

*“Jetzt is this fertig”*: Patterns of code-switching between two English-German bilingual siblings:

A case study

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## **Abstract**

This master's thesis is a case study on the code-mixing of two English-German bilingual siblings. The children are of the ages of 2;10–3;02 and 6–7 years old and thus at very different stages of language development. This case study explores patterns in the children's production of bilingual utterances over the course of six months. The purpose of this study is to contribute to the understanding of bilingual children's language behaviour, which differs significantly between individuals and language pairs.

The analysis in this thesis is conducted through mixed methods: It examines transcripts of monthly recorded sessions over the course of six months and employs qualitative content analysis to dissect the utterances into categories based on recurring elements in them, while quantitative information about the proportions of mixed and unilingual utterances supports the analysis of the children's language behaviour. The inductive approach to the data takes the lead in this thesis and uncovers interesting practices in the bilingual children's language behaviour. Previous research in the disciplines of bilingual first language acquisition and code-switching provide an extensive understanding of how the language acquisition process occurs and differs between stages of language acquisition, making some differences between the children's language behaviour expected.

However, the recognition of patterns in the code-mixed utterances in the data provides some understanding as to why the children may mix languages. Moreover, the analysis discovers an interesting similarity in the children's language behaviour: a common idiosyncrasy in their use of an English demonstrative in otherwise German speech, through which the children optimise their language use, as the analysis finds a multifaceted set of functions behind the demonstrative in their utterances.

## **Tiivistelmä**

Tämä pro gradu -tutkielma tutkii koodinvaihtoa kahden kaksikielisen (saksa/englanti) sisaruksen puheessa. Sisaruksista nuorempi on aineistonkeruun aikaan 2;10–3;02-vuotias ja toinen 6-vuotias, ja näin ollen lasten kielen kehitys on hyvin eri vaiheessa. Tämä tutkielma tarkastelee, millaisia kuvioita lasten muodostamissa kaksikielisissä vuoroissa ilmenee kuuden kuukauden aikana kerätyssä aineistossa. Tarkoituksena on muodostaa selkeä käsitys lasten koodinvaihtokäyttäytymisestä ja täten täydentää koodinvaihtotutkimusta tuomalla lisää tietoa tutkimuskenttään tapaustutkimuksen muodossa.

Tutkimuksen aineisto koostuu kuukauden välein äänitettyjen sessioiden litteraateista, joita lähestyn yhdistelmämenetelmällä, tarkkaan ottaen sisällönanalyysilla. Kerään aineistosta kaksikieliset vuorot, jotka jaan alakategorioihin niissä esiintyvien elementtien perusteella. Yksikieliset vuorot (saksa ja englanti erikseen) toimivat viitteenä kaksikielisten vuorojen tarkastelussa. Vuorojen prosentuaalisten määrien erot litteraateissa liittyvät miljöön vaikutukseen lasten koodinvaihdossa sekä nuoremman lapsen kohdalla kielelliseen kehitykseen.

Induktiivinen lähestymistapa aineistoon täten johtaa tutkielmani analyysia. Kirjallisuuskatsaus tarjoaa näkökulmia, jotka luovat oletuksia aineistossa mahdollisesti esiintyvistä koodinvaihdosta ja eroista lasten koodinvaihdon välillä. Analyysissa ilmenevistä kuvioista saa kuitenkin kattavan käsityksen siitä, mitä tekijöitä koodinvaihdon takana on. Lisäksi lasten koodinvaihdossa korostuu yksi yhtäläisyys: englannin *this*-demonstratiivin käyttö muutoin saksankielisissä vuoroissa, jolla paljastuu olevan monimuotoinen funktio lasten muodostamissa vuoroissa.

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## 1. Introduction

The impact of bilingual upbringing on a child's language acquisition process is an expansively researched topic in the field of first language acquisition, as research has proven that bilinguals' differing profiles (consisting of different language pairs and acquisition methods as well as other differences in their environments) influence the language acquisition process of the child. The phenomenon of bilingual children mixing their co-mother tongues has been a curious topic in the discipline for decades, and researchers' hypotheses of the practice of language mixing have developed into an elaborate understanding as to how bilingual children actually acquire languages: The process occurs similarly as monolingual language acquisition, merely with the exception of dual language input. A further, connected topic of interest is how bilingual children then learn to produce speech: Most children go through a phase of code-mixing, even when they do not hear such language used in their input. Literature in the discipline consists of case studies of bilingual children's code-switching, providing a base from which generalisations can be drawn, while the impact of certain differences in bilinguals' profiles have also been recognised. Hence, case studies of differing language pairs in bilingual first language acquisition form the core of the body of knowledge. Interesting studies tracing back bilingual children's language input dissect how the vocabulary emerging in children's mixed utterances has originally occurred in child-directed unilingual speech.

This thesis analyses the code-switching behaviour of two German-English bilingual siblings of the ages of 2;10–3;02 and 6–7. It provides descriptions of the language behaviour of the two children who are at different stages of the language acquisition process but, belonging to the same family, have acquired their first languages in the same circumstances (environment, acquisition method). The analysis is based on transcripts of sessions recorded regularly over the course of six months in authentic and natural situations in the family home. In the transcripts, I expect to find code-mixed utterances, which I will then compile and closely examine with the intention of exploring what kind of mixed utterances the children produce, categorising the mixed utterances based on patterns that may emerge in them. The data is thus approached through qualitative content analysis to find answers to the question of what patterns emerge in the children's code-mixing behaviour. Quantitative aspects support the descriptions of code-mixing behaviour as they demonstrate especially the younger child's language development, and perhaps explain if and how the setting may impact the children's production of mixed speech. The purpose of the analysis is to discover recurring contexts in which code-mixing may emerge (and consequently to form an idea

of the children's possible motives for code-switching) through dissection and categorisation of the data. The analysis recognises several categories into which the mixed utterances can be delegated. While some differences are expected, similarities in the children's mixed utterances are discerned in the findings of the analysis. It highlights especially the use of an English demonstrative in otherwise German utterances in both of the children's speech throughout the data and explores its manifold functions in the mixed utterances.

## **2. Theoretical framework**

This section introduces some first language acquisition research, specifically that of bilingual children. Furthermore, this section explains some relevant phenomena and factors that may contribute to the code-switching of bilingual children and ultimately aims to demonstrate the connection between bilingual first language acquisition and children's code-switching by providing a summary of the findings of previous research, which has sought to explain why and how code-switching happens in young children as well as how their speech develops over time in regard to code-switching behaviour. This section first presents (bilingual) first language acquisition and then moves on to code-switching, focusing on child code-switching.

### **2.1 Bilingual first language acquisition**

In the research field of bilingualism, two main topics can be detected. One of them is the classification of different kinds of bilinguals and their language behaviour through appropriate methods. In bilingual first language acquisition research (henceforth referred to as BFLA research) the characteristics of how research subjects have acquired bilingualism need to be precisely determined to ensure that differing variables are distinguished from one another (Romaine, 1995). Typically considered aspects in the classification of bilinguals include whether two languages are acquired simultaneously or successively, and whether acquisition happens in a natural setting, that is, from a parent or in a bilingual environment, or in a guided setting, such as through formal teaching (see e.g. Müller et al., 2006). Romaine (1995) states it is important to distinguish between simultaneous language acquisition from infancy onwards and the successive acquisition of another language in later childhood (even if it occurred in a natural setting) due to the firstly acquired language possibly affecting the later acquisition process of the second language.

For example, Weinreich (1968, as cited in Romaine, 1995) divided childhood bilingualism into 'compound' and 'coordinate' bilingualism based on whether a child acquires two languages in the same context (compound bilingualism) or in separate contexts, that is, successively (coordinate bilingualism). Romaine (1995) elaborates on simultaneous language acquisition processes (compound bilingualism and compound multilingualism) by drawing on previous research by Harding and Riley (1986, as cited in Romaine, 1995) and by further defining six different ways in which a child may acquire two first languages concurrently. Her categorisations of different kinds of compound bilinguals are defined by the

child's parents' native tongue(s), parents' choice of language output (and whether they code-switch or not), and the language spoken in the environment outside of the home. The classifications of bilingualism are thus defined by how a child is subjected to the languages he or she is acquiring. The first method that Romaine (1995) presents in her compilation of six types of compound bilingualism include the 'One Person, One Language' (OPOL) strategy, in which the child receives dual language input (i.e. child-directed speech) at home, one language from each parent exclusively. One of the parents' mother tongue is also the language dominantly spoken in the community. Other types listed by Romaine include, for example, the 'One Language, One Environment' and 'Non-dominant Home Language without Community Support' methods. In the former, both parents communicate in the native language of one of the parents, a different language than that of the other parent, whose native language is dominantly spoken in the community (like in the OPOL strategy). The latter method is similar to the former, with the distinction that the parents share a mother tongue, which is a different language than the language of the environment. In both cases, the child receive input of one language at home, and input of another language outside of the home. In the 'Double Non-dominant Home Language without Community Support' method, a child acquires three languages: two languages at home from parents who are native speakers of two different languages, and a third language from the community. The 'Non-native Parents' strategy describes a scenario where the parents share a mother tongue, which is also the dominant language of the community, but one of the parents speaks a foreign language to the child. 'Mixed languages' describes a method where bilingual parents mix languages and code-switch, thus the child receives mixed input from both parents. It seems to be a common belief that the OPOL strategy is the best one to apply in regard to a bilingual child developing two, neatly separate language systems, which has traditionally been a valued aspect in bilinguals' language proficiency as attitudes toward language mixing have been rather negative (Gardner-Chloros, 2009; see also, e.g. Lanza, 1992, as cited in Gardner-Chloros, 2009). The OPOL strategy is a common one among families who have participated in case studies of BFLA, hence the majority of literature pertains specifically to that kind of compound bilingualism.

The topic of keeping language systems separate leads us to another focal point in BFLA research, which considers *how* languages are stored in the brain of a bilingual as opposed to that of a monolingual (Cantone, 2007). Cantone points out that BFLA research essentially aims to prove the comparability of bilingual children's language acquisition process to that of monolingual children (2007). For example, Gaskins et al. (2022) state 'word frequency'—where repeated language input becomes stored in the



child's brain, enabling the child to adopt the words or phrases of the input language and to then use them in the child output—to be a crucial mechanism in first language acquisition. This pertains to bilingual children too, whose cognitive skills are similar to those of monolingual children, with the exception of duality in the child input (Gaskins et al., 2022). The process of bilingual children beginning to produce speech in infancy is identical to that of age-matched monolingual children (De Houwer, 2013). Within the first year of life, both monolingual and bilingual children begin to make syllable-like sounds that reflect the language or languages of their input. Around the age of seven to nine months, children start to babble, which means that their utterances consist of longer repetitions of those same syllables, and at approximately a year of age, children's speech begins to reflect words of their input language or languages (Ronjat, 1913; Leopold, 1939–49/1970; Cruz-Ferreira, 2006, as cited in De Houwer, 2013). While the language acquisition process occurs similarly in bilingual and monolingual children, there are remarkable differences in the rate of vocabulary acquisition among bilingual children, just as there are in the rate of monolingual children's, as the number of words that children produce at the early stages of language acquisition fluctuates between individuals. Bilingual children may develop expressive language proficiency in both input languages at the same time, but it is also normal for there to be a delay of several months between a bilingual child starting to produce speech in one and later the other language of input (De Houwer, 2013).

Interlocutors have a significant role in a child's process of acquiring new vocabulary and connecting words to meaning. Children apply various strategies for creating meaning to a new word, in which they are dependent on the interlocutor's feedback. For example, when a child hears an interlocutor use an unfamiliar word, the child deduces from the context what it may mean. The child then bases this deduction on previous knowledge and tries to connect the new word to an object which the child does not know what to call yet (McLean & Snyder-Mclean, 1999). For instance, if a child has two crayons of different colours and only knows one of the colours (e.g. pink), but the interlocutor asks the child for a blue crayon, the child excludes the pink one and connects the new word 'blue' to mean the other colour. If the child had several crayons and gave the interlocutor the wrong one, the interlocutor would correct the child by stating, "that is not a blue crayon; that one is green". A more subtle way of correcting a child is integrating the child's intended meaning in the interlocutor's response. These are ways in which an interlocutor guides a child to make correct denotations. Behind Weinreich's dichotomous classification of compound and coordinate bilingualism, there is the intention of understanding the differences in the encodement of words in a bilingual child's brain based on their language acquisition process (Romaine, 1995).

Weinreich (1968, as cited in Romaine, 1995) theorised that while compound bilinguals and coordinate bilinguals both develop two separate language systems, what differentiates them is that compound bilinguals, having acquired two languages interdependently in the same context, develop only one set of meanings (i.e. mental representations), which is equally associated with both language systems.

In contemporary BFLA research, it is theorised that bilingual children differentiate their languages earlier than the age of three, despite language mixing occurring. Most young bilingual children mix their mother tongues at an early stage of language acquisition, before eventually differentiating them apart in the multi-word stage of language development by the latest, typically around the age of three (Cantone, 2007). In literature, a bilingual child's understanding of the differences between languages is described as language differentiation and language separation. 'Language differentiation' addresses the question as to whether bilingual children initially develop a single language system or two separate systems simultaneously for both languages. Cantone (2007) questions studies that insinuate language mixing to be proof of a single language system, as in most of such studies, a bilingual setting has been created for the research subjects, which encourages the children to mix. 'Language separation', on the other hand, refers to the socio-linguistic aspects of bilingual children's language use, namely the understanding required to choose the appropriate language for different interactions based on the interlocutor's language competences and thus the ability to grasp what language the interlocutor speaks (Cantone, 2007). However, Romaine (1995) points out that what is interpreted as a lack of language separation, may just be children at early stages of the language acquisition process resorting to their total communicative repertoire in order to express themselves.

Our understanding of how the language acquisition process occurs in bilingual children has come a long way in research on bilingualism: In the past, researchers mostly approached BFLA with the presumption that children do not differentiate the two languages that they simultaneously acquire, whereas nowadays research focuses on how two separately acquired languages interact in the brain of a compound bilingual child (Cantone, 2007). This section presented a summarised overview of research on bilingualism, which consists of a broad variety of different types and cases of it. The findings of case studies of different language acquisition methods and varying language pairs form our understanding of bilingualism, and it is believed that, in terms of psychological and neurological processes, the simultaneous language acquisition process of two first languages differs from to the monolingual language acquisition process

only in dual input. The process of language input becoming expressive in child output will be delineated in the following sections.

## **2.2 Code-switching**

The idea of bilingual children developing a single language system stems largely from the practice of mixing languages, which is a prevalent phenomenon in both adult and child bilinguals. This practice is most often called ‘code-switching’. Code-switching is a broad concept, as its definitions comprise many different ways of mixing languages and even dialects within one context (see e.g. Gardner-Chloros, 2009; Cantone, 2007). Commonly, it refers to the mixing of lexicons of at least two languages within a single conversation, but it occurs on other levels of language as well. This section will present some code-switching research, focusing on child code-switching. It will give some insights into how the phenomenon occurs and how the language acquisition process of a bilingual child impacts and perhaps promotes code-switching. Thus, BFLA will also be further discussed in this section, as the topic is interconnected with code-switching in early childhood.

Various intentions behind code-switching have been explored by researchers. For example, Meuter (2009), in a broader context of adult code-switching, discusses multilinguals’ deliberate code-switching as a practice for optimising language performance in conversations, where typically a so-called ‘matrix language’ acts as a base language into which other languages are embedded. The concept of a matrix language has, however, been questioned by some researchers, as especially in child code-switching, one cannot always be determined in the code-switched speech (see e.g. Romaine, 1990). However, uneven language development in the early stages of language acquisition is not uncommon in bilingual children, causing an imbalance between the two mother tongues and affecting code-switching behaviour (Cantone, 2007). According to Cantone (2007), studies on bilingual children’s code-switching in most cases associate the practice of language mixing with inadequate language proficiency. In such studies, the cause of child code-switching has been argued to be a lack of pragmatic competence (meaning that the child may not grasp what languages the interlocutor understands) or a lack of (or perhaps, unevenly developed) vocabulary. In cases of grammatical interference (i.e. the transfer of grammatical elements of one language into another), the code-switching may have been explained by a lack of grammatical competence. Therefore, the term ‘code-mixing’ is often used to specifically refer to the code-switching of children in early stages of bilingual first language acquisition (see e.g. Cantone, 2007), whereas the

term ‘code-switching’ tends to comprise both adult and child code-switching. Code-mixing, as the name implies, may be considered less deliberate than code-switching, occurring due to different factors and motives in children. Behind this differentiation there is the presumption that young children, whose language systems are still developing, do not yet (at least not entirely) distinguish the languages that they are in the process of acquiring.

According to Cantone (2007), literature on code-mixing focuses on three main issues: 1. how the phenomenon occurs in young children and how it develops over time, 2. why children mix and whether it happens due to unevenly developing vocabulary, and 3. what kind of elements are subject to language mixing (and whether these differ from adult code-switching). Moreover, Romaine (1995) has noted that code-switching research focuses on pragmatic, discourse-related aspects, and on the other hand, grammatical/syntactic aspects. Code-switching in young children differs from that of adults (and that of children who have reached full linguistic proficiency in their co-mother tongues) in that it is less systematic and less compliant to linguistic rules (Sridhar & Sridhar, 1980, as cited in Cantone, 2007). Structural rules are not relevant to early code-mixing, as young children who are still in the process of acquiring their mother tongue(s) have not yet reached full linguistic proficiency in them and thus deviate from grammatical rules (Cantone, 2007). As a child’s linguistic proficiency develops, code-mixing is expected to become more “adult-like”, meaning that different elements become subject to mixing. In adult code-switching, it is mostly nouns that are mixed (Cantone, 2007). One reason for this is the fact that nouns are “relatively free of syntactic rules” (Romaine, 1995). In the process of code-switching, the languages in question are constantly activated in the brain, as words and phrases are borrowed from a language into another, thus enabling the speaker to code-switch (Meuter, 2009). Meuter (2009) indeed describes (adult) multilinguals’ language performance with two characteristics: keeping the languages that they master separate but also being able to use them interchangeably within the same sentence. Although researchers have not come to a consensus as to whether bilingual children acquire this ability at a certain point in language acquisition or if learning to do so occurs along with the language acquisition process, it is nowadays generally believed that children do develop two separate language systems simultaneously from the beginning (Cantone, 2007).

In literature, code-switching is further discerned into certain types of switching. Commonly discussed categories are intersentential switching, intrasentential switching, and tag-switching. Intersentential code-switching refers to the switching at the boundary of a clause or sentence, which means that an

utterance consists of clauses produced in different languages, or the speaker switches languages from sentence to another. This includes conversations where a speaker switches languages between speaker turns. Intrasentential switching occurs within a clause or sentence, thus referring to sentences that consist of speech produced in more than one language. Gardner-Chloros (2009) discusses the use of ‘compromise forms’ in intersentential and intrasentential code-switches, which include ‘bridges’, where switching is facilitated through the use of a word which sounds similar or identical in the two (usually related) languages used by the speaker. Bridges in code-switched speech somewhat diminish the contrast that is caused by switching languages and also make it difficult to determine where exactly the transition from one language to another occurs. She demonstrates the use of bridges in an example of Dutch-English code-switched speech, where morphemes which could be assigned to either language—in the case of her example, functional words, such as ‘in’, ‘*de*’ (phonologically similar to ‘the’), and ‘is’ (Clyde, 1987, as cited by Gardner-Chloros, 2009)—emerge in the point of transition in code-switched utterances. Gaskins et al. (2022) also theorise that the phonological proximity of a bilingual child’s mother tongues may contribute to code-switching. This deduction is based on the findings of their study, in which one research subject was a German-English bilingual child. The child, whose utterances otherwise followed a pattern, showed some exceptions in the formation of mixed utterances containing words that sound similar in German and English, as in the example “for *mir*” (German ‘*für mir*’, English ‘for me’). Gaskins et al. (2022) believe that such exceptions in the code-switching pattern may be the result of lower level of attention. Tag-switching describes the kind of code-switching where what is called a ‘tag’ is connected to an otherwise unilingual utterance, as for instance, Romaine’s (1995) prevalent examples of English tags: ‘you know’, ‘I mean’. Tags are generally easy to connect to monolingual sentences without them interfering with syntactic rules, which typically do not impose many restrictions onto tags (Romaine, 1995).

Romaine’s (1995) overview of six types of acquisition patterns of compound bilingualism mentions how the amount of cross-linguistic influence in bilingual children varies significantly in different stages of the language acquisition process as well as on different levels of language, depending on the child’s language acquisition method. Cross-linguistic influence is a phenomenon which occurs on different levels of language and is commonly referred to as ‘interference’ and according to, for example, Haugen’s (1956, as cited in Romaine, 1995) definition, is described as “the overlapping of two languages, or the application of two systems to one item” (p. 52). Interference is sometimes referred to as ‘transfer’ as a more neutral term, but definitions seem to slightly vary, and some researchers (see e.g. Odlin, 2009)

rather associate ‘transfer’ with cross-linguistic influence in successively acquired languages as opposed to simultaneously acquired co-mother tongues. Some literature associate ‘interference’ with negative cross-linguistic influence (see e.g. Odlin, 2009; Romaine, 1995). However, since ‘transfer’ is more relevant of a term in second language acquisition research, I will use the term ‘interference’ as a neutral term for cross-linguistic influence in discussing the code-switched speech of young compound bilinguals later on in the analysis. Odlin (2009), for instance, exemplifies what he refers to as ‘transfer’—as his example deals with a coordinate adult bilingual—with the use of an idiomatic expression of one language in another (thus translating it literally), or with cases where a multilingual mixes up words that are similar due to stemming from the same origin but carry different meanings in different languages. This kind of cross-linguistic influence is of course not limited to coordinate bilinguals. According to Romaine’s (1995) account of various studies of cross-linguistic influence in bilingual children who grew up acquiring two languages through differing methods, cross-linguistic influence does not only vary between stages of language acquisition but also between different levels of language (such as the lexical, grammatical, or phonological level). Odlin’s (2009) examples are instances of interference on the lexical level of language. While interference and transfer are often considered negative effects, cross-linguistic influence can be helpful in case of similarities between languages, for example on the grammatical level of language in case of similar use of articles in the languages. Odlin (2009) differentiates cross-linguistic influence and code-switching by the simplified fact that the former may not be as detectable (especially when its effect is positive), whereas code-switching usually causes a rather noticeable contrast. Both concepts are categorised as kinds of ‘language mixing’, as in both the system or the lexicon of a language is embedded into another (see e.g. Romaine, 1999, and Odlin, 2009, for other phenomena that the term ‘language mixing’ comprises).

BFLA research has consistently shown that a majority of bilingual children mix languages and that this phase ends abruptly around the third year of age. Most utterances of bilingual children’s speech are unilingual, that is, they only contain both words as well as grammatical inflections from one language system (De Houwer, 2013). However, the number of occurrences of mixed utterances varies largely between individuals, and the proportion of mixed utterances in a child’s speech tends to fluctuate throughout different stages of the language acquisition process before eventually decreasing and resulting in a change in the child’s code-mixing patterns as the child reaches full language proficiency. This section presented the phenomenon of code-switching as well as explanations that research has provided for how

code-switching occurs in bilinguals. It explained different types of code-switching, which is defined based on how languages are mixed in speech, and furthermore, defined cross-linguistic influence.

### **2.3 Research on early mixing**

The previous sections have provided descriptions of the bigger picture of BFLA and code-switching among children. As discussed in those sections, first language acquisition processes occur similarly in monolingual and bilingual children (see e.g. De Houwer, 2013). This section delves deeper into the connection between a bilingual child's acquired unilingual input and mixed output by presenting some recent psycholinguistic research which studies how (dual) language input becomes established in the brain of a bilingual child. The studies presented in this section employ, for example, the traceback method to examine mixed utterances produced by bilingual children. Through the method, they determine how components of those mixed utterances have emerged in the language input, thereby demonstrating how the bilingual children then combine different components in their mixed utterances.

Research on code-switching in young children has recognised certain patterns in code-mixing and has demonstrated how these patterns tend to change and that the amount of mixing tends to eventually decrease after fluctuating throughout the language acquisition process. Gaskins et al. (2022) studied several bilingual children between the ages of two and three to find out how exactly young bilingual children come to produce mixed utterances, although their input does not contain them. As usage-based approaches to monolingual language acquisition have proven a close connection between child input and output, Gaskins et al.'s (2022) interests lay in how this process then occurs in bilingual children, who receive unilingual input in two languages from different interlocutors, and then mix the acquired language together in their output. For example, Gaskins et al. (2022, 2019a) have provided extensive explanations for how child input becomes entrenched as different types of units in a (bilingual) child's brain, and which then becomes activated as the child produces it in the child output, as the child dissects and combines the entrenched units, which sometimes results in code-mixing. Approaching bilingual language acquisition with usage-based theories in their study, Gaskins et al. (2022) demonstrated that many bottom-up principles tested in relation to monolingual language acquisition also pertain to the language acquisition process of bilingual children. Usage-based theory perceives language use as the act of combining entrenched units of form, that is, units of language (such as words, phrases, and clauses) that have become established in the child's brain from frequent repetition in the child input. Units of

form range in length and level of complexity and are associated to a certain meaning by the child (Endesfelder Quick et al., 2017).

Gaskins et al. (2019b) conducted a longitudinal study segmenting a bilingual child's stretches of speech into recycled language constructions (referred to as 'frames') and non-recycled language constructions (referred to as 'slot fillers'). Nearly 90% of the data captured 'partially schematic units' (also called slot-and-frame schemas), that is, combinations that a child forms of acquired words and phrases (e.g. 'Give me X'). Before children start constructing such partially schematic units, they have acquired 'frozen chunks' (i.e. fixed sets of words joined together, such as 'give me that'), into which they learn to embed other acquired words or phrases, thus filling a slot (Gaskins et al., 2019a). For instance, in the example of the frozen chunk 'give me that', any word for which 'that' is exchanged, acts as the slot filler, forming a partially schematic construction. The emergence of partially schematic constructions is thus explained by a child connecting frozen (i.e. lexically fixed) constructions with 'fully schematic constructions', that is, an "open" part (Endesfelder Quick et al., 2017). The child combining units of more than one language results in code-switching.

Next, Gaskins et al. (2022) examined the characteristics of constructions that were always monolingual in the child output as well as of those constructions in which code-switching sometimes emerged. The results showed that mixed utterances often contained words that also emerged independently (such as 'more') and would later be combined with other words (such as 'more milk'). Monolingual combinations mostly consisted of frames (e.g. 'I', 'my') that emerge in the output as parts of frozen chunks (e.g. 'my mummy'), and of which parts eventually become productive, meaning that the child learns to combine the frames with other words (e.g. 'my X'). Gaskins et al. (2019a) found that the bilingual combinations included frames which carried more semantic content used on their own than the frames in monolingual output did. For example, the frames 'no' and 'more' carry more meaning than frames such as 'I' or 'my', as they can be used on their own. Such frames become fixed in the child's vocabulary as individual words, and thus facilitate code-switching as they can more easily be combined with other words and phrases.

Gaskins et al. (2019a) traced three bilingual children's mixed utterances back to their previously produced, monolingual speech, segmenting whether these children's mixed utterances were actually unprocessed chunks or partially schematic units. An example of an unprocessed chunk produced by an English-German speaking child is, for instance, the mixed utterance '*hilf* me' (English 'help me', German



*‘helf mir’*) (Endesfelder Quick et al. (2017). Gaskins et al. suggest that phonological proximity may be the reason for the emergence of such utterances, which the child possibly processes as one entity and which may become self-entrenched in use. The main factor for the acquisition of frames is the repetition of them in a child’s input (Stoll et al., 2019). For monolingual children, frame-based schemas comprise the majority of their earliest constructions, as they can reach up to 78%–92% of the constructions produced by the child as shown by previous studies (see e.g. Lieven et al., 2009, as cited in Gaskins et al., 2019a). According to Schmid (2017, as cited in Gaskins et al., 2019a), the repetition of expressions, such as ‘give me X’ with varying word types filling the slot, encourages the entrenchment of the frame ‘give me’ in the child’s vocabulary. Furthermore, repetition of the construction with different word types filling a slot eventually makes it receptive to new language (Schmid, 2017, as cited in Gaskins et al., 2019a).

These longitudinal studies present remarkable contributions to code-mixing research for understanding the psycholinguistic processes that happen in bilingual children in the earliest stages of language acquisition. Sections 2.1 and 2.2 discussed research which ultimately shows that the first language acquisition process is the same regardless of dual input and that code-mixing is a common phenomenon in bilingual children, in which certain patterns can be expected as well as that the code-mixing decreases as linguistic proficiency develops. This section delved into more detailed information as to how exactly child input becomes entrenched in the brain as segments that the child learns to use (i.e. recycle and combine in his or her output) and consequently explains how dual child input may result in mixed output. Thus, by applying the traceback method, Gaskins et al. (2022, 2019) and Endesfelder Quick (2017) concretely demonstrate how bilingual children come to form mixed utterances from the unilingual, dual input they receive and acquire.

### **3. Data and methodology**

In this section, I will present the data of this study and the methodological framework that will be applied to analyse it. In the first subsection, the data set and the research participants will be described. The second subsection will explain the methodology which is applied to dissect the data. Qualitative content analysis will be applied in the examination the transcripts, for which I will take an inductive, largely corpus-driven approach. I will begin by classifying the utterances into main categories and then further examine the subsections that emerge in one of the main categories, the code-mixed utterances.

#### **3.1 Data and research subjects**

The research subjects of this study are two German- and English-speaking bilingual siblings. The children go by pseudonyms in this thesis. At the time of the recordings, the younger child, “Fion”, is 2;10 to 3;2 years old, and his older brother, “Arnie”, is six years old. The data show noticeable variation in Fion’s code-mixing behaviour and overall development of speech over the course of six months, as he is at a significant point in his language acquisition process where substantial progress is expected to happen. Arnie’s language behaviour is rather unfluctuating and less complicated in the sense that his speech contains less code-mixing, and due to Arnie’s higher level of language proficiency, does not significantly deviate from grammatical rules.

In all of the transcripts, either the brothers’ English-speaking father or their German-speaking mother, or both at a time, are present. The language behaviour of the bilingual family of this case study is somewhat inconsistent. Both parents have high proficiencies in each other’s native languages and thus communicate using both German and English when speaking to each other. While the data shows that the parents mainly apply the OPOL method speaking their native languages to the children, they do not absolutely stick to it but sometimes express themselves in their second languages. The language of the community is German, as the family lives in a German-speaking country. The children’s main source of English input is thus their father.

The data that is analysed in this thesis consist of five transcripts, which stem from audio material recorded approximately a month apart each over the course of six months. The recordings have been taped in casual settings, many during playtime (such as roleplaying and picture-book reading), in the family home with one or both parents present and thus showcase an authentic representation of the children’s language

behaviour. The length of the transcripts varies between 56 to 350 utterances per child. In the analysis of the transcripts, a lot of examples of mixed utterances will be provided. Utterances will be presented in cursive, and English words in them will be in bold font to differentiate between English and German speech. Words that can be classified either language will be marked with a slash symbol like the following: *is/is*. I will provide direct translations for mixed/German utterances to preserve their sentence structure when it is relevant.

It should be noted that my analysis is purely based on written transcripts, as I do not have access to the audio material that these transcripts are based on. That is to say, my analysis of the research subject's code-switching relies on the transcribers' work, and phonological aspects of the two children's language behaviour will not be relevant to my analysis, other than in cases of mixed utterances that contain words which are phonologically similar in the English and German languages. Not having access to the audio material has resulted in having to categorise a few short utterances—which contain words that are spelt identically in the two languages—as 'ambiguous', and thus discard them from the analysis. Other utterances that contain such vocabulary are defined by the rest of the utterance. For example, an otherwise German utterance which contains a word that assumes the same spelling in either language is considered a unilingual, German utterance. However, if such words stand on their own in the transcripts, they are classified as ambiguous (e.g. 'leopard'/'*leopard*').

For the sake of cohesion, small changes to some utterances have been made in this paper. In the transcripts, the spelling of words such as 'this' and 'the' varies, as some transcribers' spelling reflects the children's pronunciation of them, 'dis' and 'de'. While this is a noteworthy detail in the light of the children's use of the demonstrative 'this' in the analysis, children under the age of seven typically do not yet master the pronunciation of the "TH" sound, the voiced dental fricative (/ð/) and pronounce it as a voiced alveolar stop (/d/) instead. Therefore, it should not be considered German interference. For the most part, the proper spelling is used in the transcripts, hence the spelling of only a few utterances has been altered for cohesion in the analysis.

I thank Dr. Endesfelder Quick (University of Leipzig, Institute of British Studies) for providing the data for this thesis. Fion's transcripts are part of a larger project and have been studied extensively in case studies of code-mixing, in which bilingual children's output is studied through usage-based approaches and by employing the traceback method (see e.g. Gaskins et al., 2019a).

### 3.2 Qualitative content analysis

My analysis of the research subjects' code-mixing behaviour is based on a relatively large set of data, and understanding it requires careful dissection of the transcripts. Qualitative content analysis allows examination of big quantities of data by categorising it into groups through the recognition of patterns, and thus it is a well suitable approach for extensive, text-format data that calls for interpretation (Schreier, 2012). Qualitative content analysis differs from most qualitative research approaches in that its aim is not to give a holistic description of the data, but to focus on selected aspects of it, which are defined by the research question. A coding frame, which consists of main- and subcategories, is constructed and acts as a guide for classifying the data, thus reducing it and enabling the analysis of selected aspects (categories) in it and finally interpreting the contents of the relevant categories (Schreier, 2012; Mayring, 2015).

Schreier (2012) thus describes qualitative content analysis as flexible and systematic: The coding frame is flexibly constructed according to the research question of a study, and acts as a guide for systematically categorising the data, which allows targeting and close analysis of the relevant parts of the data. Mayring (2015) notes that "qualitative-oriented content analysis" may be a more fitting term, as qualitative content analysis often includes (or could benefit from) mixed methods after all, thus a dichotomic division of research approaches for content analysis is sometimes inadequate. This holds true in case of this study, in which quantitative aspects bring significant information into the interpretation of the data.

The objective of my thesis is to analyse the mixed utterances that the research subjects produce in the transcript-format data collected from five sessions that have been recorded over the course of six months. First, I will go over the transcripts, classifying each utterance into a main category: German, English, or mixed. Mixed utterances are the relevant main category for my study, and thus the next step is to closely examine all mixed utterances (respectively for both research subjects, Fion and Arnie), further classifying them into subcategories based on the (expectedly reoccurring) aspects that emerge in them. Here I take an inductive approach, as subcategories are solely based on the patterns that emerge in the mixed utterances. The classification into subcategories concretely shows what kind of mixed utterances the children produce and how frequently. Finally, I present my interpretations as to how or why the children may come to form these mixed utterances. The other main categories, 'English utterances' and 'German utterances' will be drawn on in the analysis of the subcategories of 'mixed utterances' to gain an

understand of the children's linguistic proficiency in both languages and (to some extent) their pragmatic competence, thus giving those mixed utterances some context.

Quantitative aspects will thus be considered in regard to two aspects. Firstly, the number of mixed utterances produced by the children during the sessions as well as the subcategories that those mixed utterances comprise, are of high interest in the analysis of the nature of their mixed utterances. Secondly, what portions of all utterances make up the main categories of the coding frame is relevant to understanding the research subjects' language behaviour apart from the code-mixed speech: The amount of unilingual speech produced in both languages as well as how this may change throughout six months is relevant to understanding the children's code-mixing behaviour.

#### 4. Analysis

This section presents and analyses the data, which comprises five transcripts. The section is delegated into two parts. First, I will go over each transcript and explain their contents: I will provide descriptions and examples of the mixed utterances that emerge in each of them and shed some light on the amount of mixing throughout the sessions in general. The setting in each session will also be considered. After detailed presentation of the mixed utterances in the transcripts of each session, I will finally provide an overview of Fion and Arnie's language behaviour, in which I intend to observe the bigger picture in which their mixed utterances occur. Due to their different stages of the language acquisition process, it is of course expected that Fion and Arnie show differing language behaviour. A remarkably higher number of code-switched utterances occur in Fion's speech. Fion and Arnie's utterances will be discussed separately. I aim to demonstrate their language behaviour by analysing what kind of mixing occurs in their speech and how it seems to be influenced by the interlocutors' presence and thus the input they receive in the setting. Thus, unilingual utterances will also be discussed to some extent in respect of the setting, as Fion and Arnie's language awareness will be considered in the light of their code-switching behaviour.

In Fion's case, changes in the amount of unilingual speech are relevant due to his early stage of language acquisition, and the analysis will show substantial development in his English proficiency, which in the beginning of the data appears mostly receptive while it becomes clear that German is Fion's dominant language at the time of the first session (aged 2;10). Fion is in the multi-word stage of language development, which children usually reach at around 2,5 years of age (Lust, 2006). At this stage of language development, children have already learnt the use of various function words, such as articles, prepositions, and conjunctions, and they start to include more complex grammatical structures in their speech (Lust, 2006), but do not yet follow proper grammar due to the incomplete state of their language acquisition process. At times, this results in interesting, code-mixed speech. Arnie is 6–7 years old, which is the age around which children have typically nearly reached full proficiency in their mother tongue (Lust, 2006). Therefore, his language behaviour does not contain the same degree of contrast caused by code-mixing as Fion's speech does. Moreover, Arnie demonstrates a high degree of pragmatic language proficiency in that he matches his language to that of interlocutors'. The transcripts include a lesser number of mixed utterances on his part, and consequently his code-mixed utterances are different in nature overall.

## 4.1 The first transcript

In this section, the mixed utterances of Fion and Arnie's speech in the first recorded session will be described and analysed. In the first session, the children's English input is abundant, as Fion and Arnie's English-speaking father is present and very actively engaging in conversations with them. The mother seems to be absent in this session: The transcript shows no utterances from her nor is her presence in anyway noted by the participating family members.

The father makes explicit attempts to prompt Fion to speak English, which one would expect to have an activating impact on Fion's production of English speech (see e.g. McLean, 1999; Cantone, 2007), yet Fion produces little English utterances in the first session. However, Fion seems to be aware that his father understands German as his father does speak both English and German in the home and, in this specific setting, repeats Fion's German comments and requests back to Fion in English. Thus, Fion does, in a way, show awareness of language separation as he switches from German to English when his father ignores his German order to "go away" (*geh weg*) and asks Fion to "say it in English", and Fion eventually does. Arnie, as opposed to Fion, shows having a strong sense of language separation, as he adapts to whichever participant of the conversation he addresses. He thus switches back and forth between German and English, yet the data contains only a small number of mixed utterances on Arnie's part.

### 4.1.1 Fion's mixed utterances

The first transcript contains 506 utterances from Fion (aged 2;10), of which 86 have been unclear in the audio recording, and of which four are considered ambiguous utterances in the data due to the identical spelling and similar pronunciation of those words in the English and German languages. Thus, those 90 utterances will be discarded from this analysis. Of the remaining 421 utterances, 10,5% are mixed utterances. Fion's English utterances amount to only 1,4% and his German utterances amount to 87,2%. Out of the 44 mixed utterances, 43 consist of otherwise German utterances, but with the English word 'this' repeatedly produced in the place of a German demonstrative pronoun or demonstrative determiner. The placement of 'this' within a sentence occurs according to German syntax (VSO-structure in sentences beginning with an adverb), as can be seen, for instance, in two of the following examples of Fion's utterances:

Example 1. *'jetzt is/is this fertig.'* (tr. 'now is this ready')

Example 2. *'ich zeige jetzt this da.'* (tr. 'I show now this there')

Example 3. *'jetzt helf dir this bagger.'* (tr. 'now helps you this digger')

Example 4. *'jetzt is/is this zu ende.'* (tr. 'now is this over')

The word 'this' carries different functions in the contexts of these utterances, and thus if translated into German, 'this' would be translated into several different words depending on the case and grammatical gender of the noun. Next, I will discuss the functions of 'this' in Fion's utterances in the light of some examples.

In utterances such as *'jetzt is/is this fertig'* (tr. 'Now is this ready'), *'ich zeige jetzt this da'* (tr. 'I show now that there'), and *'jetzt is/is this zu Ende'* (tr. 'Now is this over'), 'this' refers to a noun which it replaces in the sentence, thus functioning as a demonstrative pronoun. In roughly half of Fion's utterances in the first session, the demonstrative 'this' is combined with the verb 'to be', such as in *'jetzt is/is this fertig'* (tr. 'Now is this ready'), *'this is/is ein Lastwagen'* (tr. 'this is a lorry'), and *'this is/is Creme'* (tr. 'this is lotion'). Moreover, there are a few occasions in which the demonstrative 'this' emerges together with other verbs, for example in the sentence *'jetzt gibt this ein Geschenk'* (tr. 'Now gives this a gift', where 'this' acts as the subject), as well as in some contexts where 'this' is the receiver of an action and thus the object and not the subject of the verb, such as in *'this wegtun'* (tr. 'this [to] put away') and *'ich zeige jetzt this da'* (tr. 'I show now this there').

While 'this' emerges combined with the verb 'to be' a lot of the times in the transcript, it is ambiguous whether Fion produces the English 'to be' in present tense, or whether it is a colloquial abbreviation of the German *'ist'* (tr. 'is') which is abbreviated to *'is'* more often than not in spoken German. The placement of 'is' corresponds German sentence structures in the mixed utterances—such as in the example *'jetzt is this fertig'* (tr. 'Now is this ready'), as according to German grammar, finite verbs precede the subject when the sentence begins with an adverb. Moreover, the transcript interestingly shows one mixed utterance in which Fion combines 'this' with the past tense of the German *'sein'* (tr. to be): *'this war ein Auto'* (tr. this was a car). Nonetheless, some of Fion's sentences occur as telegraphic speech, lacking verbs altogether. The following examples present such utterances:

Example 5. *'this die music.'* (tr. 'this the music')



Example 6. *'papa **this gold/gold**.'* (tr. 'daddy this gold')

Example 7. *'**this** noch heiss.'* (tr. 'this still hot')

Example 8. *'und **this** meine flöte.'* (tr. 'and this my flute')

These utterances differ from the previously discussed examples. Here Fion produces shorter and more simple sentences that are grammatically incorrect due to the lack of verbs to connect the demonstrative pronoun to nouns or adjectives in the sentence. That is to say, as far as can be concluded from the contexts that these utterances emerge in in the transcript, 'this' nonetheless acts as a demonstrative pronoun in these utterances. Next, I will present some examples of Fion's utterances in which 'this' carries a different function:

Example 9. *'**this** hose.'* (tr. 'these/those trousers')

Example 10. *'jetzt hilft dir **this** bagger.'* (tr. 'now helps you this digger')

Here 'this' emerges in front of a noun to demonstrate a specific item that Fion refers to, thus acting as a demonstrative determiner in the examples. The nouns in the examples 9 and 10 are of different grammatical genders in the German language: 'Trousers' is a grammatically feminine noun, and 'digger' is masculine. In the German language, there are three grammatical genders which determine the article of a noun: masculine (*ein/der*), feminine (*eine/die*), and neutral (*ein/das*). The grammatical gender of a noun also determines the inflection of a demonstrative determiner in German, whereas in English 'this' is always used regardless of the noun's article. Thus, the demonstrative determiners used together with the nouns in the example utterances would actually not all be inflected the same in the German language, but the correct inflections would be *'diese Hose'* (tr. these/those trousers) and *'dieser Bagger'* (tr. this/that digger). Fion's mixed utterances in the first session only contain one mixed construction that does not include the demonstrative 'this':

Example 11. *'ich **spit**.'* (tr. 'I spit')

This utterance emerges during playtime in a conversation with Fion's father and brother Arnie and is a reaction to being told not to spit by his father. Interestingly, Fion produces the same utterance purely in German before producing the mixed utterance. Therefore, the data show that Fion does indeed know the word 'spit' in both languages. It is worth noting that Fion indeed produces the unilingual utterance first,

as it could otherwise perhaps be interpreted as a self-correction if he produced the unilingual utterance only after the mixed utterance.

#### 4.1.2 Arnie's mixed utterances

The first transcript contains 271 utterances from Arnie, of which 98 have been marked as inaudible and will thus be eliminated from this analysis. Arnie's utterances show little code-mixing: He only produces three mixed utterances in the transcript. The audible utterances consist of 1,7% of mixed utterances, 38,2% English utterances, and 60,1% German utterances. One of Arnie's mixed utterances is similar to Fion's languages mixing pattern in the first transcript, as Arnie also produces the demonstrative 'this' in the place of the German article/demonstrative determiner '*das*' while addressing Fion during playtime:

Example 12.

Arnie: *ich hole noch ein geschenk* . (tr. 'I will go get one more gift')

Arnie: *das hier ?* (tr. 'this one?')

Arnie: (inaudible) *this geschenk* . (tr. 'this gift')

Throughout the session, Arnie speaks German quite consistently when his speech is directed at Fion, as shown in the excerpt in example 12. Although the mixed utterance that it contains is unfortunately partly unclear, it can be assumed from both the context as well as the preceding utterance that 'this' acts as a demonstrative determiner in the sentence. Before producing the mixed utterance, Arnie uses the correct German article for the noun 'gift' (neuter: ein/das), indeed producing both the definite and indefinite articles correctly. Arnie uses the English demonstrative 'this' and its German equivalent 'das' (i.e. in this context) interchangeably, as he produces them in successive utterances, using the demonstratives to refer to the same noun in the utterances. This mixed utterance differs from Arnie's other two mixed utterances which I will discuss below:

Example 13. '*twinkle twinkle little scheisse* .' (tr. 'twinkle twinkle little shit')

Example 14. '*ich (inaudible) funny music* .' (tr. 'I [...] funny music')

Example 13 is a mixed utterance produced by Arnie as his father and Fion practice singing 'Twinkle twinkle, little star'. In the context of example 13, their father is trying to bring Fion to sing with him in

English, which is when Arnie interrupts them by saying ‘*twinkle twinkle, little Scheisse*’ (tr. shit) after their father recites the line correctly. Here Arnie switches out a noun from a line of a song that he is most likely familiar with, as it can be assumed from the context that the song has been sung before in the family. Based on the humorous nature of the mixing in this utterance, it could also be assumed that Arnie’s code-switching may have been deliberate in this case.

The code-mixing in the examples 13 and 14 is similar in the sense that in both of them, a noun is subject to code-switching. While the utterance is unfortunately partly unclear, it can be assumed that the inaudible part may have been a verb connecting the subject and object, possibly ‘make’/’play’/ ’put on’ etc., as the noun ‘music’ emerges several times in combination with these verbs in the contexts of the transcript. In any case, the subject and the object (a noun phrase) are of different languages in the mixed utterance of example 14.

While one of Arnie’s mixed utterances (example 12) in the first transcript conveys a similarity to his younger brother Fion’s code-mixing patterns, Arnie’s mixing behaviour in the rest of his mixed utterances (examples 13 and 14) contrasts Fion’s mixing patterns as different elements are subject to mixing in Arnie’s speech, as the remaining mixed utterances (examples 13 and 14) become mixed through noun phrases.

## **4.2 The second transcript**

This section exhibits Fion and Arnie’s mixed utterances in the second session. The setting is similar to that of the first session: The father is present and actively engaging with the children as they play together, and English input is thereby ample as he, again, encourages Fion to speak English with methods such as repeating Fion’s German utterances back to him in English or asking him questions with the intention of prompting a response in English (see e.g. McLean & Snyder-McLean, 1999). The mother is physically present in the same space but does not engage in the session—she only speaks two inaudible utterances during it. Thus, the children receive English input from the participating parent in this session as well.

### **4.2.1 Fion’s mixed utterances**

Fion’s (aged 2;11) utterances in the second transcript amount to 280 utterances, of which 111 consist of mostly unclear utterances as well as a few ambiguous ones. The remaining utterances, which are included

in the analysis, consist of 16% mixed utterances, 8,9% English utterances, and 75,1% German utterances. While the shift in the ratio of mixed and unilingual utterances in either language is not necessarily dramatic in comparison to the transcript of the first recording captured a month earlier, it still becomes clear that Fion has begun producing more English speech, both in the form of mixed utterances as well as unilingual English utterances. As in the first transcript, a majority of Fion's mixed utterances in the second transcript consist of Fion producing the English 'this' in the place of a demonstrative within an otherwise German utterance:

Example 15. '*this kommt hier;here .*' (tr. 'this comes here')

Example 16. '*wir machen gerade this .*' (tr. 'we do just now this')

Example 17. '*mir schmeckt this auch .*' (tr. 'to me tastes this too'; 'this tastes good to me, too')

Here again, 'this' carries the function of a demonstrative pronoun, for which the correct German translation in the context of these utterances would most likely be '*das*'. However, it is possible that, for instance in the context of example 15, the noun that Fion refers to may be masculine or feminine, in which case the correct demonstrative to use would accordingly be '*der*' or '*die*'. In German, demonstrative pronouns assume the same form as the three definite articles *der*, *das* and *die*. Fion uses 'this' to refer to both tangible objects as well as abstracts. While 22 out of 27 Fion's mixed utterances still include the embedment of 'this' in otherwise German sentences, some interesting language mixes occur in his utterances which, in the second session, are beginning to include different types of bilingual constructions.

Interestingly, two of Fion's mixed utterances in the second transcript contain the indefinite English article combined with a German noun: '*a Ritter*' (tr. a knight) and '*a Rakete*' (tr. a rocket). These nouns are of different grammatical genders in the German language: the former is masculine and the latter feminine, thus they assume different articles. So far in the data, articles have only emerged in definite form in mixed utterances that include an article or determiner combined with a noun of a different language. Moreover, Fion produces these nouns unilingually in German using the correct articles in the second session prior to producing them again as mixed utterances.

More code-mixing occurs in the session as Fion and his father sing 'Old MacDonald had a farm'. The context behind the situation is that Fion's father recites lines of the song and seemingly attempts to prompt Fion to continue the song with him, to which Fion starts singing along, assumably making up his

own versions of the line “*And on his farm he had a (...)*” by filling the slot with different nouns. Fion’s singing comes out as heavy intrasentential mixing:

Example 18. ‘*und on the farm/farm had some cowboys/cowboys .*’ (tr. ‘and on the farm had some cowboys’)

Example 19. ‘*and on the farm/farm hat ne pistole .*’ (tr. ‘and on the farm had a pistol’)

Example 20. ‘(inaudible) *on the; der farm/farm hat die Polizei*’ (tr. ‘[...] on the farm had the police’)

Here Fion repeats the same line of the song, changing the object of the sentence in each utterance. Despite it being the same line of the song that Fion repeats successively, the language mixing varies in the utterances. Different parts of the same sentence become code-mixed in his repetition of the line, as Fion code-mixes in the places of function words. The English preposition ‘on’ remains consistent in each of the utterances, while the conjunction ‘and’, the pronoun ‘the’, and the verb ‘have’ become subject to code-mixing in the utterances. Fion’s recitations of the repeated line lack the subject pronoun ‘he’. In both the German and English versions of the song, the line includes a subject: “on the farm he had (...)”. Based on the context, such as in example 20, it seems that Fion may intend to form a passive sentence expressing what there is on the farm. In this case, he would be confusing the meaning of ‘to have’ with the impersonal verb ‘there is’. However, Fion does not produce the correct form in either language in this case, so it is also possible that he leaves out the subject pronoun simply due to faltering grammar.

However, these mixed utterances interestingly show that Fion knows the vocabulary of the recurring line both in German and in English, but instead of correcting the former mixed utterance of this sentence to express it cohesively as a unilingual utterance, he switches out the words, thus not decreasing the amount of code-mixing, but producing differently mixed utterances of the same line successively. However, the utterances consist of combinations of stretches of English and German. The conjunction ‘and’ emerges in both languages in separate utterances, but other than that English and German speech occurs solidly as complete phrases within the sentence. The first time Fion produces the line of the song, only the conjunction ‘and’ is produced in German but the rest of it Fion utters in English. This is noteworthy, as so far in the data, Fion has produced little speech in English, and his mixed utterances have mainly consisted of German. In example 19, Fion then maintains the prepositional phrase as it is sung in the song in English, but the rest of the line, that is, the predicate which encompasses different objects that Fion seems to come up with himself, he produces in German in two of the utterances. The utterances that

Fion produces in the examples 18, 19, and 20 contain many function words that are similar in German and English (apart from the preposition ‘on’). The line thus contains many possibilities for Fion to use such function words as a bridge to the other language, which may explain the intrasentential, back-and-forth code-switching between English and German in the utterances. More vocabulary that Fion produces in the session both in English and German emerges in his mixed utterances:

Example 21. ‘**look** *passt nicht*’ (tr. ‘look, doesn’t fit’)

Example 22. ‘*guck* **this** *ein Feuerwehrmensch*’ (tr. ‘look, this a firefighter’)

Fion’s utterances in the second transcript include two utterances, in which the word ‘look’ (German ‘*guck*’) emerges in mixed utterances. The examples 21 and 22 occur in different contexts in the session and are both times used by Fion as an imperative with the function of demonstrating something to Arnie or their father. The word ‘look’ emerges in the data in both languages in the father and in Arnie’s utterances first. In the examples 20 and 21, Fion integrates the word ‘look’ in both languages into similar contexts, which, however, occur in different parts of the transcript. These two utterances are similar to some previously discussed case of code-mixed utterances such as example 11, which occurs in the first transcript as Fion uses the word ‘spit’ in both English and German. However, in the context of example 11, Fion uses the word ‘spit’ in nearly successive utterances within the same conversation, whereas ‘look’ does not emerge in even remotely closely spoken utterances. In both cases, Fion produces ‘spit’ and the German translation ‘*spucken*’ as well as ‘look’ and the German ‘*guck*’ in mixed utterances and uses them interchangeably.

#### 4.2.2 Arnie’s mixed utterances

Arnie’s speech in the second sheet amounts to 325 utterances, of which 83 have been unclear in the audio recording. Of the utterances that can be analysed, 43,4% are English utterances, 57,4% are German utterances and 3,3% are mixed utterances. In the second transcript, two of Arnie’s mixed utterances contain the word ‘this’ as a demonstrative determiner in otherwise German sentences, and two mixed utterances contain an adverb or an interjection:

Example 23. ‘*aber* **this** *hier passt .*’ (tr. ‘but this here fits’)

Example 24. ‘**this is** *mit U.*’ (tr. ‘this is with U’)

Example 25. '*ja maybe* .' (tr. 'yes maybe')

Example 26. '*mann I can't find this N* .' (tr. 'man I can't find this N')

For context, it appears in the transcript that these utterances were produced during playtime solving an alphabet puzzle, and the letters mentioned in the utterances refer to letter-shaped puzzle pieces. The demonstrative pronoun 'this', which Arnie used in the first session as well, is produced in an otherwise German sentence in example 23. 'This' is also produced in example 24, which consists of small function words that sound more or less similar in German and English. A small detail, Arnie's pronunciation of the letter 'U' gets lost in the transcribed form of the data—if Arnie produces the German pronunciation of the letter, then a switch occurs through a bridge from English to German somewhere along the sentence, but it cannot really be determined whether the switch occurs in the place of 'is/is' or 'mit' in the utterance.

Example 25 is a mixed utterance combining two words ('*ja*' [tr. 'yes'] + 'maybe'), and which again, may be a switch influenced by phonological similarity, as the German '*ja*' and the English 'yeah'—which Arnie and other members of the family often use—sound much alike. In example 26, Arnie connects a German interjection, a tag, to a sentence produced in English.

The rest of Arnie's mixed utterances show code-switching in the places of nouns:

Example 27: '*oma has the same!*' (tr. 'grandma has the same')

Example 28: '**but we don't know what *dinkel* is**' (tr. 'but we don't know what spelt is')

Example 29: '**maybe** (inaudible) **it was like this at the *korbkiste***' (tr. 'maybe (inaudible) it was like this at the basket')

Example 30: '*der mann mit den hook!*' (tr. 'the man with the hook')

In example 27, the subject of the sentence is produced in German while the rest of the sentence Arnie speaks in English. Examples 28 and 29 follow the same pattern, only that in them German nouns act as objects in the sentences. Example 30, as opposed to the other three utterances, is an otherwise German utterance but contains an English noun.

In the context of example 28, Arnie has no choice but to use the German noun as his father himself uses the German word '*Dinkel*' (tr. spelt) in his speech, and Arnie does not know what the word means. In the case of example 27, the reason behind Arnie's code-switching could possibly be him making different

associations for a word and its translation in the other language: the German word for ‘granny’ might specifically refer to Arnie’s maternal grandmother, if he speaks German to her and thus would call her ‘*Oma*’ (tr. grandmother) in German.

### 4.3 The third transcript

The transcript of the third recording is the first one in which both parents actively engage in conversations during the session. The mother has indeed not been part of the conversations in the preceding two transcripts. The mother, from whom the children receive their German input, also addresses the father in English during this session. Therefore, this is also the first of the sessions in which Fion and Arnie receive dual input in English and German, which could assumably reflect on the children’s language behaviour (see e.g. Cantone, 2007), as this creates a somewhat bilingual setting for Fion and Arnie.

#### 4.3.1 Fion’s mixed utterances

In the third transcript, Fion’s (aged 3;00) German utterances amount to 77,8%, his English utterances to 15,6%, and his mixed utterances to 6,7%. This excludes 46 of Fion’s 136 utterances, which have been eliminated from the analysis due to not having been heard clearly by the transcribers. The portion of Fion’s mixed utterances has decreased in the third transcript, which consequently occurs as an increase in his unilingual utterances, specifically as an increase in his production of English speech. The increase of Fion’s English utterances at this point of the data is indeed quite remarkable. Fion’s mixed utterances, which do not amount to many in the third transcript, are also quite unvaried:

Example 31. ‘*jetzt will ich **this** hier/**here** machen .*’ (tr. ‘now want I this here do’; ‘I want to do this now’)

Example 32. ‘*mama jetzt will ich **this** hier/**here** machen .*’ (tr. ‘mum now want I this here do’)

Example 33. ‘*mama ich will **this** hier/**here** anmachen .*’ (tr. ‘mum I want this here turn on’)

Example 34. ‘[inaudible] *will ich **this** hier/**here** anmachen .*’ (tr. ‘[...] want I this here turn on’)

Example 35. ‘*ich will **this** hier/**here** anmachen .*’ (tr. ‘I want this here turn on’)

Example 36. ‘*will jetzt **this** .*’ (tr. ‘want now this’)



These utterances do not emerge completely consequently in the data, but Fion produces little unilingual utterances in between these mixed ones. The other family members engage in a separate conversation while Fion speaks these utterances. With the demonstrative pronoun ‘this’, Fion seems to be referring to the same thing in all of them. In the transcript, all six of Fion’s mixed utterances contain the word ‘this’ used as a demonstrative pronoun. In all except example 36, Fion combines the demonstrative pronoun with ‘here’ which cannot with certainty be classified into either language in Fion’s speech due to its similar pronunciation in German and English. Fion’s request is addressed to his mother, and the mixed utterances mostly consist of German output.

#### 4.3.2 Arnie’s mixed utterances

Arnie produces mostly German (74,5%) in the third transcript, with the portion of his English utterances adding up to 18,1%. He only produces two mixed utterances, which amount to 1,1% of the utterances that can be considered in the analysis. 49 utterances have been marked as unclear by the transcribers and have thus been discarded from the analysis. Arnie’s two mixed utterances look like the following:

Example 37. ‘*kannst du das nochmal* [inaudible] **with** [inaudible] *stift* ?’ (tr. ‘can you [...] it again [...] with [...] pen?’)

Example 38. ‘*ja aber **this** mit **this** und **this** und **this*** [inaudible] .’ (tr. ‘yes but this with this and this [...]’)

Unfortunately, neither of Arnie’s mixed utterances are completely audible in the recording. In the context of these two utterances, Arnie and his mother are calculating the total of the prices of their purchases. Deducing from the transcript, Arnie and his mother are having a separate conversation, while the father is apparently singing and playing with Fion. Example 37 is marked as two utterances in the transcript due to interruption by Fion and their father’s separate conversation in the recording. The utterance consists of mostly German, containing only one (audible) function word in English, which is relatively similar to the German ‘*mit*’.

In example 38, Arnie asks his mother to calculate prices together. Arnie thus refers to the prices of different products with the demonstrative pronoun that he repeats four times in the utterance. Both mixed utterances contain the preposition ‘with’ – one utterance in English and the other in German. This shows that Arnie uses the preposition in both languages interchangeably in the mixed utterances. The use of the

demonstrative pronoun ‘this’ in otherwise German sentences prevails as in the first and second sessions. However, only one of the mixed utterances contains the demonstrative pronoun in English. In example 37, Arnie produces the demonstrative pronoun in German.

Arnie’s amount of code-mixing remains low, whereas the difference between the portions of Arnie’s English and German utterances respectively has grown significantly in comparison to the two first sessions. The increase in the portion of German utterances may be explained by Arnie’s mother taking part in the session and Arnie interacting with her for a large part of the session.

#### 4.4 The fourth transcript

In the fourth session, both the mother and the father are present and actively engaging in the conversation. The parents mostly speak in their native languages but do occasionally switch to the second language of the home, for example, when speaking to each other. At times they even mix German and English in their speech. Bilingual conversations occur in which all four family members take part using both German and English, and in which Fion and Arnie thus receive a dual language input, creating a very much bilingual setting for them.

##### 4.4.1 Fion’s mixed utterances

Fion’s (aged 3;1) utterances in the transcript of the fourth session’s recording consist of 78,3% German, 15,1% English, and 6,6% mixed utterances. The audible and thus analysable utterances amount to 350 in the transcript. The portions of both German and English unilingual utterances as well as mixed utterances are nearly identical to the previous transcript, therefore no significant change has occurred in a month in that aspect.

Mixed utterances which include ‘this’ as a demonstrative pronoun or as a demonstrative determiner in otherwise German utterances persist in the fourth transcript. They appear in sentences such as in the following utterances:

Example 39. *‘kannst du mal **this** wilde kerle suchen ?’* (tr. ‘can you look for this wild fellows?’)

Example 40. *‘jetzt is **this** verloren der ball/**ball** .’* (tr. ‘now this is lost the ball’)

Example 41. *‘wer kann **this** (inaudible) rausmachen ?’* (tr. ‘who can take this (inaudible) out’)

'This' functions as a demonstrative determiner in the utterance of example 39 and classifies as a demonstrative pronoun in examples 40 and 41. In example 40, Fion complements his sentence by elaborating on what he refers to with the demonstrative pronoun, stating the noun at the end of the sentence for clarity. These three mixed utterances again demonstrate the versatility of Fion's use of the demonstrative 'this'.

The following mixed utterance integrates a combination of a preposition and an article in a German sentence:

Example 42. '*wer springt in/in the wasser ?*' (tr. 'who jumps in the water?')

The mixed utterance contains a combination of two English prepositions within an otherwise German sentence. The preposition 'in' is the same in the German language. The grammatical gender of '*Wasser*' (tr. 'water') is neuter, meaning that the correct German article here would be '*das*' (usually combined with the article '*in*' by abbreviating it to '*ins*'). Interestingly, Fion's often uses 'this' in the place of the demonstrative pronouns in otherwise German utterances, but here '*das*' would act as an article. The code-mixing in the example 42 is similar to the utterances that Fion produces in examples 18–20: "*und on the farm/farm had some cowboys*", "*And on the farm/Farm hat ne Pistole*". These utterances become mixed through the integration of small function words from the other language.

Other mixed utterances produced by Fion in the session:

Example 43. '*please papa ich will bitte noch ein brot .*' (tr. 'please daddy I want please another [slice of] bread')

Example 44. '*please papa ich will noch ein brot .*' (tr. 'please daddy I want another [slice of] bread')

In examples 43 and 44, Fion addresses his father asking him for one more bread. Fion produces the request in German, with the exception that the adverb 'please' emerges in English in the beginning of both of utterances. The first time Fion produces the request, his utterance contains the adverb 'please' twice, as he produces it in both English and German within one sentence. Similar to English, the placement of 'please' in a sentence is flexible in the German language. Therefore, both placements of the adverb are syntactically correct. Fion's father asks him to repeat the question, which Fion does, but this time he leaves out the adverb in German, thus producing another mixed utterance. The father then

prompts Fion to say the whole sentence in English. Preceding Fion's request for bread, the following conversation takes place at the table:

Example 45.

Fion: *ich will was trinken* . (tr. 'I want something to drink')

Father: *what's wrong Fion ?*

Fion: *i<ich> will was trinken* . (tr. 'I want something to drink')

Father: *d<do> you want juice ?*

Father: *d<do> you want juice or milk, which ?*

Fion: *milk* .

Fion: *aber mit n<einem> blauen glass* . (tr. 'but with a blue glass')

Father: *a blue glass ? or a long glass ?*

Fion: *an blue* .

Although all utterances produced in example 45 are unilingual and code-switching only occurs at sentence boundary, I would argue that Fion's utterance "an blue" is worth noting in the light of his code-mixing behaviour. Fion uses the (incorrect) indefinite English article 'an' as a determiner for the 'blue glass'. In English, Fion's way of expressing which one he wants would be considered grammatically atypical due to it lacking a noun. In German, however, 'ein Blaues' would be a natural response to the question presented. By adding the ending *-es* to the German adjective 'blau' (tr. 'blue'), the adjective becomes a noun when used on its own, as the inflection indicates reference to a neuter noun. The inflection also expresses nominative case and singular form. A noun is thus not necessary in the context of this phrase in German, and therefore Fion's utterance would be grammatically logical in German, and thus appears to be affected by cross-linguistic influence. In addition to that, the pronunciation of the indefinite article 'an' is relatively close to that of the German indefinite article 'ein' (/an/), which the neuter noun 'Glass' would assume. Fion's English utterance 'an blue' thus exhibits German interference.

Some of Fion's mixed utterances in the fourth session emerge in the form of telegraphic sentences:

Example 46. *'balcony draussen !'* (tr. 'balcony outside')

Example 47. *'daddy neben mir .'* (tr. 'daddy next to me')

This kind of concise speech that lacks auxiliary verbs and other function words, thus causing sentences to be incomplete and grammatically incorrect, is typical for children in the (early) multiword stage of language acquisition, which usually occurs around the age of 18 months (Brown, 1973). Fion occasionally produces telegraphic utterances in the sessions.

The following code-mixed utterances are spoken by Fion while reading a bedtime story together:

Example 48. '*some sheep kann nicht sleep .*' (tr. 'some sheep cannot sleep')

Example 49. '*sleep kann nicht sleepen .*' (tr. 'sleep cannot sleep')

In the example 48, in which intrasentential mixing occurs, the modal verb 'cannot' is produced in German, and the subject 'sleep'—which may or may not have been supposed to come out as "sheep", or may just be repetition of his previously produced sentence—is produced in English. In the utterance, In example 49, Fion code-mixes on morpheme level. Here Fion appends a German suffix to the English verb 'to sleep', which translates to '*schlafen*' in German. The verb stem of '*schlafen*' is *schlaf-*, and the suffix *-en* expresses infinitive form. In English, the base form of the infinitive form of 'to sleep' cannot be dissected any further and requires no conjugation in its present tense. The suffix *-en* is thus an additional affix in 'sleepen', as it does not replace an English inflection in the utterance.

Example 50. '*ich* (inaudible) *pop .*' (tr. 'I [inaudible] pop')

Example 51. '*mum is/is da is/is ein Helm ?*' (tr. 'mum is there is a helmet?')

Fion's remaining mixed utterances contain intrasentential mixing in the place of both function words and contents words. The meaning of 'pop' is not revealed in the context in which example 50 emerges. However, the word emerges numerous times in the transcript during storytime, and (deducing from the conversation) seems to read in the picture-book which the mother is reading to Arnie and Fion in English. Example 51 is a question directed at the mother, who Fion addresses in English ('mum'), but other than that forms his sentence in German. Based on the transcripts, it is exceptional for Fion to address his mother in English, although he addresses his father in both languages in the data. His father uses the German word 'mama' in this session when talking to the children.

#### 4.4.2 Arnie's mixed utterances

In the fourth recorded session, Arnie's 347 analysable utterances consist of 52,4% English utterances, 46,1% German utterances, and 1,4% mixed utterances. 110 unclear utterances are discarded from the analysis. Two of the mixed utterances consist of otherwise English sentences in both of which a noun is produced in German:

Example 52. *'it's the kuehlschrank .'* (tr. 'it's the fridge')

Example 53. '(inaudible) *now* (inaudible) *can't eat my streusel .'* (tr. '[...] now [...] can't eat my sprinkles')

Both utterances integrate a German noun in an otherwise English sentence. In example 52, Arnie refers to a humming sound by 'it': The family members are trying to "hear the sea" by holding a seashell to their ears. Arnie's utterances preceding the mixed utterance in example 52 are unilingual English utterances, and it appears in the context of the data that he is mainly addressing his father. The mother and Fion are, however, also present and engage in the conversation. The following excerpt shows the mixed utterance in context and exhibits the family members' language behaviour in the bilingual discussion:

Example 54.

Father: *listen . the sea .*

Arnie: *no !*

Father: *what is it ? Is* [inaudible] ?

Arnie: *it isn't de* <the;der> *sea*

Father: *what is it ?*

Mother: *the tree .*

Arnie: *no*

Father: *will I tell you what it is ?*

Fion: *kann ich mal n* <ein> *bisschen ?* (tr. 'can I [listen?] a little')

Arnie: *it's the kuehlschrank .*

Father: *the fridge .*

Example 54 shows an excerpt of the conversation in which both parents and both children partake in the discussion and display versatile language use. The dialogue initially occurs between the father and Arnie, who habitually speaks English when addressing his father. The German-speaking mother joins the conversation by commenting a suggestion in English. Fion asks to have a turn to listen to the seashell, and even though their mother (who predominantly speaks German to the children) comments in English, Fion does not reflect her code-switching to English and expresses his request in German.

Arnie then produces a mixed utterance (example 52), which contains a German noun (*Kuehlschrank* [tr. 'fridge']). The rest of the sentence (pronoun, verb, and article) Arnie produces in English. In response, his father complements him by repeating the noun back to him in English.

Example 55. **'this is/is am dezember .'** (tr. 'this is in december')

In example 55, Arnie produces a mixed utterance that contains 'this' as a demonstrative pronoun, which emerges with the inflected verb 'is'. The inflection 'is' could again be interpreted as either English or German, as it is a commonly used abbreviation of '*ist*'. The auxiliary verb acting as a bridge facilitates the switch to German, in which the prepositional phrase is produced.

Example 56. **'it's meine** (inaudible) .' (tr. 'it's mine')

Example 57. **'den then'** (tr. 'that [one] then')

Both examples 56 and 57 are two-word utterances in which one word is produced in English and the other in German. Both mixed utterances contain a word which is phonologically very similar in the two languages: the possessive pronouns '*meine*' (tr. 'mine'), as well as the conjunction 'then' and its German translation '*dann*'. In example 57, Arnie addresses his mother and begins his sentence in German, thus producing the demonstrative pronoun in German and correctly inflecting it into accusative case according to German grammar rules.

#### 4.5 The fifth transcript

The fifth transcript is based on a recording that has been captured just before bedtime. The father, Fion, and Arnie are present during the session. The father speaks solely English in this session; thus the children receive no German input from a parent in the fifth session, as is the case in the first and second sessions.

#### 4.5.1 Fion's mixed utterances

Fion's (aged 3;2) analysable speech consists of 57,1% German utterances, 35,7% English, and 7,1% mixed utterances. The fifth transcript contains 150 utterances from Fion, of which unfortunately only 56 were audible. However, a significant percentage growth is thus detectable in the number of Fion's English utterances in comparison to the earlier recorded sessions. Fion produces only four mixed utterances in the fifth session, which will be discussed (and some shown in context) in this section.

Example 58.

Fion: *und das hier ?* (tr. 'and this here?')

Father: *everything* .

Father: *everything that was in the bin you put back in the bin* .

Fion: *aber nicht der stern* . (tr. 'but not the star')

Father: *not what ?*

Fion: *der stern* . (tr. 'the star')

Father: *put it in now if you can* .

Father: *but put in the big ones first* .

Fion: *this noch nicht* . (tr. 'this not yet')

Example 59.

Father: *now one of you get a book and we look at it* .

Arnie: *au !* (tr. 'ouch!')

Arnie: *mann Fion !* (tr. 'man Fion!')

Father: *yeah is an accident* (inaudible) .

Arnie: *no he extra did it !*

Father: *he didn't do it on purpose come on* .

Arnie: *yes he did* .

Fion: *nein not !* (tr. 'no not!')

Father: *Fion get a book and we look at it* .

Father: *don't throw that* .



Example 58 presents a conversation between the father and Fion, who continues responding to his father in German despite the father giving Fion the order to tidy up in English. Fion's mixed utterance in example 58 is the only mixed utterance that comprises the demonstrative pronoun 'this', which emerges in combination with other function words produced in German in the utterance. The interaction between the father and Fion shown in example 58 corresponds to the language behaviour that Fion demonstrates in the first session, where his English proficiency proved to be very much receptive. In another mixed utterance presented in example 59, Fion combines two adverbs: 'nein' (tr. 'no') and 'not', the latter word emerging in German in example 58.

The third mixed utterance that Fion produces in the fifth transcript is his intraword code-mixing of the word 'saw shark'. Prior to the mixed utterance, it becomes evident that he knows the word in German ('*Sägehai*'), as he points one out from (presumably) a picture-book. His father says it back to him in English, and Fion repeats after him ("yeah saw shark"). Fion only produces the mixed utterance after having produced the word in both languages unilingually first.

Example 60.

Fion: *look at that* .

Father: *they're so ugly* .

Father: *some sharks are very ugly aren't they ?*

Fion: *saw hai saw* . (tr. 'saw shark saw')

Father: *what ?*

Fion: *saw* .

Father: *a saw shark is it ?*

Fion: (inaudible)

Father: *that's right* .

The formation of the fourth mixed utterance presented below is similar to that of '*saw hai*':

Example 61.

Arnie: *das buch von spongebob* sponkop .

Fion: (inaudible) *sponge kopf* .

Fion: *spongebob* (inaudible) *kopf* .

Fion: (inaudible) *schwammkopf* .

The animated television series ‘Spongebob Squarepants’ translates into ‘Spongebob Schwammkopf’ (tr. Spongebob Spongehead) in the dubbed German version. ‘Sponge’ does not mean anything in German, but acts only as part of the character’s given name, whereas the rest of the character’s name has been changed. In the context of this excerpt from the session, Arnie and Fion appear to be choosing a picture-book to look at before bed, and point out a Spongebob Squarepants book. Fion produces an utterance that contains intraword code-mixing, in that he produces the German dubbed name ‘Schwammkopf’ (tr. ‘sponge head’) partly in English (‘Sponge *Kopf*’).

#### 4.5.2 Arnie’s mixed utterances

Arnie’s analysable utterances amount to 43,9% German utterances, 54,4% English utterances, and 1,8% mixed utterances in the fifth transcript—that is, Arnie produces only one mixed utterance in the transcript, which in fact emerges in the same dialogue of example 61.

Example 62. ‘*das buch von **spongebob** spongekop*’ (tr. ‘the book of Spongebob Spongekop’)

Arnie produces the same kind of intraword code-mixing in the utterance as Fion does in the two previously discussed utterances in the section above. Both Arnie and Fion at times omit the ‘f’ in ‘*Kopf*’ (tr. ‘head’). This may be a misspoken pronunciation of the word, but it could also be dialect, as in some German dialects the word is pronounced without the ‘f’. Arnie produces the mixed utterance first, and Fion therefore may only produce the similar utterance because he repeats after his brother.

One of Arnie’s unilingual utterances stands out due to its crosslinguistic interference. The utterance in question has already emerged in a dialogue in the above section:

Example 63.

Arnie: *no he extra did it !*

Father: *he didn’t do it on purpose come on .*

The word ‘extra’ exists in the German language as well and carries various meanings—one of its most common meanings being that it acts as a colloquial expression for ‘deliberately’. In context, it becomes quite clear that that is what Arnie intends to say, as Fion does something that hurts him and Arnie

expresses his exasperation. Their father is shown to correct Arnie by integrating ‘on purpose’ into his response.

Moreover, the word order of the sentence suggests German interference. In spoken German, Arnie’s utterance would naturally be expressed in past perfect instead of past simple, in which case the verb is placed at the end of a sentence and the adverb before it in German in a sentence such as Arnie’s (e.g. ‘*er hat das extra gemacht*’, literal translation ‘he has that deliberately done’). Arnie expresses his utterance in past simple, which is the normal way of speaking in past tense in English but positions the adverb in front of the verb as would be done in German past perfect sentences, which again is the normal way to form sentences in German spoken language. Since Arnie means to emphasise the word ‘deliberate’ in his sentence, it would naturally be placed at the end of the sentence in English.

#### **4.6 Development and code-mixing patterns**

In this second part of the analysis, I will discuss the overview of Fion and Arnie’s code-mixing respectively. These sections aim to distinguish the patterns that emerge in the mixed utterances over the course of the six months during which the data was collected. Moreover, it generally analyses the development of Fion and Arnie’s code-mixing and language behaviour: This includes some statistical demonstration of the occurrence of patterns, as well as discussion of the impact that language input has on Fion and Arnie’s language behaviour based on the setting of the sessions.

##### **4.6.1 Fion’s code-mixing behaviour**

The use of the demonstrative pronoun and demonstrative determiner ‘this’ in Fion’s mixed utterances is the most prevalent aspect recurring in his code-mixing patterns. Fion’s use of the demonstrative ‘this’ appears versatile: in otherwise (at least mainly) German utterances, the English ‘this’ is produced in the place of German demonstrative pronouns and demonstrative determiners. In order to give a clear account of how Fion uses the demonstrative ‘this’, some German grammar needs to be explained. There are three grammatical genders in the German language, which means that the definite and indefinite articles of all three grammatical genders amount to six words (*der, die, das; ein, eine, ein*). Further inflections exist for the articles in accusative (*den, die, das*) and in dative (*dem, der, dem*) forms. Simply put, the way one would use the definite article ‘the’ in German is determined by the noun’s gender (masculine, feminine, neuter), number (singular or plural) and the noun’s case (nominative, accusative, dative, or genitive).

Thus, three definite articles exist in the German language, and definite articles are inflected into many different forms, depending on the noun's case. The genitive case is often avoided in spoken German and is not relevant to the speech analysed in this paper.

The use of the demonstrative pronouns 'this' and 'that' (singular) as well as 'these' and 'those' (plural) depend on the speaker's distance from the object. The singular forms of demonstrative pronouns translate to '*dieser/diese/dieses*' (nominative form), depending on the grammatical gender of the noun which the demonstrative refers to. In spoken German, these are often used not only for both objects that are near (sometimes by adding the words '*hier*' [tr. 'here']), but also for objects that are farther away in combination with the word '*da/dort*' (tr. 'there')—for example, '*dieser hier/da*' (tr. 'this here/there'). Definite articles (*der, die, das*) also function as demonstrative determiners in the German language, also often combined with 'here' or 'there'. The plural forms 'these' and 'those' translate to '*die/diese*' and '*die/diese da*', as the same form is used for plural as is for feminine nouns. That is to say, in spoken German only the proximal demonstratives are used regardless of the distance to the object, as the official distal demonstratives ('*jene-*') sound overtly formal. Proximal demonstrative pronouns are formed by combining the correct demonstrative pronoun with 'there' (and sometimes 'here') to clarify what is meant.

A large portion of Fion's mixed utterances only become mixed through his production of the English word 'this' in otherwise German utterances: He produces 'this' in his mixed utterances in all of the sessions. In the first transcript, Fion produces the demonstrative 'this' 46 times in mixed utterances, of which four utterances contain the words 'this *da*' (tr. 'this there') combined. In the third transcript, all seven of Fion's mixed utterances contain the demonstrative pronoun 'this', and in six of them 'this' is combined with '*hier*/here'. In the fifth transcript, Fion produces the demonstrative 'this' only once in a mixed utterance and produces the English distal demonstrative pronoun 'that' for the first time in the data at the age of 3;02: The distal demonstrative pronoun appears in Fion's unilingual English utterances (e.g. 'Look at that!'). That is to say, Fion uses the English proximal demonstrative for both nearby as well as farther located objects, which reflects the way proximal demonstrative pronouns are used in spoken German. To sum up Fion's productions of 'this' in the transcripts, it emerges on its own in all five transcripts. 'This *da*' (tr. this there) is produced in the first transcript, and 'this *hier*/here' emerges in the third. 'This *da*' and 'this *hier*/here' do not occur in other transcripts, and Fion never combines the English 'this' and 'there' in any of the sessions.

Plural forms of demonstrative pronouns and demonstrative determiners do not occur in Fion's utterances. However, Fion uses 'this' as a demonstrative determiner to refer to plurals on some occasions, such as in example 39 'this *wilde Kerle*' (tr. 'these wild guys') in the fourth transcript. He also uses 'this' as a demonstrative determiner for the German word for trousers ('*die Hose*') in the first transcript. Unlike in English, the word 'trousers' is not expressed in plural form in German when referring to only one pair. However, it is a feminine noun, which means that it assumes the same article and thus the same inflection of a demonstrative determiner and pronoun as nouns in plural form do. In German, the plurality of the word is indicated in the inflection of the noun: '*diese Hose*' (tr. 'these trousers', singular), '*diese Hosen*' (tr. 'these trousers', plural). The definite article and demonstrative determiner for the singular and plural forms is the same, but the singular form can be distinguished in the inflection of the noun, unlike in English (unless referring to them as a pair of trousers). Fion uses the demonstrative determiner in singular form, which would work in German.

'This' predominantly occurs as a demonstrative pronoun in Fion's mixed utterances, although in some utterances where the speech produced after the determiner is unclear, the function of 'this' cannot be determined. However, occurrences of 'this' as a demonstrative determiner in Fion's mixed utterances are scattered and only appear in a maximum of 15 utterances. Since the data is in the form of transcripts and not audiovisual material, it cannot always be distinguished what (object) Fion is referring to with 'this', nor how near or far it is located. This means that it cannot always be determined whether it would be correct to use a proximal or distal demonstrative. As mentioned before, definite articles also act as demonstrative pronouns and determiners in spoken German, as for example, '*der* (instead of '*dieser*') *Hund da*' (tr. 'the [instead of 'that'] dog there'). Although Fion also uses German definite and indefinite articles correctly together with German nouns in his utterances, he does not use those same definite articles with the function I just demonstrated, but resorts to the demonstrative 'this' when pointing to a particular noun or when replacing the noun with a demonstrative pronoun.

The amount of Fion's code-mixing throughout the transcripts does not fluctuate dramatically: His mixed utterances amount to 10,5% (44 mixed utterances, first transcript) by the most and to 6,6% (23 mixed utterances, fourth transcript) by the lowest. The percentage rates are in relation to the total number of utterances in a transcript, as the number of those varies, meaning that Fion has produced only six mixed utterances in the third session and four mixed utterances in the fifth session, but in relation to the total number of Fion's utterances in each transcript, that is more than the 23 mixed utterances in the fourth

transcript. Although there is some fluctuation in the amount of code-mixing throughout the sessions, it is not exactly striking, and it can nonetheless be noted that Fion's code-mixing gradually decreases over the course of those six months. A decrease in the production of mixed utterances consequently results in an increase of unilingual speech in at least one of the two languages. Overall, an increase in Fion's production of English speech can patently be detected throughout the sessions. The difference between the number of English and German utterances is by its highest in the first transcript (Fion aged 2;10), with very little production of English utterances (1,4%) and mostly German unilingual speech (87,2%). In the session recorded a month later, Fion already demonstrates a significant increase in English utterances (15,6%) and consequently a decrease in German utterances (75,1%) and mixed utterances. In the second, third, and fourth transcripts, Fion's (aged 2;11–3;01) production of English utterances remains around 8,9%–15,6% and his German utterances around 75,1–78,3% of the speech he produces in the sessions. The difference between English and German utterances is remarkably smaller in the last transcript, in which English utterances have gone up to 35,7% and German utterances down to 57,1%.

The impact of the language input that Fion receives in the sessions is not directly detectable in Fion's production of speech. What is notable is that in the first transcript (Fion aged 2;10), Fion's production of English speech is remarkably low despite it containing the highest number of utterances and Fion's English input being plentiful, as his German-speaking mother is absent and his father speaks only English to the children and continuously tries to motivate Fion to speak English, too. Arnie habitually speaks German to Fion but uses English with their father in the session. However, Fion's production of English output increases significantly by the age of 2;11, then stays quite consistently around the same amount before another peak in the last session by the age of 3;02. Fion's mother actively engages only in the third and fourth sessions (Fion aged 3;00–3;01), which is around the time when there is no dramatic change in the amount of Fion's German and English output in the transcripts. Dual input in the sessions does not seem to directly affect Fion's production of mixed utterances, as dual input is ample in the settings of the third and fourth sessions, but Fion produces the least code-mixed utterances in just those sessions. Fion's production of unilingual English speech is at its highest in the fifth session after a significant increase from the session from a month before. As opposed to the fourth session, Fion receives no German input from a parent in the fifth session. Therefore, it is likely that Fion's increased English proficiency shows so clearly in the fifth session because the setting is not as bilingual as in the previous two sessions. That is to say, dual input does not show as an increase in the production of mixed utterances, but naturally shows in the amount of unilingual speech in both languages. This may explain the

remarkable difference in the production of unilingual English speech in the fourth (15,1%) and fifth (35,7%) sessions. In the fifth session, Fion already produces a lot more speech in English than he does in the beginning of the data set captured five months earlier, where his English proficiency proves to be greatly receptive. Fion thus demonstrates clear development on the course of six months, as he gradually begins to produce more speech in English.

Some mixed utterances that Fion produces are interesting in the sense that they contain vocabulary that Fion produces in both languages in the transcripts. For instance, example 11 ‘*ich spit Fiony*’ (tr. ‘I spit [at] Fiony’) produced in the first session includes a verb in English which Fion has, however, first produced in a unilingual German sentence (‘*ich spucke*’ [tr. ‘I spit’]) in the same context. The mixed utterance is in response to Fion’s father telling Fion not to spit (in English). Similar situations occur a few times in the data. In the second transcript, Fion produces the mixed utterance shown in example 21 (‘look *passt nicht*’ [tr. ‘look, doesn’t fit’]), but later produces a similar but unilingual sentence in German, calling for attention with the German word ‘*guck*’ (tr. ‘look’). The combinations of English articles with German nouns (a *ritter* [tr. ‘a knight’], a *rakete* [tr. ‘a rocket’]) in the second session are an exception that Fion does not produce elsewhere in the data, but these are also another case of mixed utterances which Fion has first produced unilingually using the correct German articles during the same session. The fourth and fifth transcripts contain instances of intra-word code-mixing as well. Fion produces an utterance containing the English verb ‘to sleep’ and conjugates it according to German grammar: “(...) *kann nicht sleepen*” (tr. ‘cannot sleep’). Again, Fion has produced the verb correctly in English and in German respectively prior to producing the mixed utterance (where mixing occurs at morpheme boundary) in the fourth session. In the fifth session, Fion produces an intra-word language mix by combining the English and German words for ‘sawshark’ (‘*Sägehai*’) and thus producing ‘*sawhai*’. Fion produces the word unilingually in both languages before producing the mixed utterance. Moreover, he produces a similar mixed utterance in the same session, when referring to a Spongebob Squarepants book. In the German dubbed version, the character’s first name has been preserved, but ‘Squarepants’ has been translated to ‘*Schwammkopf*’ (tr. Spongehead’). Fion refers to the character as ‘Sponge *Kopf*’, producing the first part of the name ‘*Schwammkopf*’ in English.

One utterance in the fourth transcript differs from the above discussed utterances in that it contains intra-sentential code-mixing as Fion produces the word ‘please’ is in both English and German within one sentence. These instances where utterances become mixed through vocabulary that Fion has produced in

the other language first, show that the words produced are in fact part of both Fion's English as well as German active vocabulary. Thus, in cases of mixed utterances such as the previously discussed examples, which become mixed through words that Fion has produced in the other language first, it can be concluded that the code-mixing is not due to a lack of vocabulary, as the data show that words which would be required to produce the utterances unilingually are part of Fion's active vocabulary. This includes some mixing which occurs at morpheme boundary as well as demonstrated with examples such as "a *Ritter*" (tr. a knight) and "sawhai" (tr. sawshark). This indicates that code-mixing in utterances such as these occurs due to Fion not being able to retrieve the intended word quickly in the language the utterance is mainly produced in. Fion thus optimises his language use by drawing on the other language to complete his utterances, which results in code-mixing. It is likely that some of the mixed utterances discussed above are mix-ups occurring due to lower levels of attention and the proximity of some of the vocabulary and phonology—that is, in the cases of mixing in the place, for example, prepositions, which in many of Fion's utterances seem to cause a bridge-effect between the two languages. For instance, the mixed utterances which Fion produces in examples 18–20 singing *Old MacDonald had a farm* (second session; aged 2;11) cannot be due to a mix-up of two versions of the song, as the German version does not contain a line similar to "And on his farm he had x", which Fion however produces partly in German. Here his language mixing therefore may occur due to the proximity of the vocabulary (i.e. 'and/und', 'the/der', 'had/hat') which he switches out as he repeats the line multiple times.

#### **4.6.2 Arnie's code-mixing behaviour**

Overall, Arnie produces little mixed utterances in the data: The most code-mixing he produces in one transcript amounts to 3,3% of his utterances in the second session. Otherwise, the percentage rate of Arnie's code-mixing stays consistently between 1,1%–1,8% in the rest of the recorded sessions. In the five, monthly-recorded sessions, Arnie produces only 19 mixed utterances altogether. Moreover, Arnie's way of forming mixed utterances appears quite consistent.

The use of the English demonstrative 'this' in German speech is not only limited to Fion's utterances in the data but also emerges in the mixed utterances of his older brother Arnie, although much less. In turn, Arnie produces plenty of German demonstratives and articles which he inflects according to grammatical gender and cases of nouns. The German 'das', the definite article and a demonstrative pronoun for neuter nouns, emerges much more frequently in Arnie's German utterances than the English 'this' does.



Therefore, only a low amount of Arnie's utterances become mixed through the demonstrative 'this'. The use of the English demonstrative 'this' in Arnie's German speech is scattered and irregular and amounts to merely five of Arnie's mixed utterances in the data. Like Fion, Arnie uses the demonstrative 'this' as both a pronoun and determiner in his mixed utterances: 'This' emerges as a demonstrative pronoun in four of the mixed utterances, and as a demonstrative determiner, in one of them. In the context of the latter (example 12), Arnie first produces a German indefinite article and noun combination ('*ein Geschenk*', tr. 'a gift'), and then refers to it with a German demonstrative pronoun '*das hier*' (tr. 'this here'). He then repeats himself producing the English demonstrative determiner 'this' instead, which results in a mixed utterance. In one utterance (example 23) that contains the English 'this' as a demonstrative pronoun in an otherwise German sentence, Arnie produces it together with the German word '*hier*' (tr. 'here'), using the common way of forming a proximal demonstrative pronoun in spoken German. Fion also does this in his speech.

Nine of Arnie's mixed utterances, that is, nearly half of them, become mixed through a noun phrase that is produced in a different language than the rest of the utterance and acts as either the subject or the object in his sentences, such as in examples 27 and 52: '*Oma* (tr. 'granny') has the same' and 'it's the *Kuehlschrank* (tr. fridge)'. Arnie thus mostly produces mixed utterances through a word class that is syntactically relatively unrestricted, and which is typically subject to mixing in adult code-switching (Cantone, 2007). One of Arnie's mixed utterances (example 26) counts as tag-switching ('*Mann*, I can't find this N'), which is also syntactically free in the sense that they are easily connected to unilingual sentences and that the absence of the tag would not have a significant impact on the semantics of the clause or sentence, meaning that the sentence can stand without the tag (Romaine, 1995). Tags are a common aspect in adult code-switching.

The rest of Arnie's four mixed utterances are scarce and not as structured. Three of them are short, two-word utterances which are all strongly characterised by phonological similarity in Arnie's two mother tongues (examples 25, 56, 57; '*ja*'/'yeah'; '*meine*'/'mine'; '*dann*'/'then'). Furthermore, they all consist of (mostly function) words which Arnie produces in both English and German in the data, thus demonstrating that they are part of his active vocabulary in both languages. Due to the nature of these mixed utterances (i.e. the phonological similarity of the words in English and German) and the limited occurrences of such utterances in the data, it is most likely that such utterances happen as a slip of the

tongue, so to say, caused by the combination of phonological proximity between the languages and lower levels of attention in the child.

With a low amount of production of mixed utterances in the sessions overall, the amount of Arnie's code-mixing does not dramatically fluctuate. Whereas mixed utterances remain low in quantity, Arnie's portions of English and German speech differ from session to session. In Arnie's case (age, stage of language acquisition, and same environment throughout the six months), fluctuation in the production of unilingual utterances due to significantly developing language proficiency in either language is not expected. Arnie's language use in the sessions is determined by who he interacts with. In the first two sessions, Arnie's produces German and English unilingual speech at a roughly 60/40 ratio, and in the fourth and fifth sessions, the ratio evens out a little more. Only in the third session a substantial difference in the amount of unilingual speech produced in the two languages is detected. Arnie's amount of English and German speech in the sessions is clearly explicable by the conversations that he is partaking in. The data show that, while the family's language behaviour is quite mixed, Arnie habitually speaks English to his English-speaking father and German to his German-speaking mother as well as to his little brother Fion, whose production of English speech is low, especially earlier on in the data. Since the father is generally a more active interlocutor in the sessions, the setting is in most sessions very bilingual for Arnie, as he thus switches back and forth from English to German depending on whether he addresses his father or Fion in the sessions. These switches occur very fluently between speaker turns as Arnie participates in the conversations bilingually, while Fion speaks mostly German and their father English. In the third session, Arnie produces little speech in English, as for most of the session, Arnie does calculations with his mother, with whom he speaks German. Arnie thus demonstrates strong pragmatic competence as well as the ability to differentiate between the languages in bilingual settings in the sessions, as he is capable of switching between English and German within one speech event while expressing himself quite eloquently.

All in all, Arnie demonstrates high language proficiency and pragmatic competence. His mixed utterances are scarce, and half of them become mixed through a noun/noun phrase or a tag (in example 26), which both are typical ways of code-switching in adults (also coordinate bilinguals) and children who have reached full proficiency in their co-mother tongues. Roughly one fourth of Arnie's utterances become mixed through the demonstrative 'this', which occurs much more often in Fion's speech than it does in Arnie's, who masters German articles and demonstratives and their inflections. From Fion and

Arnie's similar use of the demonstrative, it appears that it may be a family-specific expression, which both the siblings produce and hear each other use. Three mixed utterances most likely occur only due to phonological similarity, which may also, at least to some extent, be the reason behind the use of 'this'. The demonstrative 'this' is often combined with the inflected verb 'is', which can be considered both English or German and which acts as a bridge in many of the mixed utterances, thus making production of code-mixed utterance containing the demonstrative especially easy. An overview of Arnie's mixed utterances shows that most of them can be described as quite "natural". Their low number despite the (from Arnie's perspective) bilingual settings in the sessions combined with Arnie's relatively equal production of unilingual speech in both languages, shows that Arnie fluently switches back and forth between German and English at the boundaries of speaker turns.

## 5. Discussion

The children's code-mixing behaviour and language development occurred in the data as described in the research presented in the theoretical framework of this paper. The results of the analysis showcased the progress of Fion, a bilingual toddler's (aged 2;10–3;02) development of language proficiency, and as Arnie's (aged 6-7) utterances could be examined from a comparative point of view in the light of his younger brother's utterances, the analysis uncovered some interesting similarities in the children's code-mixing. Careful examination of the transcripts thus brought out patterns in the code-mixing behaviour of Fion and Arnie which could not be detected without rigorous dissection of the utterances.

Most interestingly, the prevalent use of the demonstrative 'this' emerging in both Fion and Arnie's mixed utterances was an unexpected finding which can be connected to many possible factors that provoke code-mixing. The manifold functions of the demonstrative 'this' in otherwise partly—or perhaps completely—German utterances seems to be a way of optimising language use especially for Fion, as he thus avoids using German equivalents for 'this', which amount to a wide range of words depending on the context. The use of the English demonstrative 'this' is more straightforward, and it should be noted that children at Fion's stage of language development generally do not master grammar to the extent of always inflecting articles correctly (in German). Fion extends the function of the demonstrative 'this' in that he combines it with the words '*hier*/here' and '*da*' (tr. 'there') to specify what he means (proximal or distal demonstrative), and uses 'this' in contexts where in German, definite articles with the function of demonstrative pronouns/determiners would be used. As the demonstrative 'this' sounds quite similar to the German neuter article, phonological proximity may play a role in the integration of the English 'this' in German utterances. The fact that the demonstrative pronoun 'this' is often combined with the verb 'to be', which in its present tense third form singular assumes the same form in English and in colloquial German (*is/is*) facilitates the integration of the demonstrative in German speech, as 'is' acts as a bridge in intrasentential code-switching.

The fact that the use of the demonstrative 'this' emerges in both Fion and Arnie's code-mixing is interesting. Although Arnie produces it to a much lesser extent in his mixed utterances than Fion does and demonstrates knowledge of German demonstratives in his speech, utterances becoming mixed through the use of the demonstrative is a similarity in the children's language behaviour, which can be spotted regardless of their very different stages on language development. Although an analysis of Fion and Arnie's language behaviour can only be drawn from the time from which the data was collected,

some likely deductions of Arnie's language behaviour on the longer run can be made, namely that his mixing may have been more frequent at a lower stage of language development, and the occurrence of the demonstrative 'this' in mixed utterances more common. Similarly, the data proved a decrease in Fion's use of 'this' in mixed utterances, while he gradually began to produce other demonstratives (such as the distal demonstrative 'that') in its place over time. This similarity, which is a striking, recurring characteristic in both of the children's mixed utterances, evokes the idea that it may have become established as a common, idiosyncratic way of speaking within the family (specifically the children's way of speaking). This would indicate that both Fion and Arnie's production of 'this' in German utterances may be influenced by the other sibling, in the sense that hearing one sibling use it may induce the production of 'this' in German utterances in the other sibling as well. Nearly half of both the children's mixed utterances become mixed through the use of the English demonstrative 'this', but the examination of Fion and Arnie's use of the demonstrative shows that its functions are manifold especially in Fion's speech, as it allows him to express himself in a way that he is not yet able to do (fully) in German at his stage of language acquisition.

Overall, the analysis proved that Arnie, being (nearly) fully proficient in his co-mother tongues, shows great sense of language separation and language differentiation. Arnie's choice of language in conversations is based on the interlocutor, as he speaks to his parents in their native tongues, although he knows that both parents understand both languages. Arnie habitually speaks German to Fion, in which Fion develops expressive language proficiency earlier than he does in English. Arnie thus exhibits strong ability to keep his mother tongues separate. Fion, being at a stage of language acquisition where more development is expected, gradually produces less mixed utterances throughout the six months as his vocabulary grows and his English proficiency develops and becomes expressive. Fion and Arnie code-mix their speech to different extents, but the same elements became subject to mixing in their speech, and both children's code-mixing behaviour proved to be structured and quite regular. On the other hand, both children's mixed utterances also contained code-mixing that could best be explained by phonological proximity.

English and German are not an uncommon language combination in code-mixing case studies, and due to the languages' typological similarity, mixing is even more so to be expected as closely related vocabulary and the prevalence of function words, which easily turn into bridges to the other language, encourage code-switching. This case study delved deeply into the use of a specific pronoun which arose

in the data, uncovering its different functions, which Fion demonstrates extensively, and which Arnie very well may have employed as well at an earlier stage of language development, as he still occasionally uses the English demonstrative in otherwise German utterances. This finding brings out the positive side of (early) code-mixing, that is, the children's practice of optimising language use by drawing on the other language where it is convenient for the young child. Further studies focusing on such idiosyncratic elements in bilingual children's code-mixing, examining how they employ them to create new functions by reflecting one of their mother tongues onto the other, may uncover further correlations that have to do with the bilingual children's profiles and showcase language optimisation at early stages of the language acquisition process.

## 6. Conclusion

The purpose of this case study was to explore the contexts in which the two bilingual children, Fion and Arnie, code-mix. Dissection of the data based on recurring elements in the data led to discovering patterns in the children's code-mixing, which initially appeared arbitrary. Upon closer examination of the data, complex functions behind the most prevalent pattern in it could be distinguished. Qualitative content analysis facilitated the study of the data through the categorisation of elements, through which patterns could be determined. The findings showed that the same elements become code-mixed in Fion and Arnie's mixed utterances, with the exception that for Arnie, utterances becoming mixed through nouns was a noteworthy category. This is explained by his high level of language proficiency, which was expected to result in a lesser amount of code-mixing overall.

The categorisation of the data further benefitted the analysis in that it provided some quantitative information that was significant for the study of patterns in Fion and Arnie's code-mixing behaviour. In terms of the bigger picture, considering the proportions of mixed utterances, unilingual German utterances, and unilingual English utterances, Fion's language development between the age of 2;10–3;02 could be followed. Moreover, by considering the language input and the presence of interlocutors in the setting on the sessions, conclusions of their impact on code-mixing could be drawn. Surprisingly, the data conveyed a bilingual setting to have little impact on the proportions of mixed utterances, even in Fion's case. Fion's English proficiency proved to be largely receptive at the age of 2;10 and appeared only just to become expressive throughout the course of the data, thus English input in the sessions only influenced Fion's output when explicitly encouraged to say or repeat something specific in English. Dual input in the sessions did not increase Arnie's production of mixed utterances either, and due to his strong ability of language separation and language differentiation at his stage of language development, the proportions of his unilingual utterances directly reflect who he interacted with.

This case study contributed some information to research on (English-German) bilingual children's code-mixing and language behaviour—a body of knowledge constructed of case studies, as diverse instances of bilingualism mean differing outcomes. With an inductive approach to the data, similarities and correlations in the code-mixing of the two children at different language acquisition stages were discovered. Typological similarities of their two mother tongues resulted in “bridges” and/or mix-ups due to phonological proximity. A surprising number of mixed utterances became mixed through vocabulary that the children demonstrated to know in both languages during the same session, in which

case it can only be assumed that the reason for such mixed utterances is the child retrieving the word faster in the other language in the moment of producing the utterance, therefore making use of their dual language proficiency to optimise communication. Most interestingly, the analysis showcased the children's use of the English demonstrative 'this' in German utterances, which was produced in the place of many German equivalents that are more complex to use due to inflections which are determined by grammatical gender and noun case. This function of the English demonstrative is another, more creative way of optimising language use and was employed by both children, revealing an idiosyncrasy in the siblings' speech.



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