though V2 is the derivational more complex option (requiring more derivational steps) compared to the non-movement option provided by the English grammar.

Following this argumentation it becomes reasonable to wonder why such transfer of V2 has not been observed more widely than has been reported in the literature to date. There are a few studies that report V2 transfer (cf. (Bentzen, 2013; Bonnesen, 2009; Rankin, 2012) but it is clear that not every bilingual child takes up the option of V2 transfer. This suggests that structural overlap makes a transfer analysis possible but not necessary (Kupisch, 2013; Sorace & Serratrice, 2009). Similar observations have been made in monolingual contexts. For example English-speaking children were demonstrated to sometimes adopt an incorrect parameter setting regarding *wh*-interrogatives. While the majority of children produces correct *wh*-questions, about one third of children produce medial *wh*-interrogatives as *'What do you think what Cookie Monster eats?'. This is argued to result from different parameter setting allowing either the adult-like long-distance movement or cyclical movement of the *wh*-phrase, where children sometimes allow a copy to remain undeleted (Thornton 1990; 1995). This option is compatible to UG as other languages also allow medial *wh*-questions. However, just as has been demonstrated for monolingual children who misset a parameter, not every bilingual child is sensible to the inconsistencies provided in the input. Essentially the transfer of V2 is a choice, not a requirement. Further, the pivotal question of how the bilingual child 'unlearns' the incorrect V2 analysis for English cannot be answered fully at this stage. The child constantly receives data that are inconsistent with a V2 analysis for English, such as non-subject initial main clauses where the verb appears in third position in English, not in second as required by V2. The child should come to the conclusion that *'Yesterday I went to school' is ungrammatical in English, as this word order is absent in the input. In addition do-support in interrogatives serves as data to rethink the V2 analysis, as the child finds the main verb in situ in the VP, not moved up to I or C.

Besides V2 transfer causing non-target like word order patterns, I have demonstrated that the bilingual child produces non-adult like negations treating negation adverbial. Adverbial use of negation is evident in the appearance of inflected main verbs, where the inflectional affix has arguably been moved across negation, an option that is incompatible with the target adult grammar. This pattern can be observed in the stage before she breaks down the negative form ‘doesn’t’ into its components of *do+(e)s+n’t*. As soon as the child analyses these components, she is able to incorporate a NegP into her grammar and all other non-adult like negations diminish. However, as previous studies (Thornton & Rombough, 2014; Thornton & Tesan, 2013) demonstrate, this process is not well understood in monolingual first language acquisition either and further research is needed to highlight the processes involved in this change of the underlying grammar.

In summary, this thesis represents another puzzle piece to our understanding of the internal processes involved in acquiring (multiple) first language(s). In particular the findings from chapter 4-7 highlight that bilingual children are highly sensitive to inconsistencies in the input and thus vulnerable to cross-linguistic influence which manifests itself in at least one of the following three forms: transfer, acceleration and/or delay in the acquisition of a certain grammatical phenomenon. However, the exact triggers for change in the child’s syntax as well as the mechanisms involved to implement the change(s) are still not well understood. Even after more than three decades of increasing interest on bilingual first language acquisition there is little research available on the effects of variable input. It will be up to future investigations to discern the importance of structural versus surface overlap, economy considerations and the role of transfer as a relief strategy in bilingual language acquisition.

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Appendix

Macquarie University Student Email and Calendar Mail - HS Ethics... <http://mail.google.com/a/students.mq.edu.au/?ui=2&ik=aada4d1a9...>



KATHARINA GENSKE <katharina.sturm@students.mq.edu.au>

HS Ethics Final Approval - Ref No. 5201001170

1 message

Ethics Secretariat <ethics.secretariat@mq.edu.au>

Tue, Oct 5, 2010 at 12:04 PM

To: A/Prof Rosalind Thornton <rosalind.thornton@mq.edu.au>

Cc: Ms Katharina Genske <katharina.genske@students.mq.edu.au>

Dear A/Prof Thornton,

Re: "Early child bilingualism: a case study investigating simultaneous acquisition of English and German"

Thank you for your recent correspondence. Your response has addressed the issues raised by the Faculty of Human Sciences Human Research Ethics Sub-Committee and you may now commence your research.

The following personnel are authorised to conduct this research:

A/Prof Rosalind Thornton
Ms Davina Creek
Ms Katharina Genske
Prof Stephen Crain

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).
2. Approval will be for a period of five (5) years subject to the provision of annual reports. Your first progress report is due on 1st September 2011.

If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:
http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

3. If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Sub-Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

4. All amendments to the project must be reviewed and approved by the Sub-Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

Appendix

Macquarie University Student Email and Calendar Mail - HS Ethics... <http://mail.google.com/a/students.mq.edu.au/?ui=2&ik=aada4d1a9...>

5. Please notify the Sub-Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

<http://www.mq.edu.au/policy>

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have final approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

If you need to provide a hard copy letter of Final Approval to an external organisation as evidence that you have Final Approval, please do not hesitate to contact the Ethics Secretariat at the address below.

Please retain a copy of this email as this is your official notification of final ethics approval.

Yours sincerely,

Dr Peter Roger
Chair
Faculty of Human Sciences Ethics Review Sub-Committee
Human Research Ethics Committee