

'Mami, lietadlo! Aeroplane, daddy!': A Case Study Exploring Bilingual First Language Acquisition in a Mixed- Lingual Family

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A thesis submitted in fulfilment of the degree of Doctor of Philosophy

Discipline of Linguistics, School of Humanities

The University of Adelaide

August 2012

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List of abbreviations

BFLA	Bilingual First Language Acquisition
CDI	MacArthur Communicative Development Inventory
CDS	Child Directed Speech
CS	Code-switching
ENI	English Noun Inflection
ESLA	Early Second Language Acquisition
IDS	Infant Directed Speech
IPA	International Phonetic Alphabet
MFLA	Monolingual First Language Acquisition
OPOL	One parent-one language
SG	Slovak Gender morpheme
SNI	Slovak Noun Inflection
SPA	Slovak Phonetic Alphabet
SVI	Slovak Verb Inflection
TE(s)	Translation Equivalent(s)
1P/1L	1 parent/1 language
1P/2L	1 parent/2 languages
1P/1L & 1P/2L	1 parent/1 language & 1 parent/2 languages
1sg	1 st person singular
2sg	2 nd person singular
3sg	3 rd person singular
1pl	1 st person plural
2pl	2 nd person plural
3pl	3 rd person plural

Abstract

Family environment plays a crucial role in bilingual language socialization in early childhood. The bilingual family introduces the child not only to the languages-in-acquisition, but also to the preferred language use patterns. In recent years the discussion on how and when a bilingual child comes to use her two languages in contextually appropriate ways has become central to Bilingual First Language Acquisition (BFLA). While evidence for language differentiation and sensitivity to interlocutor's preferred language is available in the two-word stage, few studies consider the language learning environment and its impact on bilingual development in the one-word stage and early combinatorial speech.

This longitudinal case study reports on linguistic developments from birth to 2;0 in a child who was acquiring Slovak and English simultaneously in the home. The effects of the child's language learning environment on linguistic development from the onset of speech were considered, focusing on lexical development, word combinations, emerging morpho-syntax, and pragmatic aspects such as language choice and mixing.

The child's two languages developed separately in a side-by-side fashion, as shown by use of translation equivalents and language specific morphological markers from the beginning. She used the two languages in contextually sensitive ways from the one-word stage, relying on several pragmatic language choice strategies. Mixing was productive and accounted only for a small proportion of productions. It was explained by sociolinguistic as well as psycholinguistic factors. Language differentiation thus emerged as grammatical as well as pragmatic differentiation at the end of the one word stage.

Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide.

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Acknowledgements

I would like to express gratitude to my daughter Ria for being the very centre of my research and for making this case study possible. I am thankful to her for being a delightful participant who made my research enjoyable. I also wish to thank other participants, members of the extended family, who allowed me to observe their interactions with Ria, and interactions between their children and Ria. Without their participation my research would not have been complete.

I owe gratitude to my husband John for allowing me to observe and analyse his interactions with our daughter, for his support and encouragement throughout my study and for being ready to help when I encountered IT problems. I am also thankful to John for proofreading my draft and providing helpful editing suggestions.

I am grateful to my principal supervisor Dr Peter Mickan for his guidance throughout my research, for discussing my ideas and perspectives, for providing critical and constructive feedback on numerous chapter drafts, for tireless support and encouragement, and for his enthusiasm for my research.

I also wish to extend gratitude to my co-supervisor Professor Peter Mühlhäusler for providing critical and constructive feedback on my draft and for his support and encouragement throughout my research.

I am sincerely thankful to Professor Daniela Velichová and Nikoleta Tomečko for invaluable editing suggestions and comments on my draft. I am also indebted to Roberta Velichová and Leonard Velich for meticulous proofreading of my draft.

Last but not least I would like to thank my parents for believing in me, for being an inspiration, for setting a high standard, and for giving their children love of learning.

1 Introduction

The aim of this study was to document and describe the early years (birth-2;0) of linguistic development of a child growing up as a simultaneous bilingual, with the view to contribute to the growing number of studies of varied language combinations in the Bilingual First Language Acquisition (BFLA) field. Special focus was to fill the gap in childhood bilingualism research on lexical development and the development of the pragmatic skill of language choice in the one-word and early two-word stages, as well as to examine language learning environment in the early years of a child growing up with two languages.

Exploratory ethnographic approach was employed as the method to examine the child's initial bilingual acquisition. A longitudinal descriptive case study allowed long-term regular observation and documentation of data on both the language learning environment and gradual linguistic development. It allowed exploring particular phenomena in depth while assessing the validity of existing models of bilingual linguistic development.

Since the child in the case-study, Ria, is my own child, observations of language development and linguistic environment could be carried out on daily basis. Being a parent researcher brought the advantage of being present across various social situations, thus capturing novel developments and changes as they unfolded. Regular observations provided insights into Ria's prelinguistic and linguistic developments, as well as sociolinguistic factors such as language acquisition history, linguistic environment, and language usage by the people in Ria's environment, and thus a more complete picture of language development.

The methodologies of several case studies, all of which contributed to the knowledge base in BFLA with findings supporting separate development of the two languages, guided my research. Three longitudinal case studies, which were also carried out by linguist-parents and examined BFLA in child/children less than two years old, were used as basis for data collection and analysis: Deuchar & Quay (2000), Cruz-Ferreira (2006) and Štefáňik (2000). These studies assessed the development of lexicon, emergence of morpho-syntax, mixing and pragmatic language choice.

Other case studies with children aged 2 and above carried out by researchers that were not the subjects' parents were also drawn on. Sociolinguistic aspects such as parental input and analysis of interactions in the family were based on Lanza's (1992, 2004) framework of

parental discourse strategies. Descriptors of language learning environment were based on De Houwer (2009a, p. 83). Aspects such as separate development of the two languages, language differentiation, general theoretical background and methodological guidelines relevant for BFLA were sourced from De Houwer (1990, 2009a).

The above case studies collected data in naturalistic interactions sourced in the subjects' homes. Linguistic development was assessed from two data sources – diary and audio/video-recordings. In this thesis I employed the same data collection procedures. Two kinds of data sets were collected and analysed. A diary captured general progressions in development, and more specifically the construction of cumulative vocabulary, emergence of morpho-syntax, combinatorial speech, language choice and mixing. Weekly video-recordings throughout the first two years allowed detailed analyses of interactions in the family in varied situational contexts, and documented changes in language use over a longer period of time. Regular recordings were also useful to confirm and demonstrate the developments noted in the diary.

1.1 Theoretical background

Simultaneous development of two languages in young children has been of interest to researchers since the first published study by Ronjat in 1913. Many studies followed Ronjat's, however, it was not until the 1990s that the BFLA field was established (De Houwer, 2009a, p. 13). In the earlier studies the question of development of one or two linguistic systems in developing bilinguals dominated research. It produced two opposing hypotheses – the unitary language system hypothesis versus separate development hypothesis. More recent studies provided empirical evidence in favour of the separate development hypothesis, since children raised as simultaneous bilinguals from birth were found to develop their linguistic capacities in both languages of exposure, and were able to differentiate their languages grammatically and pragmatically from early stages of linguistic development (Cruz-Ferreira, 2006; De Houwer, 1990; Deuchar & Quay, 2000; Genesee, 2007; Meisel, 2001; Nicoladis, 1998).

Most recently the focus of the discussion changed into the question of how early in development and through what processes does a bilingual child come to differentiate her two languages. Evidence for differentiation is available in the stage of morpho-syntactic development when children start combining words into multiple-word utterances and use morphological markers, which occurs around 24 months. Focus on the development of morpho-syntax in BFLA suggests that bilingual infants do not show signs of language

differentiation prior to combinatorial speech. Indeed, studies on bilingual differentiation in the early stages of linguistic development, including early lexical development, babbling, even speech perception, are considerably fewer (Genesee & Cenoz, 2001, p. 5). Only a few studies address this question at an age earlier than 2 (Deuchar & Quay, 2000; Nicoladis & Genesee, 1996). Nicoladis & Genesee (1996) found there is an initial period when bilingual children do not differentiate their languages pragmatically, and that emergence of differentiation varied considerably among children. Another study found differentiation according to parental preferred language between the one-word and two-word stage, and it was observed even in situations with both parents present (Genesee, Nicoladis, & Paradis, 1995).

Bilingual differentiation also remains relatively unexplored from a sociolinguistic perspective, since few studies focus on the family environment as a crucial factor shaping the development of bilingualism in the early stages of life (Goodz, 1989; Lanza, 2004). The current body of research in BFLA also lacks studies with mixed-lingual families in which one parent is a bilingual speaker proficient in both family languages, while the other parent is a monolingual speaker able to interact only in one language, and how these families solve the issue of language choice in triadic interactions.

Although BFLA field grew rapidly and was enriched with new language combinations in the last decade, western European languages still dominate the research (Lanza, 2001b, p. 241). Combinations with a Slavic language as one of the languages-in-acquisition remain underrepresented. To date only one case study is available concerning Slovak-English language combination. However, it is a case of *intentional bilingualism* in a child growing up in Slovak majority environment, acquiring English from the father, who is a non-native speaker, while both parents are bilingual (Štefánik, 2000, p. 25). No case studies of children growing up with Slovak and English in an English majority environment are available.

The theoretical foundations of this study stem from the functional or usage-based language acquisition theories (Halliday, 1975; Painter, 2006; Tomasello, 2003), which consider learning of a child's initial languages as context based. Family environment plays a crucial role in language socialization in early childhood. For a bilingual child the bilingual family provides the socializing environment and introduces the child not only to the languages-in-acquisition, but to preferred language use patterns in the family and in the wider community. In particular, language presentation affects how a bilingual child will learn to use her languages appropriately in various social situations.

In a bilingual family each parent and child share a linguistic bond through the medium of a particular language, called the person-language bond (Grosjean, 2010, p. 183). This bond provides a base language for interpersonal interactions between the parent and the child, and the child becomes sensitive to the language which is normally used by the parent. Thus the language bond establishes a specific language for interaction, and this in turn sets a language mode that the child will typically be in when interacting with that parent. In the pre-linguistic stages of development this is the parents' preferred language. Thus the base language preferred by the parent can become the main language of communication in the parent-child dyad. The base language can be strictly separated, where each language is shared by the bilingual child and a particular parent, or it can be a mixed variant used by the family. What is important is that the type of linguistic relationship which is established at the onset will determine the later language of communication.

A popular strategy among bilingual families is the *one parent-one language* approach, which suggests that a child comes to associate her languages with different people, and therefore learns to separate them. However, research found that although consistency of input is necessary in this strategy, in reality parents experience difficulties in keeping the languages apart and often the language of the community becomes the dominant language in the family (Barron-Hauwaert, 2004, p. 123; Noguchi, 1996). While parental guides to raising children bilingually stress the importance of consistency of input, parents are left with little advice on how to ensure consistency. The guides fail to highlight that consistency creates an emotional and linguistic bond through a particular language between a child and her parents.

In this thesis I consider the interpersonal principle crucial in establishing a linguistic bond, and claim that it is this bond in the parent-child dyad that makes bilingual upbringing possible. The linguistic bond can set the language mode in the dyad to a 'default mode' - the usual language of interaction between the parent and the child. If parents consistently address a child in their preferred language from birth or even the pre-natal period, she will establish emotional attachment through that language. The parents will feel at ease using that language with the child in various social situations, and it will become a natural choice of language of communication. Moreover, an infant in her first year is yet unable to engage in the process of negotiation of language choice, a phenomenon which is observed in all bilingual interactions (Grosjean, 2008, p. 86). Thus the parents have a rather unlimited opportunity to create the linguistic bond with the child based on their preferred language, making later language use consistent.

1.2 Research questions

This thesis aimed to answer the following research questions, and subquestions which framed the analysis:

1. How did the language learning environment influence Ria's bilingual linguistic development?
 - 1.1. What was Ria's language acquisition history?
 - 1.2. How did the parents use the two languages and how did they negotiate their preferred language context?
2. What was the course of bilingual linguistic development?
 - 2.1. Were there any differences in the course of development between the two languages?
3. What was Ria's lexical and morpho-syntactic development in the two languages?
 - 3.1. How did Ria's cumulative lexicon develop in the two languages?
 - 3.2. Did she use translation equivalents and how?
 - 3.3. How did Ria progress into combinatorial speech?
 - 3.4. When and how did morphological development emerge?
 - 3.5. Was Ria using appropriate morphological markers in each language?
4. When and how did Ria start using her languages in contextually appropriate ways?
 - 4.1. How early was pragmatic language choice ability observed?
 - 4.2. What types of utterances did Ria produce?
 - 4.3. Did Ria mix the languages in her utterances and how?
 - 4.4. Was Ria differentiating the two languages, and if so, when and how did differentiation emerge?
 - 4.5. Were there any signs of language dominance?

In order to answer these questions I examined the earliest stages of Ria's BFLA. General developmental patterns were determined, and each stage was assessed in detail. Aspects such as the construction of cumulative lexicon during the one-word stage, and emergence of combinatorial speech and morpho-syntactic development during the two-word stage were analysed. I also analysed how Ria came to use her two languages differentially, and how parental language choice and discourse strategies facilitated this experience.

The main contribution of this thesis is in the insights into the very early stages of infant bilingualism. By exploring sociolinguistic factors affecting language acquisition in the early stages of linguistic development, more detailed information on the development of pragmatic ability to use two languages appropriately in different social contexts was

gained. The findings taken together allowed for a general assessment of Ria's developing sense of bilingualism. Moreover, this thesis examined a relatively unexplored language combination consisting of Slovak and English. Since simultaneous development of two morphologically different languages was compared, this thesis also contributes to cross-linguistic developmental research.

Due to space and time constraints I was not able to include detailed analysis of Ria's phonetic and phonological development, such as cooing and babbling, and detailed development of phonological differentiation between the two languages. Likewise, an analysis of paralinguistic means of communication, such as the use of gesture and kinetics, and use of protolanguage in the months prior to the onset of speech had to be omitted. While the basic theoretical background of the interpersonal principal in language development as explicated by Halliday (1975) and Painter (2006) guided the theoretical foundations of this study, a functional analysis of the data was not carried out.

1.3 Thesis structure

The content of this thesis is organised as follows. In chapter 2, I shall discuss current research in the field of bilingual linguistic development. Key theoretical and methodological approaches that guided this study will be acknowledged.

Chapter 3 provides details of study design, outlines procedures of data collection and specifies how the data were analysed.

Chapters 4-8 present the data and the results of the analyses. Chapter 4 introduces the case study by analysing the linguistic environment in the bilingual family. In Chapter 5 I analyse prelinguistic developments and bilingual word comprehension. In Chapter 6 I discuss the development of early productive lexicon and cumulative vocabulary repertoire. Chapter 7 analyses the emerging morpho-syntax and combinatorial speech.

In chapter 8 I interpret the findings of the previous chapters in light of bilingual first language acquisition, considering the theoretical principles that guided this study. In Chapter 9 I draw conclusions from the findings, state the limitations of my study and highlight the contributions of the thesis to the wider research.

2 Literature review

Traditionally bilingualism was perceived as deviation from monolingualism (Cruz-Ferreira, 2006, p. 16; Grosjean, 2008, p. 10; Meisel, 2006, p. 93). Perhaps this perception was caused by the fact that in the past linguistics was dominated by Western research, and it was by and large the monolingual speakers who deemed it necessary to describe bilingualism with reference to monolingualism, in order to gain an understanding of a bilingual state of mind (Romaine, 1995b, pp. 7-8). This approach used the seemingly 'common' monolingual experience as the norm. Modern linguistics has arrived to a new approach: bilingualism is to be taken as the norm rather than the exception, since multilingual environments are more common in the world (Baker, 2007, p. 186; Grosjean, 1982; Kroll, Gerfen, & Dussias, 2008, p. 108). Bilingualism is now acknowledged as another form of *lingualism*, a term suggested as shorthand for the 'language faculty' (Cruz-Ferreira, 2006, p. 16). As such, bilingualism is equal to other forms of *lingualism*, namely monolingualism and multilingualism and needs to be researched under this assumption.

Despite bilingualism being common, research in the field of child language acquisition focuses predominantly on monolingual development. The little focus there is on bilingual language acquisition - it has been estimated that approximately only 2% of research on language development concerns children learning two languages - grants little attention to bilingual development in the early years (Fernald, 2006, p. 19; Petitto et al., 2001, p. 456). Thus only small portion of research focuses on the pre-school years when the parents or carers have the greatest influence on language development (Arnberg, 1987, p. 3).

Given the scarcity of literature on early bilingual language development it seems necessary to draw from two existing fields: the relatively young field of Bilingual First Language Acquisition and the vast body of research that is available in language acquisition literature which uses monolingual norms. Indeed, it has been demonstrated that bilingual development resembles the overall patterns of monolingual development (Genesee, 2006, p. 60). Genesee concludes it is evident in the fact that bilingual children reach the same milestones at approximately the same ages as monolingual children, and that language-specific grammatical development is also taking place at the same rate as in monolingual children. However, there appears to be greater variation among bilingual children, because the pathway to acquisition of two languages is influenced by many factors along the way of bilingual experience, including age of first exposure to the two languages, amount and

patterns of exposure, and typological differences between the two languages (McCardle & Hoff, 2006, p. ix).

Furthermore, it is stressed in the literature on bilingual language acquisition that any form of comparison of bilingual development with monolingual development is neither advisable nor useful (Baker, 2007, p. 35; Cruz-Ferreira, 2006, p. 14), since this approach only raises monolingualism as the norm bilingualism is to be compared with. Bilinguals need to be compared with bilinguals.

In this chapter I will first consider research in specific areas of BFLA carried out to date, to my knowledge, within each developmental period that was identified in the data of this thesis up to age 2;0. I will consider both the BFLA and general initial language acquisition fields. I will then turn to phenomena specific for bilingual development, and outline the theory guiding my research.

2.1 Bilingual First Language Acquisition (BFLA)

Literature concerning early bilingual development can be characterised as case studies undertaken on children, often linguists' own, growing up in high SES families. These have been labelled cases of 'elite bilingualism', and much of the criticism suggests they do not provide models for a 'typical' bilingual language development (Romaine, 1995a, p. 187). However, it could be argued that at present, due to upward social mobility, there are increasing numbers of families with stable SES with varied motivations to become bilingual and to maintain bilingualism. Individuals now have a free choice to move to different countries for various reasons and thus many migrant families no longer belong to low SES parts of populations (Tokuhama-Espinosa, 2001, p. 3). It therefore appears that the term *elite bilingualism* is becoming less relevant, and more research on childhood bilingualism is needed specifically in children who are growing up in more favourable environments. It needs to be recognized that such form of bilingual development is no longer elite, but is becoming common.

Another point is that most studies focus on linguistic productions in infant bilingualism, while only few case studies on bilingual development focus on the language learning environment and patterns of language presentation. Lanza (2004, p. 49) further argues that 'context' in which children acquire and use languages remains neglected in studies on infant bilingualism.

In this thesis I adopt Lanza's (2004, p. 10) perspective that an infant's language acquisition experience is influenced primarily by its language learning environment. Thus the best

indicators of how the infant's two languages are likely to develop at the very early stages of life would be by examining the input and language strategies that the parents use when interacting with children.

Ervin-Tripp & Reyes (2005, p. 87) differentiate contexts of child bilingualism depending on whether the parents are speakers of both languages themselves, or whether there is a bilingual and a monolingual parent in a family. The language acquisition context examined in case studies to date is mostly a situation with both parents speaking both languages (one parent as a native language, the other as a second language), or a family where one of the languages is not a native language of neither of the parents, but at least one parent is fluent in a second language, which they use with the child, thus aiming for *intentional bilingualism* (Štefánek, 2000, pp. 20-21).

Mixed-lingual families where only one parent is a speaker of both languages remain underrepresented. Mixed-lingual families and their use of two languages in the home render the family environment different also to a migrant family, where the minority language tends to be the only language used at home. While in a minority family relatively clear boundaries delimiting the use of the two languages can be set –usually the private and the public domain, in mixed-lingual families this distinction becomes blurred. There are still two languages, a minority and a majority language, but the domains for these languages overlap considerably. This form of family bilingualism, with one bilingual and one monolingual parent, is termed *the asymmetric parent bilingualism* (Chin & Wigglesworth, 2007, p. 11). While the bilingual parent addresses the child primarily in the minority language, the child is aware of the parent's bilingualism and often overhears the parents' communication in the shared language.

Furthermore, the term 'childhood bilingualism' includes different ways of becoming bilingual without taking the start of exposure to the two languages and chronological order in which the languages were acquired into consideration. In general, children who are exposed to two languages from birth are termed *simultaneous bilinguals* (also called infant, incipient or childhood). Children whose exposure to the second language started later than exposure to the first are *sequential bilinguals*, since they acquired first language at home and a second language later on in a different setting, typically childcare or from a different carer (Baker, 2001, p. 221). However, De Houwer (1990, p. 11) argued that this distinction is somewhat imprecise since it does not satisfactorily describe the circumstances of initial language exposure. She argues that even a short delay in exposure to the second language could affect the way languages are processed in an individual, and

that an infant who was exposed to the second language at a later stage may develop differently. Since full effects of such differences in exposure are not certain, it is recommended to make this distinction obvious. De Houwer adopted an earlier term – Bilingual First Language Acquisition (Meisel, 1989; Swain, 1976) – and established a new field of study, which specified the onset of acquisition of the two languages more precisely. The BFLA field examines simultaneous acquisition of two languages from birth, while allowing for different exposure patterns and language presentations across families. Since a BFLA child is acquiring two first languages from birth, labels such as *mother tongue*, *native language* or *first and second language* become unsuitable. The languages are labelled *Language A* and *Language Alpha*, in order to give both equal status. De Houwer's (1990, p. 12) strict criteria for BFLA comprise only those studies which clearly specify that the subjects' exposure to *language Alpha* started no later than a week after the start of exposure to *language A*, and exposure to both was on regular basis until the time of the study.

Thus BFLA is distinct from other early language acquisition contexts, namely:

- Monolingual First Language Acquisition (MFLA) - a context with one first language (Language 1),
- Early Second Language Acquisition (ESLA) - a context with first language (L1), and a second language (L2) that is introduced considerably later to the first language (De Houwer, 2009a, p. 4).

According to De Houwer, BFLA as a field of study is an intersection between language acquisition and bilingualism (De Houwer, 1998, p. 250). It focuses on the first 3 years (infancy and toddlerhood) of linguistic development. Chronological description of research carried out within the field of BFLA has been outlined in great detail in other studies (Barron-Hauwaert, 2004; De Houwer, 1990, 2009a; Genesee, 2006). To date the focal points in BFLA were the following phenomena:

- general linguistic developmental patterns
- one language system vs. two language systems
- language differentiation
- language choice
- comparisons with monolingual norms (Pearson, 1998, p. 349).

These phenomena were explored from phonological, lexical and morpho-syntactic developmental perspectives. A detailed discussion of the focus of various studies is presented in De Houwer (1998, 2009a) and McCardle & Hoff (2006).

2.1.1 Early vocal development and sound production

The earliest vocalizations produced by very young infants, cooing and other non-linguistic sounds, are generally not seen as being language specific, and it is believed that all infants across languages tend to produce similar sounds (De Houwer, 2009a, p. 171). No studies to date have focused specifically on vocalizations by bilingual infants. However, one study reports the bilingual subjects used intonation patterns which resembled the two languages the infants were acquiring (Cruz-Ferreira, 2006, p. 63).

In the second half of the first year infants start producing canonical and reduplicated babbling productions. No studies to date focused specifically on babbling in bilingual infants. De Boysson-Bardies & Vihman (1991) carried out a cross-linguistic study in order to examine whether babbling sounds are the same across languages or whether infants exhibit language specific productions. The findings indicated that by 10 months infants showed language specific tendencies in both vowels and consonants, which developed into more marked differences further on. It was further concluded that the phonetic structure of the infant's environment is an important factor that influences the shapes of babbling productions.

Another study compared developmental patterns of monolingual and bilingual infants, in order to assess the possibility that acquiring two languages may require substantially greater effort, and therefore cause delays in linguistic development and in achievement of milestones in bilingual infants (Oller, Eilers, Urbano, & Cobo-Lewis, 1997). However, no differences were found in monolingual and bilingual infants in the average age of canonical babbling onset. In all normally developing children the age of the onset ranged between 4 to 10 months of age, with no delays in bilingual infants.

Another research interest has been the link between babbling and early word productions. In a study on babbling productions in hearing and deaf infants Pettito and Marentette (1991, p. 1495) conclude that babbling is not dependent only on the motor development of the articulatory mechanisms as previously thought, but that it is an expression of certain amodal language capacity, and as such it is the '*mechanism by which infants discover the map between structure of language and the means of producing this structure*' (Pettito & Marentette, 1991, p. 1495). The authors found that similarities in manual and vocal

babbling support the hypothesis of the existence of a unitary language capacity that is the basis of language acquisition.

The above findings have important implications for bilingual infants. In their language environments two phonetic structures will be found which could be presented either separately or in the form of a blend, depending on the language presentation patterns in the family. Thus in general, in families that adopt the 1 parent/1 language (1P/1L) approach infants hear phonetic structures mostly in separate fashion, while in families with 1 parent/2 languages (1P/2L) approach the infant receives varied phonetic input from one person. However, to date no BFLA studies report on these aspects of infant babbling.

2.1.2 Bilingual Comprehension

It is well understood that before the onset of speech children are able to comprehend words in speech that is directed to them (Tomasello, 2003, p. 79). Word comprehension precedes word production by several months. For example Cruz-Ferreira (2006, p. 146) observed the first signs of comprehension as early as seven months of age, while production did not start until several months later. However, the exact link between comprehension and production is not fully understood, and there can be a large variation between the number of words an infant comprehends and the number of words she can produce. It is believed that comprehension and production are two different processes (De Houwer, 2009a, p. 209).

As De Houwer et al. (2006, p. 331) point out studies on comprehension focus mainly on monolingual children, with only two diary studies on bilingual children which produced a similar finding regarding comprehension preceding production in BFLA infants (Deuchar & Quay, 2000, p. 55; Leopold, 1939). To date only one experimental study examined comprehension in bilingual children in detail (De Houwer, et al., 2006). It examines whether BFLA children are able to comprehend translation equivalents (TEs), cross-linguistic synonyms with equivalent meaning, at the age of 13 months. Comprehension of TEs was examined through parental and carer reports on the infant form of the MacArthur Communicative Development Inventory (CDI). Carers reported on vocabulary items understood by the children in their two languages, Dutch and French. The findings showed a large individual variation. All children in the study understood at least some TEs, called doublets, but the number of TEs they understood differed considerably. Likewise, all children understood at least some words in one language only, called singlets, again with large variation in the number of singlets. Differences were also found in the distribution of

doublet and singlet comprehension, with some children understanding only singlets overall, or mainly in one of their languages, while other children understood relatively same number of singlets in each language. Furthermore, the more meanings a child understood, the more likely she was to understand two words for that meaning, one in each language. According to the authors, the same pattern of different meanings in the two languages was also found in studies on bilingual production. It was concluded that bilingual children know more words than meanings.

An important bilingual perspective is how an infant comes to associate one concept with two different words, one from each language. In monolingual and bilingual development, Clark (1987, p. 13) proposed that in early stages of lexical acquisition children apply the Principle of Contrast, a mechanism that guides word acquisition which allows children to accept only one label for a category, and thus reject synonymy. However, the Principle of Contrast did not hold up in studies on comprehension in bilingual development. De Houwer et al. (2006, p. 343) demonstrated in their study that once a child acquired a meaning, she was able to learn the meaning in the other language as well. Thus in comprehension, the child did not link the meaning to one word form only and the Principle of Contrast did not hold up. Indeed, Yow & Markman (2007, as cited in De Houwer 2009, p. 206) compared the strategies used by bilingual and monolingual children to learn new words. The findings suggested that monolingual infants learn by Mutual Exclusivity Bias, in other words they assume that every class of objects can only have one name. However, this strategy was not used so extensively by bilingual infants who appeared to rely on other strategies, such as use of gestures that helped them interpret the meanings of unfamiliar words.

The process of TE learning has not yet been explored in a detailed case study. However, it can be inferred from the findings outlined above that a proportion of a BFLA child's receptive vocabulary would consist of TEs, since the child would be naturally driven to discover the equivalents in both languages. This, of course, cannot be true for all of the child's vocabulary, since it is unlikely that she would experience exactly the same kinds of contexts with both parents.

2.1.3 First words and early phonological development

Production of first words can occur anywhere between 8 and 13 months of age, within a span of around 5 months. When infants start producing first words the forms they produce are often unstable and different from adult forms. It depends largely on individual

differences in children's articulatory abilities to realize individual sounds, to match their productions with the sounds they are trying to produce, and at what age their speech becomes clearer.

Moreover, early word productions often undergo different processes that make the words appear less like adult forms. One such process is truncation, when children produce only one or two syllables of a longer adult word. This process is dependent on the typical stress patterns of the input language and children were found to use it with very early word productions in the second year of life (De Houwer, 2009a, p. 172). However, it is not fully understood whether bilingual children use different speech rhythms in their two languages. In fact findings to date suggest contradictory evidence. On one hand BFLA infants were found to show language specific use of prosodic features, while other evidence showed influence of one language on the other (De Houwer, 2009a, p. 173).

Other processes apparent in early words are phonological. Most common of these are deletion, substitution and reduplication of sounds, which result in simplifications of adult word forms. Natural phonological processes are found in both bilingual and monolingual children, however, it is not yet known whether they are language specific in bilingual children, and whether the two languages influence each other (De Houwer, 2009a, p. 182).

Thus early words pose a problem in assigning the forms to a particular adult target word, and can be determined only within context. It is also necessary to determine the language a bilingual child was targeting in her production. According to De Houwer (2009a, p. 177) bilingual infants' first speech sound productions are not yet language specific and it is not possible to determine whether they are dependent on one or two systems. Phonological development in a bilingual child entails acquisition of two sets of target phonemes that likely overlap to some degree. It is a gradual process believed to emerge in the second part of the second year. When segmental organisation of the infant's lexicon is beginning, productions are governed by rules of the language and the child's vocabulary increases rapidly (de Boysson-Bardies & Vihman, 1991, p. 317).

Prior to phonological development ambiguities may arise in the production of first words. For example one criterion suggested in Vihman & McCune (1994, p. 523) is the exclusion of homonyms as first words in the early word productions. The authors argue that if a child uses a sound form in conflicting contexts such as homonymy, the sound sequence cannot be included as a word. However, this criterion could unnecessarily exclude legitimate first words in BFLA infants or cognates in a TE pair, which appear as the same production in form but differ in prosody. As explained above, no system of phones was developed as yet,

neither are the child's articulatory abilities fully developed. Thus it is possible that a bilingual child could be attempting to produce two separate words, each belonging to a different language, with different referents, while the actual productions result in the same form. Indeed one study found that some forms produced as monosyllables by the BFLA child in the early stages resulted in cross-linguistic homophones which designated different concepts (Deuchar & Quay, 2000, p. 53). While the child's productions were constrained by a limited phonetic inventory, their meanings could be interpreted contextually and the different target adult forms identified.

Categorization of first words is equally difficult. First words tend to have a fluid meaning and they are used in a holophrastic way, since a single word may subsume a larger meaning, and on many occasions it does not have to be related to the meanings of the adult forms. Often the meanings of first words undergo semantic processes of overextension or underextension (De Houwer, 2009a, p. 216). Therefore first words are categorized according to semantic rather than grammatical categories.

However, as Cruz-Ferreira (2006, p. 150) argues, it is equally not easy to determine the most commonly used semantic categories of first words. While infants' first words would include semantic fields with words for their interests and concerns such as requests, labels for people, objects of interest, foods, actions, greetings, interjections, and onomatopoeiae, the first words are necessarily related to the physical contexts, which can vary across children and across languages. Likewise, children's own preferences in semantic fields can vary, as Cruz-Ferreira (2006, p. 150) found in the data of three BFLA children in her study.

Holowka et al. (2002, p. 246) concluded that monolingual and bilingual children's first 50 words are organized into similar conceptual domains: objects (animate and inanimate) and nonobjects (person related and object-related). In their study infants indeed showed preference for their favourite things when acquiring new words. Therefore a new category, termed person-related, was created which included words that were of personal interest to the infants. All children seemed to show preferences for person-related words in first productions, and this preference remained prevalent throughout the first 50 words period, even with an increase in non-person related words.

There is also a great variance in the amount and types of first words infants use. For BFLA infants the variance is even greater, since they may use different patterns across their two languages (De Houwer, 2009a, p. 218). The rate at which children's lexical repertoires develop also varies considerably. In general, children are fast learners of new words, since

they need to be able to quickly fill lexical gaps in order to avoid communication breakdowns. It is often sufficient for children to hear a word in one instance and immediately use it themselves (De Houwer, 2009a, p. 221), a process termed ‘fast mapping’. BFLA children have an additional need to fill lexical gaps in this way, since gaps can occur only in one of their languages, especially if some of their interlocutors are monolingual speakers. However, BFLA children are able to build on the knowledge they already have in language A when learning a word in language Alpha.

Other ways of filling lexical gaps were found in BFLA children, such as creating new words in ways that reflect the productive processes of their languages, for example compounding or adding of bound morphemes to stems (Cruz-Ferreira, 2006, p. 174). In BFLA children this processes may result in relatively rare bilingual blends, where words contain syllables from two words from a different language (De Houwer, 2009a, p. 222). However, only few bilingual case studies examined lexical development with focus on one-word utterances and the meanings bilingual children create during this stage (Sinka & Schelletter, 1998, p. 302).

2.1.4 Assessing bilingual vocabulary

Research on bilingual lexical development confirmed that the developmental pathway and achievement of first word milestones in bilingual infants are the same as in monolingual children (Holowka, et al., 2002, p. 240; Pearson, 1998, p. 360). Bilingual children produce their first words around the same age ranges as monolingual children. Likewise, the 50 word milestones were achieved at around the same age range as in monolingual children. This first vocabulary growth spurt of 50 words occurred approximately at around 18 months of age, comparable to monolingual children. According to Pearson (1998, p. 360), the vocabulary spurt appears to occur in one language or in the two languages combined, but not in both of the two languages at the same time.

However, researchers warn that norms based on monolingual infants’ lexical development do not adequately represent normal bilingual development and care needs to be taken to assess bilingual babies’ knowledge appropriately (Pearson, 1998, p. 349). A bilingual child’s combined conceptual vocabulary needs to be assessed, considering both languages together rather than each language separately. A bilingual child can have two lexical representations for each conceptual meaning, one in each language, thus two labels are linked to the same concept. Moreover, a bilingual child’s lexicon could consist of up to three parts: two sets of words each belonging to one language (singlets), and a set of words

that the child knows in both languages (doublets). They can produce either doublets consisting of translation equivalents, or just a singlet from a TE pair. Holowka et al. (2002, p. 245) found that TEs accounted for approximately a third of bilingual children's total lexicons.

There may also be different time lags between the first productions of TEs in the two languages, with no delay at all in some children and with considerable delay in others (De Houwer, 2009a, p. 218). Bilingual children may also produce language specific words that do not have a TE in the other language, as well as language neutral words that could belong to either of their two languages (De Houwer, 2009a, p. 220). Language-specificity of words can vary considerably depending on the language combination.

According to De Houwer (2009a, p. 228) BFLA children's two languages do not tend to develop at the same rate but with many individual differences. Firstly, the number of words a particular child can produce in one language can differ from the number of words in the other language at a given age and, secondly, the number of word types produced in one language can vary from the other. However, a link between the word productions in each language of bilingual toddlers was found (Conboy & Thal, 2006, p. 720). Likewise, increases in word productions in one language were followed by an increase in the other language.

2.1.5 Combinatorial speech and morphosyntactic development

When children reach the critical mass of 50 words in active vocabulary around 18 months of age two-word combinations start appearing in their speech. Few studies examine two-word combinations in bilingual children (Deuchar, 1999, p. 26; Lanza, 2004, p. 84).

The early syntax of two-word and multiple-word combinations does not reflect adult like syntactic structures as yet (De Houwer, 2009a, p. 254). However, Deuchar & Quay (2000, p. 81) found rudimentary syntax that relied on the juxtaposition of a predicate and an argument to carry meaning. Word order of such combinations was variable and changes in order had no effect on the meaning. Noun phrase combinations that consisted of two nouns were also found, but such combinations were considered equivalent to one-word utterances rather than showing syntax.

In early word combinations the use of bound morphology also emerges (De Houwer, 2009a, p. 254). However, morphological development in young bilingual children in the earliest productive stages also received little attention in the literature. Most studies focus on these aspects only after the emergence of multiple-word combinations.

According to Sinka & Schelleter (1998, p. 323) evidence for morphosyntactic development in bilingual children is to a great extent dependent on the language combination. The authors suggest BFLA children with languages with high inflectional marking could show language specific use of morphology as early as the one word stage. They state evidence for separate development of the two languages, and adherence to language-specific rules can be examined only on those aspects of grammar that are different between the languages. One of the findings was that the BFLA child was using language-specific nominal morphology in both of her languages in the one- and two-word stages, while person and number marking on verbs were observed from the two-word stage. However, there was a lead-lag pattern evident since the child did not start using morphological marking in both languages at the same time. Different timing in development of these structures was taken as evidence that the two languages were developing independently. Deuchar & Quay (2000, p. 84) also found language-specific morphology in the two-word stage and considered this as evidence for two syntactic systems. Other studies also support the finding that children are able to use verb inflections correctly when two word combinations emerge (Meisel, 1989, p. 32).

BFLA children can combine words from the two languages in various ways. They can produce unilingual combinations in each of their languages, as well as mix words from the two languages. In mixed combinations a child may borrow single lexical items from the other language, while the morphosyntax of the utterance remains language specific (De Houwer, 1990, p. 102). Such mixing is taken as evidence for language-specific morphosyntactic development. Deuchar & Quay (2000, p. 88) also argue that the use of mixed combinations can be attributed to lexical gaps in one of the languages in the child's vocabulary rather than to a single lexical system.

2.2 Language differentiation

Language differentiation is an aspect of linguistic development distinctive of bilingual language acquisition only. There are two main theories in the research literature. The first is the unitary language system hypothesis which emerged in early diary studies on infant bilingualism and suggested that as a bilingual child starts linguistic production she goes through an initial stage of one fused linguistic system. She is not able to differentiate between her two languages and only gradually acquires this ability first through lexical differentiation, followed by syntactic differentiation. Evidence that was to support these claims constituted examples of the subjects' code-mixing, seeming lack of translation equivalents in some cases, and perceived delays in overall linguistic development

(Arnberg, 1987; Leopold, 1939; Redlinger & Park, 1979; Vihman, 1985; Volterra & Taeschner, 2007) ¹.

More recent research proposed an alternative stance – the separate development hypothesis. Several case-studies confirmed that children growing up with two languages demonstrate early differentiation and separate development of their two languages (Cruz-Ferreira, 2006; De Houwer, 1990; Deuchar & Quay, 2000; Genesee, 2007). Differentiation is evident even in contexts that may encourage more mixing, such as when both parents, who normally use different languages with the child, are present and interacting with a child in the same situation (Genesee, et al., 1995, p. 627) . Childhood mixing was found to be a result of sociolinguistic factors rather than confusion, and it can also be related to language dominance, since bilingual children often code-mix to fill lexical gaps in one of their languages (Genesee, et al., 1995, p. 614; Nicoladis & Genesee, 1996, p. 443). Yet other research showed that bilingual children use translation equivalents (TEs) very early in development, which needs to be taken as evidence for early sensitivity to two input languages (Cruz-Ferreira, 2006; Holowka, et al., 2002; Pearson, 1998; Petitto, et al., 2001). Studies that examined these issues empirically with a larger group of children also proved that early infant bilingualism does not pose any disadvantages and developmental delays when compared to monolingual developmental norms (Petitto, et al., 2001, p. 490).

Hence there is evidence for early sensitivity to two input languages in BFLA children in phonetic perception, lexical, syntactic, morphological, as well as pragmatic developments. This evidence suggests that BFLA children do in fact acquire their two languages in a separate, side-by-side fashion.

However, some studies point out that while we have evidence for early differentiation, we do not understand how and when children come to understand that there are two input languages in their environment (Nicoladis, 1998, p. 113). Little is known about differentiation in comprehension and in the use of prosody in very early, pre-linguistic stages. Similarly, while children have been observed to show signs of pragmatic differentiation around the age of 2 years, only few studies examined pragmatic differentiation (also called pragmatic sensitivity, interlocutor sensitivity or context sensitivity) at an earlier age (Nicoladis & Genesee, 1996, p. 441). Nicoladis (1998, p. 106) argues that pragmatic differentiation may develop differently to other types of differentiation. She stresses the need to consider emergence of sensitivity to the existence

¹ Although according to De Houwer's (2009) criteria since the child in Vihman (1985) was not exposed to a systematic input in one of her languages until 6 months of age it is not a case of BFLA but ESLA.

of two languages, as well as sensitivity to interlocutors' language preference and dominant language use, rather than focusing on when bilingual children start using their two languages in a monolingual fashion. It is argued that bilingual language use does not mean adherence to monolingual behaviour in two languages, rather pragmatic differentiation is defined as the ability to use language appropriately in different pragmatic contexts. Nicoladis (1998, p. 106) further reasons that in the early stages of linguistic development (up to the 50 words stage) the presence of translation equivalents alone is not sufficient evidence for emerging pragmatic differentiation, because TEs may be used more like synonyms. Instead, it should be examined if children use their TEs with speakers of their two languages appropriately within context.

Overall, studies to date seem to suggest that appropriate language choice according to interlocutor emerges around 2 years of age and that there is an earlier stage in bilingual children when pragmatic differentiation is not seen despite the presence of TEs (Nicoladis & Genesee, 1996, p. 460). Nicoladis (1998, p. 107) hypothesized that when bilingual children reach the 50 words stage, their prosodic systems start showing language specific productions, which could lead to an understanding that the TEs in their lexicon are in fact cross-language equivalents. This may then lead to the understanding of pragmatic use of language in their environment. Children may be using the presence of TEs in their lexicons as a cue in learning the particular language use patterns in their environments, thus learning to use them pragmatically.

However, after a detailed analysis of one child's language use, the results in Nicoladis' (1998, p. 113) study showed the reverse pattern. The child was first using his two languages appropriately when there was only a very low number of TEs in his lexicon. Soon after the child showed understanding of two pragmatic contexts, the number of TEs in his lexicon grew considerably. Thus Nicoladis (1998, p. 113) suggests that it is possible children need to first come to an understanding that there are two input languages, and then build on pragmatic differentiation abilities to learn how to use TEs in different pragmatic contexts.

Petitto et al. (2001, p. 459) asked an important question in order to seek further empirical evidence for the separate development hypothesis: '*What underlies early bilingual language acquisition?*' The study focused on achievements of early linguistic milestones, and patterns of language use and mixing when interacting with parents in 6 hearing BFLA children. When the results were compared to monolingual developmental milestones, bilingual subjects achieved their milestones at the same ages and in the same

developmental patterns in each of their languages, thus there were no delays in development. The results of the study confirmed that very young bilingual children differentiate their languages at a very early stage of linguistic development, as early as the production of first words. Findings showed that while children did mix their languages, the rate of mixing was a reflection of the mixing patterns used by their parents rather than a sign of confusion². More importantly, children were able to demonstrate early sensitivity to their interlocutor's linguistic abilities by adjusting their language use. Another finding that emerged was that bilingual children showed preference to one of their languages early on. The preference was influenced by the child's sociolinguistic environment and corresponded to the language of the person who had the most contact with the child, and to whom the child had developed the strongest attachment. Language preference could change overtime with changes in the sociolinguistic environment. The authors conclude that since bilingual children appear to be differentiating their two languages as early as the first word stage, therefore they must already possess a representation of the two input languages from very early stages of language acquisition, starting at birth.

Lanza (1992, p. 654) goes even further and questions the relevance of unitary vs. dual language system issue in BFLA children's mixing, and argues differentiation is a reflection of language socialization, a process via which children learn to use their languages in socially appropriate ways. She suggested a child needs to learn to navigate in different language contexts and learn when it is appropriate to mix her languages as opposed to situations when it is appropriate to keep them separate. The notion of bilingual awareness was proposed (Lanza, 1992, p. 653). There are different levels of awareness, and differing degrees of bilingual awareness are reflected in varied uses of code-switching in bilingual children. Lanza (1992, p. 653) claims that in very young bilinguals (before the age of 3) the participant is the main determinant in mixing, while topic and setting are secondary. But even very young bilinguals at the age of two are able to use mixing in contextually sensitive ways.

Vihman (2002) approached the unitary versus separate development hypothesis debate by proposing an entirely different course of development. It was suggested that a bilingual child has no linguistic system as such in the first months. Bilingual input provides the child with phonetic patterns of two languages, and from these, supported by implicit learning and speech perception capacities in the early months, the child starts paying attention to

² Although another study found no evidence for a systematic relationship between child mixing and parental mixing patterns, and suggests a threshold level of mixing is necessary to have an impact on children's mixing (Genesee, et al., 1995).

the learning of first words. Such explicit learning allows reproduction of retained first words and phrases in familiar contexts. According to Vihman (2002) the early words are holistic, used in situational contexts and associated with the child's interests, since they were learnt item by item. Their phonetic shape reflects the target words with only few changes, mainly omissions.

Once a child accumulates 50-100 words in expressive vocabulary, the phonological system emerges. With increasing word productions first consistent phonological patterns appear which Vihman (2002, p. 242) calls *word templates*. The child's early word forms reflect such patterns, and therefore become more assimilated to the templates (with more changes in segments, sequence, etc.) in comparison to the first item-learned words and adult forms. They are thus less accurate as far as the target words go. The templates differ from child to child and more general structures as well as subpatterns were identified (Vihman, 2002, p. 243). The two languages interact in the patterns, while at the same time the templates reflect the phonology of the two languages. The child now starts forming representations of particular words and starts generalizing across contexts of use.

However, Vihman's (2002, p. 250) analysis does not extend past the first words stage and therefore it is not explained how the child may arrive to a more adult like phonological system. It is only suggested that within a year of the first word production a child's productions should reflect adult forms, except for difficult segments and clusters. The child's growing dual lexicon is taken to allow for further differentiation of the phonological system as well.

As MacWhinney (2001, p. 257) points out, to date language differentiation in infancy and early linguistic development such as the one-word stage and combinatorial speech stage remains underexplored.

2.3 Language mixing

Researchers use the term *language mixing* as an umbrella term for any interaction of the two languages in a child's speech. They do not discriminate between switching and mixing in bilingual children. In adult bilingualism, however, a distinction is made. Switching is often assumed to be possible only in adults who possess the necessary pragmatic knowledge and grammar constraints under which switching can operate. Mixing, on the other hand, is perceived to violate such constraints, both sociolinguistic and grammatical.

According to Lanza (1992, p. 645) in the earlier literature lexical mixing is perceived as characteristic of mature bilingual code-switching, while grammatical mixing is a reflection

of developing bilingualism in very young children. Bilingual infants were not considered to have the ability to use languages in contextually sensitive ways, and therefore unable to code-switch, hence the use of the term language mixing instead. It refers to two possible phenomena:

- the use of lexical or morphological elements from both languages in one utterance
- the use of whole utterances in the 'wrong' language with an interlocutor who does not usually address the child in that language.

Genesee et al. (1995, p. 623) referred to these two different types of mixing as intra-utterance mixing (use of two languages in one utterance) and inter-utterance mixing (mixing across utterances with the same speaker). Inter-utterance mixing is especially important in young children in the one-word stage, since they do not yet produce multiword utterances with intra-utterance mixing. However, they can use inter-utterance mixing in their choices of language in the same conversation with a particular speaker (Genesee, et al., 1995, p. 626).

Language mixing is a central issue in language differentiation theories in childhood bilingualism. Recent research produced evidence that mixing in very young BFLA children is not a sign of confusion, but reflection of sociolinguistic factors. Several hypotheses for mixing were proposed:

- the lexical gaps hypothesis (Genesee, et al., 1995; Nicoladis & Secco, 2000; Quay, 1992)
- the modelling hypothesis (Goodz, 1989)
- child's dominance in one language (Lanza, 1992).

In the earliest stages of linguistic development (before age 2) lexical gaps and lack of translation equivalents in one of the languages are proposed as reasons for child mixing. Nicoladis & Secco (2000, p. 5) found that while children may have pragmatic sensitivity to two languages early on, due to their limited linguistic resources they may not be able to show signs of pragmatic differentiation until later age. Evidence is found in observations that while a child may try to use the language of their interlocutor most of the time, their linguistic proficiency is limited and to maintain interaction they need to use whatever resources available, which means borrowing words from the other language. Once they acquire the right lexical resources, they can use the language of the context consistently. Thus mixing is explained as a form of overextension of the pragmatic context (Nicoladis & Secco, 2000, p. 24).

The modelling hypothesis explains child's mixing as a reflection of the level of parental mixing in a child's input (Comeau, Genesee, & Lapaquette, 2003, p. 114). While there is consensus that in general, older bilingual children adopt code-mixing patterns typical of their speech communities, it has been questioned whether young bilingual children have the ability to code-mix pragmatically. The assumption is that due to developing cognitive capacities, they may not have the necessary sensitivity to mixing by their interlocutors, and therefore may not be able to adjust mixing accordingly. However, Comeau et al. (2003, p. 124) found that young bilingual children at the one-word stage do appear to have the necessary pragmatic sensitivity to input, and that they do adjust their rates of mixing to interlocutors' mixing patterns in a turn-by turn fashion.

Modelling hypothesis was also supported in Goodz's (1989) study of parental input in bilingual families. It found that parents did mix languages when addressing bilingual children in the earlier stages of one, two and multiple-word utterances, even if the rates of mixing were rather low (Goodz, 1989, p. 42). Moreover, even those parents who assessed their own language use as a strict separation and adherence to the 1P/1L approach were found to mix languages when addressing their children. Children's and parental mixing was closely related, in that parents would tend to switch in response to a child's switch to the other language. Explanation was sought in the nature of the interaction in parent-child dyads. According to Goodz (1989, p. 41) parents tended to acknowledge child's utterances by recasting or expanding on the utterance, using the borrowed word or utterance themselves, rather than providing a translation or requesting the child to repair the 'wrong' language choice. Thus the parents maintained the switch to the other language. Goodz (1989, p. 42) hypothesised that in the early stages of language acquisition parents focus on maintenance of communication flow rather than the form. They do not pay attention to the word or utterance borrowed from the other language, but focus on the content and the meaning the child was trying to convey, maintaining the child's form. In doing so, they essentially provide models of language mixing.

An aspect of language mixing which has not been analysed in much detail is situational switching according to addressee (Ervin-Tripp & Reyes, 2005, p. 91). In a BFLA setting, this form of switching accounts for the child's need to switch languages by addressee in a triadic interaction. According to the authors "*evidence of situational switching reflects what is salient to young children as they develop: people, place, activity, and genre.*" (2005, p. 92). Interlocutor was identified as the most important determinant of language

choice, and physical setting the second. Activity was also noted as further determinant (Kwan-Terry, 1992, p. 248).

Thus in general, bilingual infants under the age of two are thought to go through a first stage of mixing, during which they lack the necessary grammatical knowledge and violate rules of code-switching. During the third and fourth year, young bilingual children are believed to start developing the necessary grammatical as well as pragmatic knowledge that will allow them to start switching in a manner similar to adults (Lanvers, 2001, p. 438). However, according to Lanvers (2001, p. 438) little is understood about how young bilinguals may develop these abilities, apart from evidence that determinants of switching in very young infants are the language of the child's interlocutor and the child's competence. Lanvers (2001, p. 460) attempts to fill this gap by suggesting developmental trends in switching. She identified instances of intentional switching before the age of 2, particularly switching for emphasis and appeal, crutching and harmonization, as well as sensitivity to the interlocutor's language preference and switching on-demand in response to a parental discourse strategy. Many forms that the author identified did reflect the same properties of adult switching. However, the particular child's competence and "*psycho-socially different interactional mode*" likewise played an important role in shaping the functions of their switching (Lanvers, 2001, p. 461).

2.4 Language choice

Language choice is defined as accommodating use of a language in a conversation according to an interlocutor's preferences, which assumes certain pragmatic knowledge. In childhood bilingualism literature the child's ability to choose an appropriate language in a specific context is taken as a reflection of the child's pragmatic language differentiation.

Research literature on language choice in bilingual children suggests this ability appears before and around the second year of life, with most studies focusing on production of multi-word utterances (Genesee, et al., 1995; Lanza, 1992; Nicoladis & Genesee, 1996; Vihman, 1985). However, studies which examined single word utterances also demonstrated that children can make language choices with sensitivity towards the speaker's language preference as early as the one word stage (around 1;7) (Deuchar & Quay, 1999, 2000; Quay, 1992).

Several determinants of language choice were found. According to Deuchar & Quay's (2000, p. 113) findings in the early stages of productive language, when the child was building up her vocabulary, failure to make appropriate choice was most likely due to

lexical gaps in one of the languages, thus lack of translation equivalents rather than lack of differentiation. The child's interlocutor and the language used to address the child was most important, which reflects Leopold's suggestion that consistent parental language choice promotes the child's ability to make an appropriate language choice within a social context (Leopold, 1939). Deuchar & Quay (1999, p. 474) also found setting or location as determinants of language choice. While the child in their study was mostly making an appropriate choice in both language contexts, she was more likely to use more Spanish in an English context at home (in conversations with English monolingual), which was otherwise a Spanish only environment. However, what promoted appropriate language choice was the style of interaction between parent and child - the discourse strategies a parent used in reactions to a child's utterance in the 'wrong' language, and whether the parent accepted utterances in 'wrong' language.

When a bilingual child uses a language that is not the preferred language of the interlocutor, it is likely that a breakdown in communication will follow, especially with a monolingual interlocutor, or a bilingual interlocutor who chooses to strictly separate the two languages, and does not accept the child's utterances in their less preferred language. Thus when a language choice in a bilingual child causes a breakdown in communication, the child needs to acquire additional communicative competence. She needs to identify the reason for the breakdown as inappropriate language choice rather than any other reason (e.g. inaudible or unintelligible utterances). She also needs to repair such breakdowns.

Breakdowns in communication can be indicated by an interlocutor who makes a request for clarification, or it can be noted by the child herself. Indeed one study found bilingual children aged from 2 to 3 years were able to use both strategies appropriately (Comeau, Genesee, & Mendelson, 2007, p. 172). If an interlocutor requested a clarification following an inappropriate language choice by the child, most children in the study were able to identify these requests as requiring language choice repair, even if the request was not specifying a need to change language. These children never used the language change strategy if the breakdown in communication was due to other reasons. They were also able to self-repair their inappropriate language choices before the interlocutor indicated a breakdown in communication.

2.5 Parental discourse strategies

Lanza (1992, p. 635) suggests a different approach to language mixing and language choice in BFLA. Rather than considering mixing itself, researchers should focus on when

the child uses mixing, whether it is used in contextually appropriate ways, and what influences mixing. The question should be whether a child has the pragmatic ability to mix when it is appropriate to do so, and to separate the languages if the social context requires separation (Lanza, 1992, p. 653). In a detailed analysis of the contextual factors Lanza (1992, p. 644) found that the different levels of grammatical and lexical mixing by the subject were related to the conversational discourse strategies used by the subject's parents (the family used the 1P/1L approach). She identified 5 discourse strategies. Each strategy negotiated different language context with the child, either in an implicit or a more explicit way. Lanza (1992, p. 649) situates these on a continuum from monolingual to bilingual contexts:

- Minimal grasp
- Expressed guess
- Adult repetition
- Move on Strategy
- Code-switching.

If parents indicate to the child that they did not understand and expect a clarification of the child's utterance, they negotiate a monolingual context which does not allow mixing, and thus a monolingual identity. On the other hand, if they continue in the conversation by repeating the utterance in the other language, simply moving on or switching to the other language completely, they negotiate a bilingual context and allow mixing in the conversation with the child. They negotiate a bilingual identity. However, as Lanza (1992, p. 649) points out, such identities cannot be mutually exclusive.

Lanza (1992, p. 646) also analysed the child's reaction to a parental discourse strategy, as a reflection of the context each parent tries to negotiate. The findings indicated that the child was able to adjust her language use accordingly – she continued to use mixing with the parent who negotiated bilingual context but repaired her mixed utterances with the parent who negotiated monolingual context more explicitly. Thus the child was using her languages in pragmatically competent ways, demonstrating sensitivity to the requirements of the context.

Using Lanza's (1992) categories as the basis, Hiroko (1998, p. 333) identified 6 different strategies a parent can use, and classified them as explicit, implicit and code-switch strategies. The study then analysed parental feedback after a child made a 'wrong' language choice, and the child's language choice immediately after a parent used a

discourse strategy. The results showed that using one of the explicit strategies was more successful in influencing the child's choice to choose the parent's language.

Juan-Garau & Pérez-Vidal (2001, p. 83) also found that their subject tended to repair language mixes with the parent who used monolingual strategies. On the other hand, he tended not to repair his language mixing after a request for clarification made by the parent who used the bilingual strategies, presumably since he did not interpret these as requests to switch language. Some parental discourse strategies were more conducive to maintaining a certain level of proficiency in the minority language, and to develop the child's bilingual awareness (Juan-Garau & Pérez-Vidal, 2001, p. 77). The repetition strategy was particularly successful because it provided the child with the missing information in the other language, which was in many cases the reason for mixing. Thus it was avoiding communication breakdown, which could occur in cases where the parent used the minimal grasp strategy. Moreover, the repetition strategy invited the child to reproduce the utterance in the target language. The expressed guess strategy on the other hand, required only a yes/no answer, not necessarily eliciting the child's reproduction of the utterance.

Nicoladis & Secco (2000) found considerably different strategies used by parents in response to a child's mixing. They found two trends in parental mixing in the input. Firstly, much of the parental code-mixing was accounted for by use of words that the child knew in the other language, and was actively producing (Nicoladis & Secco, 2000, p. 25). Thus the parents chose to borrow some words from their non-native language because they knew the child was able to use them. A possible interpretation of this strategy is that the parents may be trying to make the meaning clear to the child. The second trend was that the parents often used a word borrowed by the child from the other language as an opportunity to teach the translation equivalent in their native language.

An area that remains relatively unexplored is triadic interaction between the parents and a child, when each parent addresses the child in their respective languages, but the parents use only the shared language to communicate (Lanza, 2001a, p. 222). Lanza (2004, p. 301) points out such situations place different communicative demands on the child. They also emphasize bilingual behaviour, since the bilingual parent negotiates maintenance of monolingual conversation with the child in one language, and a monolingual conversation with the other parent in the other language, but overall models bilingual identity. Triadic contexts were analysed in more detail in a case of trilingual development (Quay, 2008).

2.6 Theory guiding this thesis

This thesis explored and described the course of bilingual first language acquisition through a holistic view of bilingualism:

“Because bilinguals, like monolinguals, have an innate capacity for language and are, by essence, communicators, they will develop competence in each of their languages to the extent needed by the environment...but they will always maintain a necessary level of communicative competence (Grosjean, 2008, p. 16).”

Thus bilinguals were not viewed as two monolinguals in one. The development of bilingualism was approached and studied with bilingual expectations of language acquisition.

The design of the case study was data driven. An exploratory ethnographic approach, as suggested by Cruz-Ferreira (2006, p. 5), was suitable for data collection and descriptive analysis, since it allowed the data to dictate the findings of the study, rather than grappling to fit existing analytical categories of a particular framework onto the data. In the process of literature review no single framework was found that adequately reflected the findings in the data. Instead a combination of certain theoretical aspects derived from existing frameworks appeared to describe most appropriately the process of becoming a bilingual within the particular language learning environment. Language is not a static phenomenon, which is especially relevant in the early years of language acquisition, whether bilingual or monolingual. Therefore it should not be restricted to and studied under one perspective alone.

The study of childhood bilingualism in this thesis was guided by the principles of BFLA as described in De Houwer (2009a), Deuchar & Quay (2000) and Cruz-Ferreira (2006). The theory on early language development and typical milestones in BFLA children were drawn on De Houwer (2009a).

This thesis also operates with developmental stages found in models of initial language acquisition by Oksaar (1983), de Boysson-Bardies (2001), Halliday (1975) and Tomasello (2003). Descriptions of linguistic developments in these works are based on findings across languages and thus avoid purely monolingual norms. Moreover, the developmental progression which emerged from my data reflected the stages proposed in these works, and thus allowed for logical organisation of the data. Specific developmental patterns in Slovak speaking children are drawn on Horňáková et al. (2005), and in Slovak-English bilingual children on Štefánik (2000).

The methods for this thesis are based on several book-length multilingual case studies where the children under study fell in the BFLA category, and in which the authors collected naturalistic data in the child's home, as shown in Table 2.1. However, in some studies later age ranges were studied.

Table 2.1 BFLA Case Studies

Source	Research focus	Child's age range	Languages	Parental language competence	Data source
De Houwer 1990	Morphosyntax, separate development hypothesis	Kate 2;7-3;4	Dutch-English	Both bilingual	Audio/ Diary
Deuchar & Quay 2000	Phonology, lexicon, morphosyntax, language choice	Manuela 1;8-2;3	Spanish-English	Both bilingual	Diary/ Video/ Audio
Cruz-Ferreira 2006	Lexical development, morphosyntax	Karin 1;1- teen Sofia 3;1- teen Mikael 3;1-teen	Portuguese-Swedish-English	Both trilingual	Diary/ Audio/ Video
Lanza 2004	Language mixing, language choice	Siri 1;11-2;8 Tomas 1;9-2;8	English-Norwegian	Both bilingual	Audio/ Diary
Štefánik 2000	Lexical development, morphosyntax, Language mixing	Natalie 1;3-5;7	Slovak-English	Both bilingual	Diary/ Unspecified recordings

The difference in this thesis is that the family is mixed-lingual, while one of the parents is bilingual in Slovak and English and the other parent is monolingual in English. In a mixed-lingual family a specific aspect of developing bilingualism emerges as central, the learning of appropriate language choice in triadic interactions as described in Lanza (2004, p. 292). This thesis focuses on the course of BFLA under the particular circumstances resulting from the mixed-lingual family's language learning environment, and verifies the relevance of current BFLA theories to the data.

A further difference stems from the fact that the above case studies are concerned with bilingual children's linguistic production, while only a few studies focus on the language environment, input and the child's developing communication abilities as she is learning to

make sense of her two languages in the first two years of life. In first language acquisition a child's language learning environment is crucial since it provides the basis for language acquisition, that which is to be learnt. As such, the language learning environment is both the source of language(s), the tool for communication and expression, but most importantly, the tool for social contact, the purpose for using language (Hoffmann, 1991, p. 35). As Hoffmann points out, a child learns not only the language itself and its formal aspects, but also the importance of language in forming relationships with her environment. Thus it is the child's emotional engagement with the environment that drives language acquisition.

For the first few months the child's emotional engagement is with the important people, while later it extends to the immediate contexts including favourite objects, activities, and routines. Even later, emotional engagement can extend to the wider environment outside the family. But most importantly, the infant's contexts stem from the interpersonal communication in which she participates with the familiar people in numerous reciprocal interactions. Initially, the infant is interested primarily in communicating with people and responds to stimuli addressed to her by people over any other outside stimuli (de Boysson-Bardies, 2001, p. 38). Even at a later stage when the child becomes interested in other aspects of her environment interactions with people remain most important. Thus linguistic development is embedded in emotional engagement with people. This theoretical basis stems from the functional or usage-based language acquisition theories (Halliday, 1975; Tomasello, 2003) which consider acquisition of a child's initial languages as context based.

Research on childhood development demonstrated that the key factor in the development of emotional and social intelligence is face-to-face social interaction with other human beings (Grille, 2008, pp. 10-12; Sunderland, 2006). Language acquisition, interlinked with other developments, necessarily develops under the same conditions. During the first 18 months the infant is learning to communicate with the people in her environment and participates in meaningful communication before the onset of speech. The use of symbolic gestures indicates the onset of intention-reading communication, and the ability to communicate by means of symbolic representation is believed to aid in development of verbal communication (Goodwyn, Acredolo, & Brown, 2000, p. 84; Tomasello, 2003, p. 35). Child's early language is meaningfully supported by certain social-communicative interactions, or routines, constructed by the carers and the child (Horňáková, et al., 2005, p. 19; Tamis-LeMonda, Bornstein, & Baumwell, 2001, p. 763).

Studies show that the first important clue in the development of language is the amount of child directed speech (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991, p. 245). Secondly, the topic of the parent-child interaction is important, however, the degree to which the infant controls the topic is crucial in the extent to which the infant's interests are followed-in by the adult in interactions (Goodwyn, et al., 2000, p. 99). Regular child-led interactions allow the child to derive meaning from the context, since it is easier for her to determine the intended referent of the interaction (Tomasello & Farrar, 1986, p. 1460). Thus the joint attentional focus between the carer and the child is stressed as more important than directiveness by the parent to gain the child's attention. Tomasello & Farrar (1986, p. 1462) suggested that if the adult is able to determine the child's focus and then follow the child's lead, language acquisition is facilitated, since the child does not have to coordinate her attention with the adult's attention. Language acquisition can thus take place when "*the child is attentive, motivated and best able to determine the meaning of her mother's language*" (Tomasello & Farrar, 1986, p. 1462). During interactions with joint attention the conversations were found to be longer and the mother's language was simplified with shorter sentences, while it included more comments. Language development following such interactions was related to the types of object references directly from the context of the interactions. Finally, the child's interest influenced the mother's actual input in cases where the mother tuned into the child's attention and followed in the conversations, which in turn led to more learning.

The socializing aspect of first language acquisition was described as paramount by Halliday (1975), and it was developed into the *interpersonal first principle* by Painter (1996, 2006). Acquisition of the native language is interpreted as '*a process of interaction between the child and other human beings*' (Halliday, 1975, pp. 5-6). He further explains that the infant's social world has only a limited number of contexts in which the child can use symbolic expressions to communicate. The child brings certain abilities to the acquisition context in the form of '*biological predisposition to attend and respond to communicative behaviour addressed to him*' (Painter, 1985, p. 49), but this predisposition alone is not enough to acquire language. A child needs constant interaction with adults, a model of the language on which, together with the biological predisposition, the ability to communicate by means of language is developed.

From birth the parent, '*mirrors her baby's vocal and gestural behaviours*' (Painter, 1985, p. 49), and then moves on to other forms of game playing. Mothers interpret babies' vocalizations and thus assign some kind of meaning to them. Through these interpretations

the mother helps the child *'to experience shared states of feeling'*, and *'brings the child to meaningful action by her use of the language'* (Painter, 1985, p. 49). The parent's interpretations of the child's behaviours further add to the interactional experiences of the child.

According to Painter (1985, p. 49) at around 8-9 months (about 40 weeks) an important development of brain function occurs, when the child has a new way of accepting people – she starts reacting to people on a voluntary basis and *'combining her interest in the environment of objects with acts of communication addressed to persons'* (Painter, 1985, p. 49). Previously these were expressed by the child as two separate interests. This development was observed as an alternation of eye-contact between objects and people while they vocalize, and by giving or showing objects to people. The child also realizes at about the same time that her mother and she is not one person, but that she is her own person.

These two developments that lead meaning making by the child are what Halliday (1975) captured in a functional framework. According to Painter (1985, p. 50) Halliday's functional system accounts for the distinction between person and thing, and between self and other. A number of interactional capacities are built into the functional framework: achieving objects by verbal control of a person, interaction with a person as mediated by objects, expression of interest in the environment, and non-mediated address to persons.

There appears to be a link between the *interpersonal first principle* and *joint attention* in language acquisition as suggested by Tomasello & Farrar (1986). In joint attention it is the mutual focus, 'the interpersonal' in Painter's terminology, that allows the parent to follow the child's interest, and therefore feeds into what is 'learnable' for the child through her experience and retention of knowledge. In this case what the child learns is also emotionally charged. Thus language acquisition is mediated by the people and physical environment, but it is dependent on the manner in which the environment interacts with the child and vice versa. In language socialization the amount and quality of input are important (Huttenlocher, et al., 1991, p. 245).

In bilingual families, where children learn their two languages from birth and each language from a different parent, bilingual socialization is mediated through language exposure patterns, parental language choices and discourse strategies. This is particularly important for the development of the minority language. Studies to date accorded little focus to the influence of linguistic environment on bilingual development. This thesis

offers further understanding of the role language learning environment plays in the course of BFLA.

3 Methodology and study design

In this chapter the study design, procedures of data collection and data analysis will be described.

This thesis portrays linguistic development of a child called Ria growing up as a bilingual. The study was of an ethnographic format, and described the process of bilingual first language acquisition (BFLA) in the early years (birth-2). Ethnographic longitudinal case study was suitable for several reasons:

- Ria's language learning environment could be examined allowing for identification of factors that had an effect on linguistic development
- observations were carried out in naturalistic contexts, using naturalistic language
- developments could be better understood since they were observed over a longer period of time
- multiple sources of data, such as audio-video recordings and diary notes and reflections from varied times and settings were available.

There are limitations to a descriptive case study. It can be argued a case study captures the developments of one subject only and no group generalizations can be made. Further, there is a risk of 'observer's paradox' (Lanza, 2008, p. 76), meaning that the presence of the observer can have an influence on the participants' behaviour, rendering the context less naturalistic. Moreover, a parent conducting research on her own child's language use may convey a certain bias to the analysis.

However, a number of authors (Cruz-Ferreira, 2006, p. 46; Deuchar & Quay, 2000, p. 2) have argued that despite its limitations a case study is in fact the most appropriate research method in early linguistic development. Firstly, while the findings cannot be used to make new generalizations, they can be used to refute previous generalizations or to suggest new areas of research that need to be explored further in a bigger scale study involving more subjects (Hua & David, 2008, p. 99). The criticism of observer's paradox can also be challenged, since in this thesis it was a 'parent-researcher', Ria's mother, undertaking the observations. Since a mother and a child are already familiar with each other, the need to establish a relationship with the participants is eliminated. This allowed ready access to Ria's familiar contexts for observation of naturalistic data and minimized the 'observer's paradox'. Moreover, as a 'parent-researcher' access to naturalistic data in more varied situations was available, as opposed to a researcher obtaining limited data recorded in

prearranged settings. According to Deuchar & Quay (2000, p. 3), a researcher's familiarity with the child's speech is in fact advantageous for correct interpretation of developing language, since in early words the conventional forms a child targets are phonologically modified.

3.1 Data collection

There were two sources of data: audio-video recordings and diary records kept by the mother-researcher. As Lanvers (2001, p. 444) points out, these two data collection methods complemented each other. However, some instances of Ria's developing languages were missed, since the diary could not capture distributional usage and the recordings by no means gave an overview of the overall competence.

3.1.1 Diary records

The diary records consisted of notes and observations made throughout the period of the study. The records were made whenever the mother was with Ria, which in the family's particular case and carer arrangements was the majority of Ria's daily awake time. The diary records started while the researcher was expecting Ria and continued until the end of the study.

During the pregnancy diary records were kept on monthly bases. During the first 2 months after Ria's birth sporadic observations of the communication between Ria, her parents and other close relatives were recorded. From approximately 0;2 months of age observations and developments were recorded at least once a week. However, if necessary, notes were made more often or on daily basis. Observations of Ria's language, physical and cognitive developments were recorded, as well as language choice and language use patterns used by Ria's interlocutors in various situations.

From the age of 1;1 Ria started producing first words. This became the main focus of the diary recordings. From this age records of any new linguistic developments (such as new words) were kept whenever they occurred. When Ria's utterances became frequent and it was impossible to record them daily, only new types of utterances were recorded. De Houwer (2009a, p. 223) argued a systematic diary study can be particularly suitable for recording of a child's early lexical development. While transcripts of recorded sessions are limited in this respect, since they do not capture a wide range of lexical productions, a systematic diary can capture many various productions over an extended period of time.

From the age of 1;4 until 1;10 an additional recording of Ria's utterances was made in order to obtain an approximate count of word types produced and to obtain data on Ria's

expressive vocabulary. An attempt was made to record all of Ria's utterance tokens on a monthly basis. Each month the researcher spent a number of days recording every utterance token into a vocabulary sheet. From these lists word types were tallied up for a total number of words. Initially 1-2 days were sufficient to record every token Ria produced. With the increasing number of words, and to be able to capture as many new types of words as possible, the number of recording days each month was increased to 3-4 days. With more frequent speech it became impossible to record every single token, thus the aim was to record every utterance in the first two days, and on the subsequent days to record only new types of words as they occurred.

Thus during this period two kinds of utterance recordings were taking place: usual sporadic recording of all new utterance types as Ria produced them, and monthly recording of utterance tokens produced by Ria in a 1-4 day period, in order to capture all word types in production and to obtain an approximate word count each month.

From the age of 1;10 Ria had progressed from one word stage to two-word and multiple-word stages. During this period Ria's vocabulary and her ability to form many new and different constructions grew significantly, and it became impossible to record every utterance. Thus from this age daily notes of new utterance types were kept and the focus of diary notes was mainly on the new word combinations produced rather than individual new words. The word count ceased.

At the end of the study from 1;11 Ria produced multiple-word combinations as well as first sentences with adult like syntax, first in the Slovak language and soon after in the English language. Initially an attempt was made to record all of the early sentences, but the frequency of such constructions was rapidly increasing and it was possible to record only new structures as they occurred, rather than every instance of a structure or a sentence.

Throughout the study the mother did not notice that the act of taking notes during daily activities was in any way obtrusive to Ria, nor did it seem to affect Ria's behaviour. On the contrary, since the practice was taking place from birth, Ria perceived the mother's note taking as a normal part of daily activities. When Ria was able to express herself linguistically, she demonstrated that she understood what the mother was doing by occasionally stating that the mother was recording what she had said, telling the mother what to write or spontaneously repeating words for the mother, as in this example:

[mami, piʃ faɪfɛn] 'mami, piš frying fan' "mummy, write frying-pan" 1;11.6.

However, the research purpose had no effect on Ria's behaviour.

The diary records as well as Ria's utterances were initially written by hand. For the purpose of analysis Ria's utterances and notes related to those utterances (such as date, situational context, interlocutors, translation into English, comments, etc.) were transferred to computer files of various formats depending on the intended analysis. Diary data was used mainly to establish developmental stages, keep track of the onset and development of individual linguistic items and for collection of cumulative vocabulary.

Ria's utterances recorded in the diary are reported in the following format:

[phonetic transcription of utterance] 'gloss' "English translation" (age),

as in

[mami] 'mami' "mummy" (1;7)

for Slovak utterances, and

[dædi] 'daddy' (1;7)

for English utterances. Some utterance sequences were transcribed using the CHAT transcription format as used on the CHILDES system (MacWhinney, 2008).

3.1.2 Audio-video recordings

A total of 251 audio-video recordings were available in this study, of which 67 were selected for transcription and analysis. The recordings started when Ria was aged 0;4 and lasted for the duration of the study. Over this period several recordings were made weekly aiming to have at least one recording per week. Their length varied between 5-40 minutes, but on average lasted about 15-20 minutes. A JVC Everio HDD (hard disk drive) digital camcorder supported by a tripod was used for the audio-video recordings. This allowed for quality audio as well as video recording, with easy transfer or reproduction of data and no loss of quality. The use of audio-video was necessary to capture verbal and non-verbal communication as well as context.

During the recording times, it was the mother who operated the video-camera, thus there was no concern with an external observer affecting the participants' behaviour. As some authors pointed out (Deuchar & Quay, 2000, p. 18), it is possible that the video-camera might also be considered an obtrusive object for the participants, affecting their behaviour. However, Ria was quite familiar with the video-camera as a permanent object in the household, and although she did look at it at times and reached out to touch it, it was more out of Ria's natural interest to examine all objects in her environment. At a later stage, when Ria was able to express herself linguistically she also asked about the object, and its

purpose of recording family videos was explained to her. Ria also enjoyed watching the recordings, much like she was used to looking at photographs taken by the family. Thus it was concluded that the research purposes of the recordings were not affecting Ria's behaviour.

With the mother being the operator, it was possible to start recording virtually at any time and there was no need to set up regular sessions. Rather, various contexts that Ria engaged in throughout the day were captured, on different days of the week, at different times of the day and in different locations of the household. Activities during recording sessions included family meal times, one-on-one play time, play with toys, pretend play, role playing, sharing and reading books, singing nursery rhymes, Ria helping with household duties, bath time, special occasions such as parties and celebrations, and occasional outdoor play. It could be argued that recordings made in the home environment only are not sufficient, but it was observed that Ria was the most productive in her own environment, where she felt comfortable and did not need any time to adjust to a new situation.

During the recording sessions Ria was allowed to move freely in her environment so that any limitations on her natural behaviour and linguistic expression were minimized.

However, as she learnt to crawl and then walk, her increasing ability to move around freely made the task of capturing every moment and utterance, without adjusting the angle of the camera, more difficult. Thus the activities of later videos from approximately 18 months include more play, reading and meal times, since these were situations where Ria tended to stay mainly in one area, which allowed for a less interrupted recording.

Ria's interactions with her regular interlocutors were recorded, primarily with the mother and the father, with occasional recordings with other members of extended family. An analysis of the weekly patterns of language exposure based on the waking time showed that Ria was exposed to three possible language environments: the Slovak environment, the English environment and a bilingual environment where she was addressed in Slovak by the mother (or other participants) and in English by the father (or other participants), thus required to alternate between *Language A* and *Language Alpha* during interactions. These three contexts were thus determined by the language spoken to Ria by her interlocutors, and these in turn defined the language context of the recordings. However, the language preferred by the adult to address the child should not be considered the main determinant of the *language context* (Tracy, 2001, p. 18). It is the target language, and it does not have to be in line with the actual languages used in the interaction. Determining

language context may be problem free when analyzing interactions between an adult and a small, pre-linguistic infant, or a young child who started producing first utterances. It is a different matter with a child who has become more skilled in using language to communicate. While adults use discourse strategies that allow them to maintain their preferred language context, a child may not adjust her language choice accordingly. She is able to impose her language preferences, which need to be considered when analyzing interactions. A child who is able to differentiate pragmatically and thus able to make language choices consciously is helping to establish the language context. A child's language choice can influence the language mode of both bilingual speakers, which can affect their subsequent language choices further. Therefore three aspects were considered in determining the language of the context:

- adult language choice
- child language choice
- adult's and child's responses to their respective choices.

It was necessary to consider if Ria adjusted her language choice or insisted on her language preferences. Language context may be affected by both the child's and adult's language preferences and discourse strategies. A child who maintains a language different to the adult is establishing bilingual language context, whereas a child who adjusts her language choice accordingly helps establish monolingual context. Similarly, the adult interlocutor may or may not accept the child's preference. If adults adjust their language choice upon a child's insistence to use her preferred language they trigger language shift, e.g. from monolingual *language A context* to *bilingual context* using both languages, or to monolingual *language Alpha context*. Language context thus becomes a fluid concept a child does not accept passively, but negotiates in the same manner adult speakers do.

Considering the above factors, three possible language contexts were identified and captured in the video recordings. Transcriptions were carried out in these proportions:

- Slovak context - 36 videos
- English context - 6 videos
- Bilingual context - 28 videos.

In 2 videos the context changed from bilingual to Slovak, and vice versa, and in 2 videos from bilingual to English and vice versa. Overall there were more videos in the Slovak and bilingual contexts than there were in the English context. This imbalance, however, reflects the overall patterns of authentic language exposure, as analysed in section 4.2. Ria

was exposed to Slovak environment ranging from 36-51.5%, to English environment 1-4% and to the bilingual environment ranging from 47-61% of the total waking time. In addition there were also two periods in which Ria was exposed to bilingual environment 100% of the time, including the first 2 weeks of Ria's life and the family's overseas trip to Slovakia of a 5 week duration when aged 0;11 - 1;1. Thus overall, the imbalance of the language contexts of the video recordings reflects the actual exposure to the two languages in the home during the study.

Setting up specific recording sessions when Ria would be interacting only with an English speaking interlocutor would not be an entirely natural context for her, since the normal daily arrangements of the family resulted in a natural imbalance in monolingual language use. De Houwer (1990, p. 77) describes a similar situation where usual patterns of language use in the family influence the balance of data collected in each language. However, as pointed out by De Houwer (1990, p. 77), it was preferred to obtain more naturalistic data. Care was taken to include sufficient number of interactions with English speakers (predominantly with Ria's father) that would allow for comparisons of Ria's use of both languages. Moreover, the father often reported to the mother on Ria's language use on occasions when he was spending time with Ria in an English context.

Audio-video recordings were used to support the developments established through diary records. For this purpose selected recordings were transcribed.

3.2 Data analysis

The main unit of analysis was the utterance. Following Lanza's (1992, p. 638; 2004, p. 123) definition an utterance was defined as "*a single word or combination of words with a single intonation contour*". Thus utterance could vary in length, as reflected in each chapter.

Chapter 6 analysed one-word utterances. Due to the instability of first productions criteria to identify possible first words vary in strictness and the type of productions included. Some studies developed detailed mechanisms (de Boysson-Bardies & Vihman, 1991; Vihman & McCune, 1994), while others use more general criteria (Cruz-Ferreira, 2006; de Boysson-Bardies & Vihman, 1991; Petitto, et al., 2001; Tamis-Lemonda, Bornstein, Kahana-Kalman, Baumwell, & Cyphers, 1998). In general it is agreed that words elicited by an adult or reproduced after an adult are not considered part of the child's active vocabulary. It is not until the child can produce words spontaneously with a clear purpose in a particular context, as pointed out by Cruz-Ferreira (2006, p. 149), that productions can

be considered first words. Most researchers agree on the following minimum identification conditions for first words:

- approximation to the adult form: at least one segment matching with the adult form, the syllable pattern and stress matching with the adult form
- use of a consistent word form (sound sequence) consistently in relation to a referent across multiple contexts
- appropriate use in more than one situation
- identification by the interlocutor
- spontaneous use of the word in context.

In other words, to be considered a word the production must be a spontaneous, consistent sequence of sounds that regularly corresponds to any approximation to the target adult form. This working definition of first words was adopted in this thesis to avoid any parental bias in interpretation.

Chapter 7 analysed two-word and multiple-word utterances. Some word combinations had the form of telegraphic speech, with a short pause and falling intonation between, but still formed one unit and therefore an utterance. The decision was made not to calculate MLU. Although this measure is used in language acquisition studies to determine the level of the child's grammatical development, De Houwer (2009a, p. 65) argues it can be problematic as comparison across a bilingual child's languages. Moreover, due to the fact that inflectional morphology in early combinations appeared at a context related surface level, and became productive only towards the end of the study period, MLU would not accurately reflect Ria's competence.

Chapter 8 considered different types of utterances from two perspectives: language mixing and language choice. In structural analysis of mixing the unit of analysis was an utterance. Utterances were categorized according to language of utterance, language context and structure into 5 categories:

- Unilingual Slovak
- Unilingual English
- Mixed utterances
- Indeterminate
- Bilingual.

However, when considering language choice *conversational turns at talk* on discourse level became the unit of analysis.

Lastly, in some chapters observations were made on speech perception, segmentation, comprehension and paralinguistic meaning making. The study of these aspects in bilingual infants in the first few months of life is subject to methodological constraints. These aspects were examined mainly through observations of Ria's reactions to parental address. Conclusions were therefore inevitably affected by the parent's interpretation of cues given by Ria, the meanings the parents assigned to such cues, and parental responses. Language comprehension is also difficult to study. The CDI method was not used in comprehension data collection because there was no translation of the inventories available in the Slovak language. Other methods were used to measure comprehension relying on behavioural responses to familiar words within context, such as the head turn and eye gaze. These responses confirmed Ria's focus on speech and thus the recognition of familiar words in a sequence of speech.

3.2.1 Transcription

Of the total 251 recordings, 67 were used for transcriptions. Due to the high number of recordings, the time consuming nature of the phonetic transcription and coding of other details it was not possible to transcribe and include all recordings for a detailed analysis. However, all the recordings available in this study were used for a general analysis of Ria's language learning environment, as well as to determine the approximate developmental stages and milestones. Preference was put on obtaining a bigger volume of recordings, recorded more frequently over a longer period of time and in various situations. While it would be possible to observe changes and developments from less frequent recordings, for example on a monthly basis, weekly videos allow to follow the progression of developments through, noting subtle changes as well. The continuity of development was regarded more important than notable changes over longer periods, despite the fact that it was a more time consuming task.

Only selected sections of the video recordings were transcribed and analysed with the purpose of a more detailed analysis of language use by all interlocutors in the context. The selected recording sections were transcribed using the CHAT format of CHILDES. The conventions used in transcription are outlined in the following sections. List of transcribed videos is reported in APPENDIX A.

3.2.1.1 Selection for transcription

During analysis each recording was viewed and a summary of linguistic phenomena present in Ria's speech, developmental aspects, language choice by participants and

language use patterns was produced. When selecting passages for transcription, the main purpose of the study was important - to gain an insight and understanding of the overall process of BFLA in the early years, which naturally requires observations over a longer period of time, rather than detailed analysis focusing on individual aspects or periods. The following principles for selection were adhered to:

- A maximum period of 2-3 weeks between passages to ensure continuity of development
- Passages that included linguistic productions representative of particular periods
- Passages with the largest proportion of Ria's spontaneous talk, which would most accurately reflect her linguistic abilities within the period
- All three language contexts must be represented.

The linguistic phenomena and Ria's abilities for each period were cross-checked with the diary records (with weekly recording schedule). Thus for example dyad interactions between Ria and an adult participant were the subject of transcription, while the adult reading to Ria whilst she was listening only and not spontaneously interacting, or extended conversations between adults whilst not addressing Ria directly were excluded from transcription.

Sections were selected according to the following criteria:

- Each transcribed section represented an interactional episode
- An episode was considered as ending whenever the topic or the focus of the interaction changed, or whenever there was no response following a speaker's turn for 10 seconds or more.

For each episode the setting, activity, and persons present were noted. Following Lanza's (2004, p. 128) methods the first 50 utterances of a recording did not need to be excluded in transcription, since the child was already familiar with the parents.

3.2.1.2 Phonetic and orthographic transcription

Using the principles of CHAT format, all child and adult utterances in a selected section were transcribed. Since Ria's utterances before 2 years of age were recorded, the productions did not yet have adult forms, and approximations may have been overlooked and not interpreted as attempts to produce an adult word. To avoid this, all of Ria's utterances were transcribed phonetically using broad phonetic transcription based on the International Phonetic Alphabet (IPA) symbols. A phonetic transcription allows for all

utterances, including proto-words, to be interpreted within the context, not just the utterances that closely resemble adult forms.

IPA conventions for transcription of speech are not fully adequate for transcribing infant and child speech. A child with a developing articulation is unlikely to produce sounds occurring in her languages consistently, but with variations in the pronunciation of a particular sound as she is attempting to produce the target phone. However, as Cruz-Ferreira (2006, p. 56) points out, IPA provides the most convenient alternative that approximates the actual sound productions of infants.

A further problem with the use of IPA when transcribing Slovak utterances was the fact that in Slovak linguistics the IPA conventions are not traditionally used for phonetic transcription of the Slovak language. The accepted and widely used system, the Slovak Phonetic Alphabet (SPA), is based on the symbols used in the orthography of the language (Král', 1984, p. 39). The suitability of IPA for transcription of Slavic languages has been criticized in Slovak linguistics (Ivanecký & Nábělková, 2002, p. 86). It was pointed out that the IPA was based primarily on non-Slavic languages, and consequently difficulties with accurate phonetic transcription of Slavic languages arise. At the same time the need for a solution of discrepancy in the use of two transcription conventions has been acknowledged, especially for the purpose of wider international publications of research focusing on the Slovak language.

Ivanecký and Nábělková (2002, p. 89) provide a conversion table from SPA to IPA and admit that even this conversion system is not entirely problem free. The main difficulty in representation of Slovak sounds presents itself with vowels. According to Ivanecký and Nábělková (2002, p. 91) vowels in the Slovak language are not identical with the cardinal vowel system, since they are not identical with open or closed vowels in the IPA. It could be argued, however, that any form of representation of sounds with a particular symbol is merely an approximation. Although the sound representations used in Ivanecký and Nábělková (2002, p. 94), as pointed out by the authors, are not entirely suitable for the Slovak language, nevertheless, they are the closest approximations available to date.

The reality that infant and child speech is not always consistent with adult forms and the fact that only a broad phonetic transcription of Slovak utterances was necessary in this study meant that the current available transcription system of Slovak into IPA was sufficient. This was the transcription used throughout the thesis when transcribing Ria's Slovak utterances phonetically. When transcribing Ria's English utterances, IPA for

English was used. A list of the IPA symbols for Slovak language and their orthographic representation as used in the transcriptions is shown in APPENDIX A.

In transcription of adult utterances the usual orthography of the respective languages was used. For Slovak utterances a loose translation into English is provided as well. It is also necessary to note that the transcriptions in this study are representations of spoken vernacular language. As such they necessarily include non-standard forms. This is the model of language presented to Ria. When a child is acquiring language as a tool for communication, she targets the model of languages in her environment in her utterances, and consequently adopts the forms that are presented to her in the input. Therefore, when transcribing adult utterances care was taken to preserve all non-standard adult forms in the transcription.

3.2.1.3 Conventions of CHAT transcriptions

The transcriptions were produced using conventions of the CHAT transcription format (MacWhinney, 2008), which consists of two sections:

- an introduction to the transcription contained in the file headers,
- speech and non-speech lines contained in the main and dependent tiers.

The obligatory file headers delineate the beginning and end of the file, and include constant headers with information about the participants, date, place and situation of the recording, age of Ria and languages used by the adult participants when addressing Ria. There are also changeable headers showing the location of the passage (interactional episode) in the recording.

The headers are followed by speech and non-speech lines in which participants' utterances and other information are reported. Only these lines were reproduced in examples in this thesis. Each example is followed by Ria's age at the time of recording shown in brackets, as shown in the following example:

```
%sit      RIA and MAM are reading a book when RIA picks up a magazine and
           passes it to MAM
*RIA      [mama. mami ja.]
%add      MAM
%glo      mama. mami časopis.
%eng      mum. mummy('s) magazine.
```


*MAM To je mamičkin časopis, ano.
 %add RIA
 %eng That's mummy's magazine, yes.
 *RIA [da ʃai mami]
 %glo dá časopis mami
 %eng (Ria) give magazine (to) mami
 (1;8.9)

Speech lines consist of main tiers, showing the utterances. These are indicated by an asterisk and a name assigned for each participant. Following each utterance are dependent tiers containing non speech lines. These are preceded by the symbol % and include additional information, such as orthographic gloss of the target utterances that Ria produced, which also indicates non-standard child forms and in some cases an idiomatic meaning of Ria's utterance. For all Slovak utterances an English translation is provided. When necessary for analysis other dependent tiers are also included to indicate addressees of utterances in a bilingual context, proxemic, gestural or paralinguistic information, situational context and actions of the participants, addressee of the utterance, analytical comments and explanations. This information was necessary for interpretation of Ria's utterances and to determine the language context and language mode of the speakers in analysis of language mixing and language choice. Care was taken to include all relevant aspects of the interaction that communicated some form of meaning, such as proxemics, gestures, whispering, laughing, crying sounds, and actions.

A list of speech lines and non-speech lines used in the transcriptions, explanations for each abbreviation and other utterance markers from CHAT manual used in the transcriptions are summarized in APPENDIX A.

In addition, when required for a more detailed analysis of speech such as pauses, prosody and intonation patterns, other symbols adapted from the CHAT manual were used in the transcription. For example during the telegraphic speech stage, when Ria was producing early two-word combinations by leaving a pause between two words with a falling intonation, the pauses and intonation patterns were recorded and coded. Occasionally it was necessary to mark intonation patterns used by Ria with Slovak as well as English utterances. Symbols used for this type of analysis are also listed in APPENDIX A.

The transcriptions were not verified by a second transcriber, since a person that would be proficient in both languages and trained in linguistics and phonetic transcription was not found.

3.3 Data presentation

Linguistic development tends to be described by way of stages that are organised in a chronological order according to milestones achieved by particular age. By choosing to operate with *stages* researchers suggest that linguistic development takes place in a linear fashion, with periods of a particular duration, uniformly following a set sequence (Hoffmann, 1991, p. 72). Hoffmann (1991, p. 72) pointed out several problems with describing development in terms of stages. Firstly, while general developmental patterns are the same and normally developing healthy children will go through the same progression of development, each child develops at a different rate, and their language acquisition is dependent on various social, psychological and environmental factors. Secondly, developments do not follow each other in a perfect sequence, rather it is often difficult to determine when one finishes and another one starts. Developmental stages seem to come in waves and often two stages overlap for different periods of time.

Nevertheless, for the purpose of this thesis the data were organised into developmental stages. A developmental stage can be defined as a period that is most characteristic of a development of a specific linguistic trend. A stage started shortly after the first occurrence of a particular phenomenon, when Ria started using it regularly, and it lasted until a new development became more dominant. Since linguistic items were learnt over time in waves of development and several new items appeared simultaneously, the stages overlapped. Periods where two stages overlap will be clearly specified to highlight progressions in the development of linguistic trends.

The following overview lists the stages that were observed in the data for both languages, and gives an approximate age range and a brief description of each:

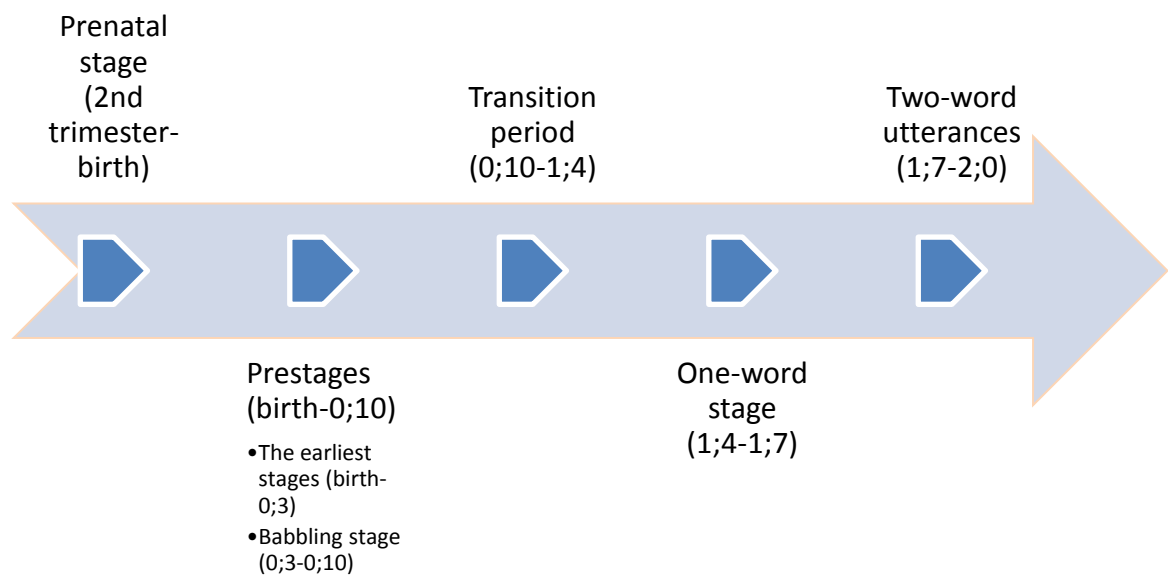
- **Prenatal stage (2nd trimester – birth):**
 - The auditory system becomes functional around the twenty-fifth week of gestation
 - The foetus is familiarized with the prosody and rhythm of the languages spoken by the mother and people she regularly interacts with
- **Prestages (birth – 0;10)** subsume two periods (Oksaar, 1983):

- *The earliest stages* (birth-0;3): crying sounds and early cooing (glottal and velar sounds), vocal expressions are reactional
- *The babbling stage* (0;3-0;10): expressions become spontaneous; Ria is responding to others interacting, playing with cooing and babbling sounds, expressing emotional states and feelings, vocalizations are accompanied by gestures
- Ria is creating expression-content associations
- Ria starts responding to her own name at age 0;6
- **Transition period (0;10- 1;4)** includes rich linguistic repertoire:
 - Pure babbling (e.g. [baba] [pa] [mamamam] [dadadada]) resembles adult speech in a number of features: it combines sounds creatively into sequences similar to syllables, words and longer stretches; it appears to have intonation patterns similar to adult speech, most often statements and exclamations; it follows the turn taking rules of a dialogue.
 - "Babbling words" (also termed vocables, babbling words, vocalizations) are phonetically consistent vocalizations, often combined with paralinguistic and kinetic means (e.g. [a: a: a: a:] + pointing and leaning towards an object, [iʝaʝ] + laughing) which Ria invented herself. Their form and functions resemble adult words, but since they are idiosyncratic can be understood only by the caregivers.
 - Words used at this stage are approximations to adult words which Ria attempts to produce. Their meaning can be established in numerous situational contexts (e.g. [mama] 'mami' "mummy", [dada] 'daddy', [dada]→[kaka]/[gaga] 'kačka' "duck", [Jeje] 'kde je' "where's", [ham] 'hami' "boobie").
- **One word stage (1;4 – 1;7):**
 - Words in the form of holophrastic utterances appear
 - Ria uses paralinguistic and kinetic means in combination with holophrases
 - Prosodic characteristics and situational context determine the meaning, since the reference depends on the situation
 - By the end of the stage Ria actively produces approximately 245 words
- **Two-word stage (1;7 – 2;0):**
 - Ria's repertoire consists of both one-word and two-word utterances, as well as some multiple-word utterances, which express basic semantic relations (e.g. agent-action)

- Combined utterances can have the form of word-utterance blocks, which consist of two one-word utterances uttered together but with separate intonation and a pause between, or the form of two words uttered under single intonation
- Expressive vocabulary expands
- Productions develop further and approximate adult forms closer
- Inflectional endings appear
- Early word ordering with syntax appears in multi-word combinations.

The progression of stages is shown in Figure 1.

Figure 1 Developmental stages



Aspects of the prelinguistic stages relevant to the developing bilingualism will be discussed briefly. The stages from the onset of speech (One-word and Two-word stages) will be analysed in more detail showing examples from the data. First the productions typical of each stage and then emerging communicative competence skills will be described. Lastly, the question of emerging bilingualism will be addressed.

Several early studies in childhood bilingualism report the development of bilingualism in stages organized before and after formal differentiation of the two languages (Redlinger & Park, 1979; Vihman, 1985; Volterra & Taeschner, 2007). However, as shown in the literature review in section 2.2, these models of bilingual development were opposed in more recent literature. Moreover, since in this thesis differentiation was perceived as a process rather than a point in time this approach was not adopted. Mixing was explained

by pragmatic and sociolinguistic factors rather than lack of differentiation, as discussed in Chapter 8.

A child's linguistic development does not take place in isolation from other developments. Infant's contexts provide the topics for linguistic interactions she initiates or is engaged in by others. During the early years of life such contexts are limited in comparison to an older child's contexts, since they are to a great extent related to the infant's motor skills and readiness. The contexts of interaction stem from what the infant is able to participate in. As she progresses through development the contexts expand and become more varied, which also impacts on further linguistic development.

4 Language learning environment in the family and linguistic input

This chapter includes a descriptive analysis of Ria's language acquisition history. To present this information as accurately as possible, protocol for information about BFLA contexts developed by De Houwer (2009a, p. 334) was adapted. Apart from description of Ria's language acquisition experience the protocol requires the following background information:

- Family composition
- Patterns of home language use
- Child's care history
- Child's residence and long-term travel
- Child's health.

Ria's linguistic environment consisted of two languages, Slovak and English. From the prenatal stage the mother addressed Ria in Slovak. The father did not address the foetus directly, he addressed Ria in English from birth. Since Ria's first exposure to both languages after birth occurred within a period of a week, this type of bilingualism can be termed bilingual first language acquisition as defined by De Houwer (1990, 2009b).

4.1 Child's parents

In a discussion paper on methodological issues in the field of bilingualism Grosjean (1998, p. 133) suggested that it is necessary to record not only the language environment of the child under study, but also the language background of the people from whom the child received the most language input. Language background of a parent is a factor that influences parental language attitudes, and therefore language acquisition. In the following paragraphs Ria's and her parents' language history is described in detail.

Table 4.1 Family Composition

Family member	Year of birth	Country of origin	Gender	Employment status
Mother	1976	Slovakia	Female	Student
Father	1974	Australia	Male	Full-time
Child	2007	Australia	Female	-

4.1.1 The mother

Ria's mother was a multilingual speaker of Slovak, English, Italian and Czech³. The mother was born in Slovakia and her mother tongue was Slovak. She was growing up as a Slovak native monolingual speaker and completed primary and secondary education in the Slovak language. At the age of 8 she started studying English as a foreign language at school and through an after school language course. She studied English formally until the completion of secondary school at age 18, with English as one of the matriculation subjects. She then taught English as a foreign language at a primary school for a period of two years.

Apart from learning foreign languages through formal schooling the mother was also learning the Czech language largely through media exposure. In the historical and social context of Slovakia the Czech language appeared widely in all forms of mass media and a large majority of Slovaks acquired varied degrees of communicational skills. Due to the typological closeness of the languages (both Slavic languages) and the joint history of the two nations even children of school age were expected to understand Czech without formal tuition. In the literature this form of linguistic competence is referred to as passive bilingualism (Nábělková, 2002, p. 102). While there was an awareness of the two languages and a clear distinction was made between Czech and Slovak, it was not a usual practice to label this form of linguistic acquisition as bilingualism and children only developed their bilingual awareness as adults.

From the age of 16 the mother attended a course in Italian at a state school of languages and later enrolled in a university course in Italian completing one semester in Slovakia.

At the age of 21 the mother migrated to Australia, where English became the dominant language in both private and public spheres. Most importantly, English became the language of her relationship with Ria's father, a monolingual speaker of English. After migrating to Australia the mother enrolled in a university course in languages and linguistics and completed Honours degree in Italian.

Thus since migrating to Australia the mother experienced a major shift in her language use - from dominant Slovak to dominant English. After her arrival in Australia her Slovak usage initially became relatively limited. She had regular face-to-face contact with her sister in Australia and occasional contact with some acquaintances, but her contact with all

³ In addition to the four main languages the mother also acquired Russian, German, Portuguese, Latin and Greek as foreign languages. However, she had no contact with these languages since school and had only passive knowledge.

other relatives and friends from Slovakia was limited to telephone conversations and email exchanges, except for 2 one-month visits to Slovakia, and 2 one-month visits by Slovak relatives in Australia. Slovak therefore shifted from being the mother's primary language of communication in all domains to being used mainly in the spoken form with limited reading in the private domain. English meanwhile shifted from a foreign language to a dominant language used for speaking, writing and reading in most domains.

This shift started reversing when the mother took up a role as a volunteer presenter in a Slovak ethnic radio and later became a translator, thus increasing her use of the language to other domains. She met more people of Slovak background and spent more time reading and writing in the language on various topics.

From the mother's pregnancy with Ria the language shift to English was reversed in the private domain as well. She started using Slovak when addressing the foetus in-utero, and continued to do so after Ria was born. Thus Slovak again became more dominant. Since throughout the first two years of Ria's life most of the time with Ria was spent at home, Slovak became the overall dominant language for the mother again.

When the mother's experience with Slovak as dominant language in childhood and adolescence is compared to her experience with Slovak as the dominant language in the first years of Ria's life, there is a significant difference related to topics and register. While prior to Ria's birth the topics varied from private to academic domains with respective registers, after Ria's birth they tended to be limited to the private domain and concerned the language of small children.

4.1.2 The father

Ria's father was a monolingual speaker of Australian English. He grew up in an English speaking family in Australia. The father's heritage background on the paternal side was Greek. He was exposed to limited Greek input since childhood. He was regularly addressed in Greek by his paternal grandparents. Although he understood only some utterances addressed to him, he was able to infer meanings from the context and answer appropriately in English. He was not able to communicate in Greek beyond a few basic phrases. He attempted formal study of the Greek language as a heritage language at school, and more recently through an adult language course, but did not pursue any further study to develop and maintain the skills.

The father also studied Italian as a foreign language for several years at school and at university but was never able to communicate other than a few idiomatic expressions, which he learnt mostly by rote.

The father also attempted to learn the Slovak language but lacked the motivation to continue. However, he was able to understand some words and phrases which he had acquired from exposure to the mother's interactions with the Slovak family and friends over the 10 years of the relationship. He was unable to express himself or to hold a conversation in Slovak apart from occasional attempts to use familiar words/phrases in a jovial manner.

Throughout the bilingual parenting approach and experiences in the bilingual family the father was immersed in the Slovak language since Ria's birth. While he was not directly addressed in Slovak, he was overhearing Slovak interactions as a participant in the bilingual context. One of the family's strategies was to interpret or retell interactions to the father, whether he requested an interpretation or not. Once Ria was able to express herself linguistically she also used this strategy for the father's benefit. The combination of overhearing Slovak interactions within the situational context and subsequent interpretation allowed the father to learn aspects of the Slovak language, such as vocabulary, expressions and some morphology. By the end of the study, he was able to use individual words and several simple phrases himself.

Although English was the father's dominant language, and the only language he was able to express in, his experiences with other languages positively shaped his language attitudes.

4.1.3 From monolingual to bilingual home

The language of Ria's parents' relationship was the language they had in common - English. It was the dominant language in the nuclear home for 10 years prior to Ria's birth. Slovak was also used in the home, but only in limited situations when other Slovak speakers were present (relatives and acquaintances), or during telecommunication with relatives and friends from Slovakia. If the father was not present during such interactions, only Slovak was used. If the father was present, the other speakers attempted to accommodate him linguistically when they deemed appropriate. As a result, on these social occasions mostly Slovak was used in interactions between Slovak speaking interlocutors, but whenever it was necessary or socially appropriate to include the father in the conversation, all Slovak speaking interlocutors momentarily switched to English.

However, the mother used only Slovak to address her parents and youngest sister directly even in front of the father⁴, since it felt neither natural nor right to address them in English.

Thus English was the primary language of the home before Ria's birth. After Ria's birth there was a shift from English dominant to a bilingual home environment. English became the language of usual communication between the mother and the father, and between the father and Ria. Slovak was the usual language of communication between the mother and Ria.

4.2 The child

Ria was born in a hospital in Adelaide, Australia, and during the one-week hospital stay she and her Slovak-speaking mother roomed-in. The father was present at the birth and visited daily afterwards. The hospital staff spoke Australian English in conversations with the mother and the father. Thus Ria was exposed to both languages from birth, and continued to receive regular input in both languages during the period of the study (birth to 2;0).

From birth each language was associated most importantly with a person. The mother, who addressed Ria in Slovak, was the primary caregiver since birth. Thus Ria spent the greatest proportion of time in the first 2 years with the mother. When the father, who addressed Ria in English, was the main carer, it was the only time Ria was exposed to English only.

Periods of such monolingual English contexts varied throughout the 2 years of the study, initially being limited to approximately 2 hours a week, later extending to 4 hours a week.

Ria's parents spoke English to each other. Thus when the whole family was spending time together interaction took place in the form of bilingual context. This occurred during weekends, and on average 3 hours during the working week (in the morning and at night).

Table 4.2 outlines patterns of most common language use in the family.

Table 4.2 Patterns of home language use (adapted from De Houwer 2009)

<p>NOTE: This figure/table/image has been removed to comply with copyright regulations. It is included in the print copy of the thesis held by the University of Adelaide Library.</p>

⁴ The mother had three other siblings (an older sister and 2 younger brothers) who were fluent English speakers and in Ria's father's presence she addressed them in English.

When Ria’s linguistic input is considered from her perspective, the mother used both languages, but strongly preferred Slovak when addressing Ria, while the father used English only.

Monolingual input in English was received also from other relatives in Australia. English was also overheard when spoken by other speakers, including the mother, in conversations with the father, and outside the private home domain. However, when the mother spoke English to other interlocutors, Ria heard this language as spoken by a L2 speaker, while influence from the mother’s L1 was apparent mainly in accent and pronunciation, with rare examples of transference on other levels of language functioning.

Ria received monolingual Slovak input from relatives who resided in Slovakia, which was limited mainly to telephone conversations. It also included a separate occasion of one month when relatives from Slovakia were visiting the family in Australia in August 2007. During this period Ria’s exposure to Slovak was from several interlocutors.

There was also a short period of time when the domain status of the two languages was reversed. During the family’s 4-week visit in Slovakia in July 2008 the language of the public domain became Slovak. The mother’s relatives and acquaintances used the standard Slovak spoken in the Bratislava region to address Ria. The only exposure to English from a native speaker that Ria received during this period was in interactions with the father, who continued to address her in English. The dynamics of language choice within the extended family whilst the father was present were the same as described in section 4.1.3. Thus Ria also overheard the mother and her relatives as L2 English speakers in their interactions with the father.

Ria’s residence during the study is summarized in Table 4.3.

Table 4.3 Ria’s residence and long-term travel (>1 week) since birth

From (m, y)	Until (m, y)	Residence/Place visited	Majority language(s)
July 2007	June 2008	Adelaide, Australia	English
June 2008	August 2008	Bratislava, Slovakia	Slovak
August 2008	July 2009	Adelaide, Australia	English

4.2.1 Ria’s SES and health

A child’s health and socio-economic-status of the parents are also factors influencing linguistic development. Ria’s social background was the middle class. Both parents were university graduates in professional jobs. The father was an IT consultant and the mother was a linguist undertaking doctoral research.

Ria was a healthy, normally developing infant and did not experience any health problems that could affect hearing, cognitive functioning or language use (De Houwer, 2009a, p. 336). Ria did not suffer from hearing or speech problems and had no developmental delays or disorders. It is therefore assumed that her linguistic development in the two languages should take a developmental trajectory similar to normally developing monolingual children in the two languages.

4.3 Parental language presentation

Bilingual parenting guides recommend a child is spoken to by an adult in their native tongue, in order to expose her to the natural form of adult language with minimal errors, and to achieve a consistent and accurate model (Menyuk & Brisk, 2005, pp. 30-31). Thus the model of the language a child observes is seen as crucial. Moreover, parenting guides suggest it is more important for a parent to have a relationship with a child based on the parent's preferred language, rather than to accommodate other people and include them in interactions, while neglecting the parent's language (Cunningham-Andersson & Andersson, 1999, p. 36). However, this aspect of linguistic relationship was not researched from the perspective of an emotional attachment based on a particular language.

In this thesis changes in the overall language patterns in the nuclear family occurred during the mother's pregnancy. The mother started addressing the foetus in Slovak as early as the prenatal period. She believed that since in the third trimester the foetus's auditory system is developed it was necessary to already provide input in both languages. In fact, research confirmed the role of prenatal exposure, and it is well understood that infants get used to the prosody of the mother's language in utero, resulting in newborns' preference for that language (de Boysson-Bardies, 2001, pp. 22-26).

The mother did not have to make a decision to bring up her child in Slovak. It was self-evident that the usual language of communication with her child would be her native tongue. Slovak was the language that felt most comfortable and natural while interacting with her child, since she was able to provide a linguistic bond through the use of Slovak motherese (Barron-Hauwaert, 2004, p. 24). She had very limited awareness of CDS in English, and thus she would not be able to provide this form of input to Ria naturally.

The mother felt that establishing a close emotional attachment based on her mother tongue with Ria early in the relationship was crucial, since it was likely to determine the Slovak language as natural and normal medium for communication within the relationship. This would likely influence long-term success of Ria's bilingualism as well. She also felt it was

important that Ria would be able to confidently communicate with her side of the family in Slovak, namely Ria's grandparents, other relatives, and mother's friends and their children. The mother felt she would be greatly disappointed if her relatives had to resort to English to communicate with Ria, even though most relatives were fluent English speakers.

Thus for the mother a linguistic need arose during pregnancy to create a Slovak language context with regular in-utero exposure to the Slovak language. However, in her daily activities she engaged mainly in conversations with speakers of English, and lacked an opportunity to speak Slovak. The diary records include a note on the mother's active attempt to engage in daily routine by addressing the foetus in Slovak. Since the yet unborn child was expected in a relationship that was based on English, initially the mother had to consciously focus to ensure she spoke Slovak when addressing the foetus. This was despite the fact that Slovak was an instinctive form of interaction with children for her, due to childhood experiences with Slovak as a first language.

In the father's presence the mother's approach for a short period in early pregnancy was to interpret Slovak utterances, so as not to exclude him from address of the foetus. However, eventually she interpreted her utterances into English only when she judged it necessary to directly include the father in the address. Since she mostly addressed the foetus only it was a form of intimate mother-child dyad interaction and there was no need to interpret for the father's benefit. By the third trimester the mother felt comfortable with her language choices. Thus a period of approximately 6 months was necessary to establish an emotional relationship with the yet unborn child through the medium of the Slovak language in an otherwise English speaking environment.

The dynamics of language choices within the family changed again after Ria's birth. The mother used mainly Slovak and the father used English when addressing Ria, thus they separated languages according to a person. It was self-evident that from birth each parent would address Ria in the language that felt the most natural to them for interactions with an infant (De Houwer, 2009b, p. 4). Thus it was not a planned decision to use this approach, but it was intuitively suitable for the family's linguistic needs.

When parents use an approach in which they separate the two languages completely, it is called naturalistic separate setting. In practice the child hears one language from one parent, and the other language from the other parent, which is a variety of Grammont's one parent-one language approach (also called OPOL or 1P/1L) (Barron-Hauwaert, 2004, p. 4). When the speakers do not separate the two languages when interacting with the child, it is called naturalistic fused setting.

However, it is not always the case that families are strictly either separating or fusing their languages (Ervin-Tripp & Reyes, 2005, p. 87; Goodz, 1989, p. 32). De Houwer (2009a, p. 110) also argues this strategy is an exception rather than a rule in most families, and they do not adhere to such systematic presentation patterns. These two options roughly represent the opposing poles with varied preferences in between. It is more likely that at least one, if not both parents will occasionally, and in specific social situations, address their children in either of the two languages, thus use some kind of combination of the two settings.

Parental language presentation can vary not only between families but within each individual family (King & Fogle, 2006, p. 699). De Houwer (2009a, p. 111) suggests using the terms *1 parent/1 language* and *1 parent/2 languages* (1P/1L and 1P/2L) to differentiate between the two parental input principles, and proposes a third possibility, which takes into account that while one parent may be adhering to the 1P/1L principle, the other parent may be using both languages when interacting with the child. This combined principle is termed 1P/1L & 1P/2L.

Similar observations in support of the combined 1P/1L & 1P/2L principle were recorded in the diary notes in this thesis. The descriptions of language presentation pattern show that the basic principle used by the parents was 1P/1L. However, the general observation was that Ria did not receive uniformity but diversity in language presentation. Moreover, the family did not settle to one final approach, but it was a fluid phenomenon that continuously evolved with changing family and social requirements. Throughout the study various social and linguistic situations emerged when the two languages came into contact. On those occasions it was necessary for the family to plan ad hoc when deciding on appropriate language choices.

While person-language separation felt natural and simple when only one parent was caring for Ria, it was not always straightforward for the bilingual mother to adhere to Slovak in the father's presence. Although the father never expressed concerns about being excluded, according to the diary notes the mother was conscious so as not to appear that she is deliberately excluding him from interactions, and occasionally addressed Ria in English to accommodate the father linguistically.

Thus despite the fact that a linguistic bond was established with the foetus in Slovak, additional period of 5 months after the infant's birth was necessary for all family members to adjust to the approach. When Ria was aged 0;1-0;2 the mother's relatives from Slovakia visited the family for a period of one month. During this time the mother received support

for her need to bond emotionally with the infant through her native language, which reinforced the natural need for such bond. By the time Ria turned 0;5, the diary notes state that the mother was comfortable using exclusively Slovak when addressing Ria, even in the presence of the father. Slovak utterances were interpreted to the father only if he requested an interpretation, or the mother volunteered an interpretation if she wished to include him in the interaction. English was used to address both Ria and the father simultaneously. By the time Ria was 0;6 the diary notes state that the mother felt uncomfortable if she had addressed Ria in English. Similar experiences were recorded by parents in other diary studies (Leopold, 1939, p. 143; Saunders, 1984, p. 80).

The parents' language choices and the mother's alternation of languages according to addressees are shown in the following excerpt:

- %sit The family has just woken up, MAM is getting up, RIA and DAD are still in bed, chatting to MAM
- *MAM You're so cute!
- %add RIA & DAD
- *MAM Look at that, I love that! One leg lifted, and see the way her hands are like this underneath her. And the cheeks.
- %add DAD
- *DAD She's happy.
- *MAM Ty nádhera! No ahoj! Ahoj, krásna moja!
- %tra Beautiful! Well hello! Hello, beautiful!
- %add RIA
- *RIA [εε:ε ε:]
- *MAM [εε: ε εε:]
- %com Mirroring
- *MAM Si veselý človečik?
- %tra Are you happy shortie?
- %add RIA
- *DAD Look, she almost sit her bum up.
- *MAM Yeah!

%add DAD

*MAM Človečik moj veselý! Prečo si včera robil také problémy mame?
Človečik? Prečo, no? Si nechcela spať včera večer. Do ôsmej som tu s
tebou sedela. Do ôsmej, dve hodiny! Dve hodiny sme sa uspávali! Hm?
Prečo?

%tra My happy shortie! Why were you causing trouble for mummy yesterday?
Shortie? Why then? Didn't want to sleep last night. I was sitting here with
you until eight. Until eight, for two hours! We were putting you to sleep for
two hours! Hm? Why?

%add RIA

*DAD What about two days?

*MAM Two hours, I was putting her to sleep last night.

%add DAD

*DAD Ah yeah.

*MAM And she fell asleep, I xx xx.

%add DAD

*MAM You think it's a game? You think mami's playing a game with you?

%add DAD & RIA

*MAM Look look look look look!

%add DAD

*DAD What?

*MAM She's figuring it out.

%add DAD

*MAM Ty zlatko malé, ty!

%tra You little cutie, you!

%add RIA

*MAM She loves the tassels on the blanket.

%add DAD

*MAM To sa ti páčia tieto framforce? Framforce sa ti páčia? Páčia sa ti framforce?⁵
 %tra Do you like these tassels? You like tassels? Do you like tassels?
 %add RIA
 (0;6.16)

In the example the mother switches between languages according to the addressee, using English when addressing both the father and Ria simultaneously. When the father requests an interpretation the mother provides it. The father uses English.

Thus three discourse strategies used by the mother emerged in the first year of Ria's life:

- monolingual Slovak strategy when addressing Ria
- monolingual English strategy when simultaneously addressing Ria and the father
- bilingual strategy consisting of a Slovak utterance addressed to Ria followed by an English interpretation addressed to the father.

Similar social situations with other monolingual English speakers presented some difficulty in language choice. The mother found the need to accommodate other speakers and include them in the interaction by addressing Ria in English in their presence. While this often resulted in feelings of disappointment on the mother's side, such strategies provided Ria with a model of bilingual linguistic behaviour. Most often these occasions occurred in the public domains (in shops or at university), but emotionally it was most difficult with the father's monolingual side of the family. Such situations are psychologically difficult by nature, thus the added divide of the language the extended family did not understand could potentially hinder communication. To resolve this issue, the mother decided that the use of Slovak when addressing Ria was more important than accommodating other speakers in interactions. The decision was thus to maintain the use of Slovak when addressing Ria. The mother's beliefs were reaffirmed in the bilingual parenting literature:

"Before I would switch to English so as to not exclude anyone. Now I don't care how they feel. My relationship with my son is most important to me." (Dr Edgra Monterroso, USA, cited in Cunningham-Andersson & Andersson, 1999, p. 9.36).

Thus, when addressing other monolingual English speakers simultaneously the social situation called for the use of both languages. In these situations the mother was modelling

⁵ Non-standard use of the word 'franforce' "tatters" with substitution of the nasal stop [n] for [m], and used instead of the word 'strapce' meaning "tassels"

bilingual behaviour. Appropriate language choice was determined by the addressee, thus the mother modelled whom to address in which language. Occasionally the mother judged it more appropriate to address Ria in English so as not to offend any interlocutors by not including them in the conversation. The use of English was dictated for various reasons:

- the need for politeness to accommodate other speakers
- to include monolingual speakers in the conversation in order to maintain harmony
- to encourage interaction with Ria
- during interactions with other children in an attempt to make Ria feel comfortable among her peers
- mother's intentional modelling of desirable linguistic behaviour to Ria
- when the mother was interacting with other English speakers and Ria was present and overheard her speech, observing the mother in her role as a bilingual speaker.

The mother's usual strategy in interactions with other speakers was to separate the languages by switching to Slovak to address Ria individually, or switching to English to address the English speaker. She used English when addressing Ria and other English speakers collectively. The following example shows how the mother alternated between collective and individual address:

%sit RIA is unwrapping present from VAN

*MAM Nah, not in your mouth. Nepapaj to, nie, nepapaj.

%eng Don't eat that, no, don't eat.

%add RIA

%com MAM starts addressing in English, but immediately switches to Slovak

*MAM That's it! ## Wow! Wow! Wow! Wow wow wow!

%add RIA & VAN

*MAM Don't! Nepapáme to. Moja. To nepapáme. Ukáž to, v pusine? Nemáš.

%eng We don't eat that. Lovey. We don't eat that. Show me, in your mouth?
Nothing there.

%add RIA

*MAM Look! Look!

%add RIA & VAN

*VAN There you go!

*MAM Á! Čo to?

%eng What is it?

%add RIA

*MAM Á! Čo to je? Jáj!

%eng What is it? Yay!

%add RIA

*VAN xx xx xx

*MAM Two-in-one crocodile keys, two ways to play.

%act MAM reads the packaging

*VAN And with that thing.

*MAM Yeah, that's like a xylophone.

%add RIA and VAN

*VAN Or you can walk along, you can walk along with the stick and the eyes roll.

*MAM Ah, yeah!

%add VAN

*MAM Look! Look! That's so cute, isn't it? Isn't that a great toy?

%add RIA & VAN

(0;5.24)

In this example the mother-child dyad and Ria's monolingual English aunt were focusing on the same activity. The mother addressed Ria and her aunt in English, but she switched to Slovak when the focus was on parenting and therefore addressed to Ria only. On occasions the mother did not switch from English to Slovak to address Ria immediately after she had addressed the monolingual speaker. However, she realized this and repeated her own utterance in Slovak, so as to model the TE to Ria instead. This example also shows that the linguistic relationship was well established and the Slovak language was the language of usual and natural communication in the dyad.

Three strategies were observed in these situations:

- addressing Ria in Slovak and then rephrasing in English;

- informing other speaker(s) about what was said, a strategy which emphasized that although Ria was the addressee, she did not wish to exclude others;
- addressing Ria in English in the form of an invitation to start a conversation between all present, used when the mother's aim was to be inclusive, or to encourage Ria's interaction with others.

Another factor that further influenced the family's language presentation approach was a review of literature on childhood bilingualism, which allowed the mother to make intentional choices that developed the initial free approach into a family strategy. Specific strategies will be discussed in section 4.5.3.

In summary, the languages were presented to Ria in the 1P/1L approach in terms of relative language exposure during the first two years, however, during the second year there were increasingly more reasons to start separating language presentation according to social contexts. While the mother continued to use only Slovak when addressing Ria directly, there were social occasions when she was presenting both Slovak and English as her two languages, therefore using the 1P/2L approach. English continued to be presented as 1P/1L by the father throughout the study. A number of questions arise about the suitability of OPOL as a classification for the family's approach:

- What proportion of each language from the mother would be acceptable for this approach to be classified as OPOL?
- If the bilingual mother showed comprehension of both languages to Ria, but responded in one language only, is this viewed as 1P/1L or 1P/2L?
- If the monolingual father showed comprehension of some Slovak utterances used by the mother, and responded accordingly, but did not speak Slovak to Ria or another adult, can it be said he used the 1P/1L?

According to Barron-Hauwert (2004, p. 163), providing most of the time the parents separate the two languages and limit addressing a child in the other language to certain social situations, the approach can be classified as OPOL. Although OPOL was not successful in achieving strict language separation as previously claimed in the literature (Leopold, 1939), as a strategy it ensured Ria received maximum exposure to the minority language that was limited to a few speakers. This was especially important in the situation with one societal language, as was the case for Slovak and English respectively in Australia in this case study.

Establishment of a consistent language presentation approach in the bilingual family required some adjusting by the members over a considerable period of time. It appeared crucial to establish a suitable approach for the family very early on to maintain that approach in long term. In this way a positive shift occurred not only in actual language use in the family, but in the bilingual mother's perception of the monolingual father's experiences. It is also interesting to note it was the bilingual parent who felt unease at how to accommodate all family members in the bilingual family, while the monolingual parent had minimal difficulties adjusting to the patterns of language use.

Indeed, a number of diary entries mention the mother's private conversations on issues related to linguistic exclusion with several mixed-lingual families. They state most families frequently experienced concerns over exclusion of the non-Slovak speaking parent. Such concerns resulted in one of the parents abandoning consistent use of their native language when interacting with their children, and the use of the monolingual parent's language or the language the parents had in common within the family (the majority language that already received enough support from the wider community). This approach neglected the importance of establishing a strong emotional bond with a child in the minority language. It is also likely that the lack of impact belief in these parents caused them to switch to the other language, and consequently the children came to prefer the majority language. In most cases it proved very difficult to reverse such language shift in the bilingual children. Difficulties associated with alteration of a set language pattern in a linguistic relationship were also noted in research literature (Chin & Wigglesworth, 2007, p. 14). According to Chin and Wigglesworth (2007) any two interlocutors have a 'linguistic relationship' that is based on a certain language. This relationship evolves naturally and when the language pattern is set, it is difficult to alter. The importance of person-language bond and the psychological implications of such bond for the child were also emphasized by Kwan-Terry (1992, p. 258). Saunders (1984, pp. 129-130) also stressed the status of the language used during the initial encounter with children. He found it determined the language used in the future, since the children intuitively classified the person as a speaker of that language. In contrast, bilingual parenting guides advise to remain consistent and allow such issues to work out over time, stressing the parents' impact belief as paramount (Pearson, 2008, p. 124).

However, the findings in this thesis indicate that in a bilingual family it is necessary to establish linguistic relationship with a child as early as the antenatal stage and no later than at birth, despite the suggestions that such relationships will naturally evolve overtime

(Pearson, 2008). An early establishment of linguistic relationships and discourse strategies had a positive impact on language use and maintenance within the bilingual family, and possibly in later life for the bilingual individuals. The language-person bond became especially important for the minority language, since Ria did not receive input from many speakers of Slovak. It was the establishment of person-language bond that allowed parents to follow bilingual strategies such as 1P/1L and 1P/1L&1P/2L, since the child developed emotional association of her languages with different persons. These findings support Hoffmann's (1991, p. 38) suggestion that "*successful establishment of bilingualism may well depend on psychological factors*".

4.3.1 Language presentation within domains of use

Typically there are two main domains for the use of language - private and public, with many other subdomains such as person, topic, etc. (Chin & Wigglesworth, 2007, p. 14). Bilinguals often use different languages in different domains. Cruz-Ferreira (2006, p. 26) argues that a multilingual does not use several languages in exactly the same way every day and for the same purpose, because if that was the case, one language would suffice. While this argument is valid, for BFLA children languages cannot be as strictly separated into domains of use. The distinction is not as clear since a very young child actually uses both languages for the same purpose within the private domain. For a BFLA child the purpose stems from the need to communicate with a different person in a different language, since the family uses both languages for the same communicative purposes. Therefore in early childhood the most important factor of domain becomes the person. Often each parent interacts with a child about the same topic using their respective languages. Although it is possible that during play or reading different adults may focus on different aspects, the main argument remains that the distinction between the two languages in terms of domains in a bilingual family becomes blurred.

This thesis reports on the first two years of life, and therefore a stage when to the developing child individuals and their languages play a more important role than the language of the larger society. Thus the analysis will focus on the private domain, with some references to the use of languages in the public domains when necessary.

In the private domain Ria received input from the Slovak speaking mother during the working week, and input in both languages in the mornings, evenings and weekends. Exposure to English from the father was spread around short periods across different days, with a maximum of approximately 3 hours a week.

Ria's primary carer was the mother. An average amount of time spent in the mother's care alone was 60 hours a week. There were also periods of time when the father spent 2-3 hours per week as Ria's carer, but overall during this period the mother remained the primary carer for the rest of the week, with an average of 57 hours a week. Table 4.4 outlines the small changes in Ria's care history.

Table 4.4 Ria's care history in the home

	From (m, y)	Until (m,y)	Main caregiver/ Other caregiver	Average number of hours per week	Language(s) spoken to Ria by caregiver(s)
Period 1	July 2007	September 2008	Mother	60	Slovak
Period 2	October 2008	November 2008	Mother/ Father	57/ 3	Slovak/ English
Period 3	December 2008	February 2009	Mother	60	Slovak
Period 4	April 2009	May 2009	Mother/ Father	57/ 3	Slovak/ English
Period 5	June 2009	July 2009	Mother	60	Slovak

It is important to note that although the periods when the father had the role of the carer were short and limited in comparison to the rest of the week, it was the only time when Ria received input in English only. At all other times Ria continued to receive input either in Slovak or in both languages.

Ria's overall language exposure during different periods is shown in percentages in Table 4.5, showing usual patterns, pattern changes and relative frequencies of exposure. This calculation is based on weekly waking hours, which changed overtime. In the first 4 months waking hours totalled 35 per week, while from 11 months onwards total wake time was 80.5 hours per week. The daytime waking hours in each period account for 100% of language exposure time.

A weekly percentage of exposure to each language is calculated according to the number of hours spent with parents or other speakers of each of the two languages who were present. Thus there were 3 possibilities for language exposure: Slovak only, English only and both languages in the same context. This would occur when both parents were present, or when Ria and the mother were attending community based activities for toddlers, where they were regularly interacting with English speakers. An estimate of relative frequency of

exposure as a proportion of total amount of input based on the waking times is presented in Table 4.5.

Table 4.5 Weekly patterns of language context exposure

Period	Slovak	English	Both
Birth – 2 weeks			35h 100%
2 weeks - 0;4	12.5 h 36%	1h 3%	21.5h 61%
0;4 - 0;9	32.5h 51.5%	1h 1.5%	29.5h 47%
0;9 – 0;11	35h 50%	1h 1%	34h 48.5%
0;11 - 1;1			80.5h 100%
1;1-1;3	35.5h 44%	1h 1%	44h 54.4%
1;3-1;4	33.5h 41.5%	3h 4%	44h 54.5%
1;4-1;7	35h 43%	1h 1%	44.5h 55%
1;7-1;9	33h 41%	3h 4%	44.5h 55%
1;9 – 1;10			80.5h 100%
1;10-2;0	35h 43%	1h 1%	44.5h 55%

In the initial stages, up to approximately 18 months, the English contexts consisted of usual morning and evening routines with the father, whose time spent with Ria was limited due to work commitments. On the other hand, since the mother was the primary carer, she had more opportunities to model the Slovak language through varied shared routines and games. A change in language exposure patterns took place during an overseas trip of 5 week duration, when exposure to the languages was equal.

Therefore, for example in the period from 2 weeks to the age of 0;4, Ria received Slovak only input for a total of 12.5 hours, input from both languages simultaneously for a total of 21.5 hours and input from English only approx. for 1 hour per week. The division of carer duties impacted on the kind of linguistic skill Ria developed in the two languages, as will be shown in the following chapters.

Language exposure in the public domain is a complex phenomenon. Since the family resided in Australia, Ria was exposed to English input in interactions in public domains daily. The more meaningful contexts were when the bilingual family was spending time

with extended family, which occurred on average once a week throughout the study. In these situations relatives addressed Ria in English, while the mother continued to address her in Slovak, excluding the occasional situations when she used English, as described in section 4.3.

Other regularly occurring social situations, such as outings to university, at the community radio station, or during visits at other acquaintances accounted for short bursts of exposure. Conversations between the parents and other interlocutors were not addressed directly to Ria and consisted mainly of overheard speech. This is not to say that this form of input was not important. As De Houwer (2009a, p. 102) claims overheard speech helps children with some pragmatic rules, such as the use of pronouns, which cannot be seen in conversations they are involved in. Moreover, in these situations Ria was learning principles of bilingual behaviour.

Language use patterns were similar to interactions with extended family. The mostly monolingual English speakers used English when addressing Ria, while bilingual Slovak and English speakers tended to code-mix/switch before ascertaining with the mother that Ria spoke Slovak as well. In all situations the mother continued to address Ria in Slovak, with occasional switches to English where required by the social situation to accommodate other interlocutors.

The main changes in the public domain occurred from approximately 0;9 when Ria and the mother attended public social activities designed for toddlers. These kinds of situations were more meaningful to Ria, since they were targeted at children of her age and other children participated with their caregivers. Such activities included playgroup sessions, swimming lessons, gym for preschoolers, library sing-along and story times, and were taking place through the medium of English. However, even in such situations the mother continued to address Ria in Slovak, while switching to English when addressing other interlocutors. Ria was also receiving input from overheard speech from interactions that took place between the mother and other interlocutors. Thus even in the monolingual English public domain Ria was exposed to both languages. She received English input from other speakers and input in both languages from the mother.

Nevertheless, the diary records document changes in the mother's strategy for language choice when interacting with Ria in the public domain. During Ria's infancy the mother addressed her in Slovak only, without concerns of excluding other monolingual English interlocutors from the interaction. However, when Ria became linguistically expressive, the mother became more conscious of excluding other people from their interactions,

thereby often switching to English when addressing Ria so as not to exclude others present. The reasons for such changes are not clear; however, introspective observations by the mother provided a possible interpretation. It appeared that a mother-infant dyad formed a single entity whose interaction could not potentially offend other speakers. On the other hand, a mother and a toddler capable of expressing herself linguistically were separate individuals. The possibility that other interlocutors may be offended by exclusion from interaction existed, since they might perceive such ‘exclusion’ as intentional. The mother ascribed others the right to be participants in her interactions with a toddler, while they did not have this right during her interactions with an infant. This indicates the mother’s choice to be inclusive was triggered by the loss of privacy of interaction in the mother-infant dyad, since the mother-toddler interaction was perceived more public, requiring others to be included. Despite these beliefs the mother did not consistently include others in her interactions with the toddler by means of language choice. She based her choices on various factors ranging from emotional states to the other person’s level of engagement in the context. Nevertheless, her choices on inclusion or exclusion were modeling appropriate bilingual behaviour.

As Ria’s social network was extending, more frequent meetings with English speaking monolingual acquaintances often presented situations when their inclusion was appropriate. Such examples, however, were limited to English utterances at a time, and were not applied to whole conversations. More frequently the mother moved between the use of Slovak to address Ria, and the use of English to address the whole group, even if the utterance appeared to be addressed to Ria.

In the public domain, the amount of Slovak input from other speakers was limited (apart from one month the family spent in Slovakia). Throughout the study on average once a week the mother and Ria spent a full day with the mother’s Slovak relatives, a family where both parents were bilingual speakers of Slovak and English who spoke mainly Slovak, but used free mixing as a usual communication strategy. In these situations Ria received mainly Slovak input from the mother, and mainly Slovak input interspersed with English code-mixing from others. The patterns of bilingual exposure are summarised in Table 4.6.

Table 4.6 Exposure to bilingual language mixing

Family member (age)	Speaks to Father	Speaks to Mother	Speaks to Ria	Speaks to Ria’s aunt	Speaks to Ria’s cousin(s)
Bilingual aunt	English	Slovak &	Slovak	-	Both,

Family member (age)	Speaks to Father	Speaks to Mother	Speaks to Ria	Speaks to Ria's aunt	Speaks to Ria's cousin(s)
(>35)		mixed			mainly Slovak & mixed
Bilingual female cousin (7-9)	English	Slovak & mixed	Slovak & mixed	Slovak & mixed	Both, mainly Slovak & mixed
Bilingual male cousin (1-3)	English	Slovak & mixed	Slovak & mixed	Slovak & mixed	Slovak & Mixed

During interactions with the mother's extended family the mother code-switched and mixed her languages as in the following excerpt, where mixes are shown in bold:

%sit The two families are giving Christmas presents to each other

*MIS To má **same as** Romi Ria! Iné **colours**.

%eng Ria's got that **same as** Romi. Different **colours**.

%add MAM

*MAM Kúk, pozri, aká rybka!

%eng Peek, look, it's a fish!

%add RIA

*MIS Mami, Romi má iné **colours**!

%eng Mami, Romi's got different **colours**!

%add NEL

*MAM Pozri, stacking cups!

%eng Look, **stacking cups**!

%add RIA

*NEL Nó!

%eng Yeah!

%add MIS

*MIS Aj Romi to má, ale Romi má **different colours**.

%eng Romi has that too, but Romi has **different colours**.

%add MAM

*MAM Aj Romi? **Thank you!**

%eng Romi too? ...

%add MIS

*MIS Ano, ale different colours.

%eng Yes, but different colours.

*MAM Hej. Pozri, to je **fish**. Rybička. A tu je taká iná rybička. Pozri!

%eng Yeah. Look, that's a **fish**. Fish. And here's a different fish. Look!

%add RIA

*NEL Dúfam, že to nebude **recalled, hey?** Je to Fisher Price.

%eng I hope it's not going to be **recalled, hey?** It is Fisher Price.

%add MAM

*MAM Shouldn't be.

%add NEL

%com MAM makes a complete switch to English

*NEL Yeah, well, Fisher Price had been recalled.

*MAM Yeah I know, but,

*MIS Romi to má v piesku.

%eng Romi has that in the sand.

%add MAM

*MAM hopefully all the recalls are over now.

%add NEL

*MIS Romi to má v piesku.

%eng Romi has got it in the sand.

%add MAM

*NEL Let's hope.

(0;5.25)

In this example the mother also adjusted her language choices to free mixing and even made a complete switch into English in order to include the father in the interaction, thus modelling switching and mixing to Ria as a communication strategy. Mixing with others also triggered mixing when addressing Ria, however, she self-repaired a mixed utterance. Such self-repair did not occur when addressing other bilingual speakers. While the mother rarely code-switched when addressing Ria directly, Ria nevertheless was able to overhear her mixing. In fact, due to the regularity of interactions with Ria's Slovak extended bilingual family, overheard speech was the main source of bilingual code-switching and free mixing, and thus a plausible explanation for Ria's bilingual language use.

There were also occasional visits among other acquaintances from the Slovak community. Since language mixing is widely used among the bilingual Slovak community members, the mother also tended to mix languages in her speech. Thus Ria was indirectly exposed to language mixing as a normal bilingual communication strategy.

4.3.2 Linguistic soundscape (audio-media and other media)

Linguistic soundscape includes all forms of language exposure a person receives from various sources. The term was suggested by De Houwer (2009a, p. 97) and it subsumes all aspects of language exposure that play a role in linguistic development, thus it does not limit input to persons that interact with a child regularly. Aspects such as audio-media exposure add to the overall linguistic development and need to be considered as well. Relatively equal audio-media exposure to both languages could enrich the development of a language, while the lack of audio-media exposure in one of the languages may mean that the language may lack the added support, since a child has fewer opportunities to hear the language from varied speakers, or she may perceive the language as less useful.

According to the diary records in this thesis, indirect audio-media exposure to English started early on due to English media of the wider community. However, Slovak media such as children's music CDs and community radio broadcasting were also used regularly and intentionally by the mother to enhance Slovak language contexts. The mother started engaging Ria in regular exposure to Slovak media as early as 0;2.13.

Ria was equally exposed to books in both languages, since sharing books was a favourite activity from very early on. Initially the mother 'read' all picture books in the Slovak language and translated simple texts into Slovak. She started reading English texts only when Ria became aware of the fact that books were in different languages and explicitly

requested a story to be read in English. Thus during the study Ria received relatively equal exposure to audio-media and written media in both languages from early on.

4.4 Language attitudes and impact belief in the family

Studies found the main reason parents choose bilingual parenting was personal experience with language learning, followed by knowledge from popular parenting literature on the topic, and lastly other examples from extended family (King & Fogle, 2006, p. 706).

Successful development and maintenance of bilingualism in a family is also dependent on several factors. Three major factors were found to effect language choices within a bilingual family, and impact subsequent development and maintenance of both languages:

- family language attitudes
- generation
- social class (Eilers, Pearson, & Cobo-Lewis, 2006, p. 83).

This study suggested that long-term consistent exposure to both languages in the family was necessary for successful bilingualism. According to Zurer Pearson (2008, p. 125) it is also important to make the language attractive, valuable and indispensable to children in order to insure interest to learn, thereby feeding children's own positive attitude towards the language and bilingualism. De Houwer (2009a, p. 92) defined another important factor in successful development of bilingualism, *impact belief* - the parents' belief that they can have an effect on a child's linguistic development.

Positive attitudes allow the speakers to assign positive values to both languages, and to freely make language choices in communicative settings, which in turn could contribute to the development of successful bilingualism. However, few parental guides suggest possible solutions and discuss the importance of parental attitudes and impact belief on the outcome of bilingual parenting (Cunningham-Andersson & Andersson, 1999; De Houwer, 2009a; Pearson, 2008). This aspect was not described or addressed in the research literature.

An individual's language attitudes are the result of their linguistic experiences and background. Parental language attitude is transferred to a child indirectly through their speech behaviour, with the parents' language choice being the most obvious display. Thus through daily interaction a child is explicitly exposed to language ideologies and parents' attitudes towards the two languages. Positive attitudes can be demonstrated to a great extent by a consistent use of the languages, and can be enforced through discourse strategies that require the use of a particular language in given social situations. It therefore

seems necessary to establish strategies that encourage bilingualism early on, well before a child needs to make her own (subconscious or conscious) language choices. The process of establishing such strategies in this thesis will be described in section 4.5.3.

The mother's positive attitudes towards languages and bilingualism stemmed from her experience with foreign languages as well as from her professional interests. She was embarking bilingual parenting with good understanding of the phenomenon of bilingualism and with knowledge on various language strategies for families. From the prenatal stage the mother was applying her positive attitudes to establish a suitable strategy for the family. It was a process of using a strategy, internal reflection on the strategy and balancing between maintaining the chosen approach and accommodating all family members both linguistically and emotionally.

The mother encountered two main concerns regarding bilingual parenting in the initial stages. During pregnancy she was concerned that she would not find it natural to speak Slovak to her child, since Ria was born in a relationship between the mother and the father that was based on English. On the contrary, when Ria was born the mother found addressing her in Slovak instinctive.

Initial concerns were also related to situations when all three family members were present. The mother felt that there were two possible negative consequences of parenting in a language other than the father's language: she would have to either exclude the father from interactions when using Slovak, or neglect the use of Slovak if opting for English in these situations. On these occasions the mother had to consciously develop a language choice strategy, and chose to use Slovak when addressing Ria in family situations, thus creating a bilingual environment when both parents were present. As a result the family came to feel comfortable with the use of both languages in such situations, and the mother in particular became comfortable using Slovak when addressing Ria in father's presence.

The father's attitudes to languages and towards bilingualism remained positive despite being unsuccessful in his attempts to acquire a second language. Moreover, the father always regarded the ability to express oneself in two languages desirable, and believed a child could acquire two languages in naturalistic context with minimal effort. In fact, King & Fogle (2006, p. 704) found having experienced missed opportunities in language learning can have a positive effect on parents' goals for their children. The father was supportive of the family's bilingualism from Ria's birth and accepted the strategies used by the mother, later forming his own strategies as Ria was becoming linguistically expressive.

The father's only concern was related to Ria's uneven amounts of input in the two languages (see section 4.2). Initially he questioned whether Ria who spent most of the day with a Slovak speaking mother would be sufficiently competent in English in order to communicate with him. However, such concerns were minimised at a very early age, as soon as Ria showed comprehension of both languages, and as she became linguistically expressive the concerns were disregarded. Furthermore, the father was also able to learn some Slovak in natural everyday settings. He was exposed to the kind of input that a child receives when acquiring their native tongue, which allowed him to start learning language in naturalistic interactions, not as a foreign language learner. During the second year of Ria's life he often attempted to respond appropriately to Slovak utterances produced either by Ria or the mother, and occasionally reproduced Slovak utterances himself. This form of receptive language learning allowed the father to be indirectly included in most interactions between Ria and the mother, which in turn created a positive environment for bilingual language use.

Despite diverse language backgrounds both parents in this thesis had a positive belief that the use of their languages could impact Ria's linguistic development. The mother's decision to address Ria in Slovak only so as to emphasize the preferred language and to maximize the amount of input in the minority language, and the father's perception of language acquisition in naturalistic environments reflected their impact believes. These findings indicate that early establishment of consistent language exposure pattern helps to foster positive attitudes towards bilingualism.

The parents' experiences with languages other than their native tongues in earlier life meant they had positive attitudes towards languages in general, towards Slovak and English in particular, as well as towards childhood bilingualism, even before Ria was born. Both parents believed they can positively influence Ria's language acquisition. The mother's professional interest in linguistics led to fostering of positive attitudes in the relationship well prior to Ria's birth and in the bilingual family afterwards. The linguistic environment the parents were able to create with their positive attitudes towards bilingualism showed to be conducive to Ria's development of bilingualism.

4.4.1 Attitudes outside the family

Attitudes of extended family and other relatives, including English and Slovak monolingual speakers, towards Ria's bilingualism were positive from the start. They never expressed concerns regarding possible negative consequences of bilingual upbringing.

Likewise, they did not object to the mother's exclusive address of Ria in Slovak, or the father's address of Ria in English, and delighted in observing Ria interact with each parent in a different language.

Overall it was accepted by monolingual English and Slovak speaking relatives that they were excluded from conversations within the mother-child and father-child dyads. On occasions English speaking relatives asked for an interpretation of Slovak utterances, which was provided by the mother. The monolingual father was not able to provide interpretations of English utterances to Slovak speaking relatives, thus the mother took up the role of informing those who did not understand if necessary.

Bilingualism was also viewed positively by more distant bilingual relatives in Australia and Slovakia. Australian relatives bilingual in Greek and English supported Ria's bilingual development even though Slovak was not one of their languages. Having experienced bilingualism they understood the benefits, and also delighted in her ability to alternate between languages appropriately.

Throughout the study Ria did not show signs of concern or discomfort to use either language in front of monolingual speakers who might feel that they were excluded from the conversation. This is interpreted as a result of the mother's approach to continue using Slovak when addressing Ria even in the presence of other monolingual speakers.

Similarly, the fact that the mother and Ria did not face disapproval of their use of Slovak from another person meant that no concerns arose about addressing the mother in Slovak. Thus overall, positive attitudes towards Ria's bilingualism, mother's use of Slovak in front of monolingual English speakers and general positive experiences supported Ria's bilingualism.

When attitudes of the wider community are considered, Ria was growing up in a situation that was somewhat deterring in terms of perceived values of her languages by the wider society. It appears the Australian society values bilingualism as an important life skill. Each state implemented a language-in-education policy which recommends learning of languages other than English throughout compulsory years of education (Clyne, 2005, pp. 158-159). However, this is in selected languages of economic importance and no formal opportunities to develop minor community languages equally are provided to families. Thus minority language maintenance in Australia is largely dependent on the family's impact belief and desire to maintain the language.

4.5 Language models

According to Lanza (2004, p. 249) when considering the role of input in the study of language acquisition three aspects need to be considered:

- Linguistic forms used by native speakers with the child
- Manner of presentation of the input – how are the forms made available to the child
- Metalinguistic input – feedback on the child’s productions.

The extent of the effect particular forms of language can have on a child who is exposed to monolingual language acquisition was described by Tough (1977, p. 61):

“The particular forms and patterns of language to which the child is exposed carry values and attitudes, and serve to focus the child’s attention on to aspects of his experience that those who talk with him see as significant, or that are unchallenged tenets of a way of life.”

It can be argued that in a bilingual family the effect of the forms of language is even stronger, in particular in cases where a minority language is associated with a limited number of people. Few individuals have a greater opportunity to have an effect on the language development than a wide social network of language speakers (De Houwer, 2009a, p. 101).

An important circumstance in Ria’s experience was the fact that the mother represented one of few sources of Slovak. Therefore the mother’s speech style and the particular variety of language she used significantly affected the variety spoken by Ria. The mother was not the only Slovak speaker, but interactions with other Slovak speakers outside the home were considerably less common than interactions with English speakers. Conversely, the variety of English speakers that Ria received in her input meant that the father’s speech style and variety of language was not as important in shaping Ria’s English.

In addition, language models in bilingual families provide information about their preferred language use. Most of the English models were monolingual speakers. The father modelled monolingual language behaviour, with rare diversions from this general pattern. The mother, on the other hand, provided a model of varied bilingual language behaviour. At home alone Ria observed the mother in Slovak monolingual contexts, as well as bilingual contexts when alternating between languages in triadic family interactions. Bilingual contexts in which the mother used both languages also appeared in various other social situations with interlocutors outside the family. Within such contexts the mother engaged in interactions that were not addressed to Ria, but still provided a bilingual model.

Thus overall the mother provided a bilingual model for both languages, while the father provided a model for English only. The main point is that none of Ria's Slovak language models were monolingual, and not all of Ria's main English language models were typically monolingual.

4.5.1 Ria's languages-in-acquisition: Slovak and English

The variety of Slovak used by the mother was standard Slovak spoken in the Bratislava region, influenced to some extent by 'Australian variety of Slovak'⁶. While there were some differences in accent and intonation patterns (as influenced by the Australian English), on phonetic and morpho-syntactic levels the variety was most likely not different from the standard Slovak used in the Bratislava region, and in the media in Slovakia. The father spoke Australian English variety spoken in the Adelaide region (Burridge & Kortmann, 2008).

There are morphological differences between the two languages, which can be best highlighted by a simple description and comparison. Slovak belongs to the West Slavic family of languages and it is a highly inflectional (or synthetic) language. The different functions of words are expressed primarily by the use of inflectional affixes attached to lexical word classes such as nouns, verbs, adjectives, numerals and pronouns. These affixes express grammatical relations such as case, number, gender, person, tense, mood, degree, as well as being used for derivation of words. Word order is then free, although most commonly SVO is found. To express emphasis on a particular word it can be placed in the sentence initial position. In clause structures dependent clauses are numerous (Sgall, 1999, p. 55).

English, on the other hand, being an isolating (or analytic) language uses function words in combination with lexical items to express relational meanings. Since function words express the grammatical relationships, free word order is not possible, with English requiring a set SVO order. Syntactically, derived clauses with the use of conjunctions are common.

Another contrast is in the prosody and rhythmic differences. In the Slovak language, word stress is usually on the first syllable, except when the word is linked with a preposition, then the stress is transferred onto the preposition. However, in a stream of speech word stress is only potential and it is typically not realized with each word, only with those words that carry the main meaning of the utterance. The emphasis is thus placed on the

⁶ To date there is no formal linguistic description of this variety of Slovak.

syllable of the word which the speaker wishes to emphasize in the utterance (Mistrík, 1988, p. 37).

In English, on the other hand, the word accent is typically realized on all lexical items of the utterance, usually either on the first or the second syllable, while the functional items tend to be unaccented (Finch, 2005, p. 197). This difference accounts for different rhythm of utterances in the two languages, with English being a stress-timed language with regular falling and rising accent, whereas Slovak utterances tend to have a less fluctuating rhythm with emphasis on a particular word. Sentence intonation also differs, with English intonation rising and Slovak intonation falling at the end of the sentence, while rising intonation in Slovak signifies a question.

4.5.2 Child Directed Speech (CDS)

Child directed speech (also termed parentese) is a form of speech used by adults when addressing children. CDS has distinct speech patterns and was widely observed and described in the literature. It is used by speakers of numerous languages as a special form of speech found when adults communicate with children, and appears to be universal (de Boysson-Bardies, 2001, p. 90). Although different cultural variations and cross-linguistic differences were found in the forms of CDS, some common characteristics were observed. Oksaar (1983) describes the typical features in Western societies as following:

- Typical intonation & other paralinguistic patterns, including more slowly spoken speech, clearer articulation, exaggerated intonation contour and pitch, higher tone of voice
- Phonological and grammatical modifications including avoiding difficult consonant groups, using mostly two-syllable words, simple syntactic structures and duplication of syllables and words
- Use of 3sg when referring to oneself or a child in direct speech
- Use of associative ‘we’
- Diminutives and palatalisation – particularly prominent in Slavic languages
- Use of baby words instead of standard words, which are often of onomatopoeic nature.
- Use of expansions.

According to Kuhl et al. (1997, p. 684) CDS is modified syntactically, semantically and prosodically. They found that especially vowel sounds were exaggerated, allowing infants to perceive differences in vowel categories. This form of speech was preferred by infants and it was suggested it provided necessary information about the sound system of the

infant's native language. In the case of a bilingual child, CDS used by both parents would therefore provide sound information on both languages, although no studies to date considered this aspect in bilingual infants.

In the English literature on CDS a distinction is made between motherese, which refers to changes in voice and prosody, and baby-talk referring to simplifications of vocabulary and syntax (de Boysson-Bardies, 2001, p. 82). According to de Boysson-Bardies (2001, p. 84) the typical prosodic characteristics of motherese remain until the third year, however, the style and content of the speech are reshaped reflecting the child's developments.

In recent years the importance of CDS in language acquisition was criticized, however such critique overlooks that the purpose of CDS is not to teach language to a child. De Boysson-Bardies (2001, p. 83) argues:

“The first vocal messages - which are intended, on the one hand, to capture the child's attention – convey affective values through melodic contours.”

Thus while CDS alone cannot explain how languages are acquired, it emphasizes the focus on context-based interpersonal communication in the parent-infant dyad. The ‘here & nowness’ nature of CDS is embedded in the context as the parent verbalizes what the child experiences – what she sees, hears or feels in a way that engages the child's attention, and thus makes language especially relevant to the child. Thus through interpersonal interaction CDS leads language acquisition as a catalyst (Matychuk, 2005, p. 316).

The presence of CDS in the parental speech in the data in this thesis cannot be ignored. The above features were present in both parents' address to Ria. CDS was observed predominantly in the private domain, especially the tone of voice and use of diminutives. In the public domain generally simpler language was used, although it was not necessarily the ‘tender’ language of the private domain.

The main features of the mother's CDS in the early months were the use of soft or higher pitched voice, repetitions, mirroring and assigning meaning to Ria's vocalizations, providing commentary on Ria's movements and sounds, maintaining Ria's attention on objects she was looking at by providing a commentary and descriptions, and providing commentary on the mother's own actions. Questions were also addressed to Ria but did not require response. The mother referred to self in 3sg, using the appellative ‘mami’ ‘mummy’, and referred to Ria in 3sg using her name, as well as 2sg. She also used the associative ‘we’ when providing commentary on activities. The following example shows some of the features of CDS as used by the mother:

%sit Ria is on her change table, MAM is playing with her

%act MAM walks up to RIA singing, then she starts tickling RIA while making playful sounds to make her laugh

*MAM á! Brušiačik! Áaá Mamin mamin mamin! Mamin. Brušiak. ## Brušiak! Brušiak mamin mamin!

%tra Tummy! Ah, mummy's mummy's mummy's! Mummy's. Tummy. ## Tummy! Mummy's mummy's tummy!

%com diminutives and repetitions of short phrases

*MAM No čo ty?

%tra Well, what is it?

*RIA [aa: a:!]

*MAM [a:a]

%com mirroring RIA's cooing

*MAM Ty moja! Ty moja. Ty moja. Moja, mamina.

%tra Mine! Mine. Mine. Mine, mummy's.

*RIA [a:a. a:a]

...

*MAM Mamin nos papáš? Spapáš mame nos?

%tra Are you eating mummy's nos? Are you going to eat mummy's nose?

%com repetition

*RIA [aaa:]

*MAM Mama ti spapá pršteky.

%tra Mummy will eat up your toes.

%com diminutives

*RIA [a:a:a! a:a! a:!]

*MAM Jaj. ## Ham. Ham. Hám. Hámamamamam.

%tra Oh. Munch. Munch. Munch. Munch munch munch.

%com baby-word

*RIA [a:a!]

*MAM [a:a aaa!]

*RIA [a:a a a:a:!]

*MAM [a: a:!]

%com Mirroring RIA's cooing

*MAM Ťa spapám od ľúbosti! Hamamamamamamam. ## hamamam.
Hamamamamam. Ham.

%tra I'll eat you all up from all my love (formulaic expression)! Munch munch
munch munch.

*MAM Hó! Bud'abud'abud'a!

%com Inventing interjections

*RIA [a! aε:a! a:a:!]

*MAM [a:a a:a a:]

%com Mirroring

...

*MAM raspberry sound

*RIA [a a aa]

%act RIA is producing these sounds with a hand in her mouth

*MAM Jée! Ty vieš stát'!

%tra Yay! You can stand up!

%com describing actions

*RIA [a:a]

*MAM Ty vieš takto stát', šikovne? Ty vieš takto stát' na tých tvojich nožulcách
tvojich šunčičkových? Ty vieš takto stát' na nich?

%tra Can you stand up like this. Clever? Can you stand like this on your chubby
wubby leggings? Can you stand like this on them?

%com repetition and expansion, diminutives

(0;6.13)

In this example several CDS features are present. Prominent is the use of high pitched tone of voice with exaggerated intonation. The speech is context related. The mother is mirroring Ria's vocalizations, and this exchange is interspersed with her commentary on Ria's actions, as well as her own actions. She is referring to herself in 3sg. Words and whole short phrases are repeated, and the mother asks questions without expecting answers. The use of onomatopoeic baby-words and diminutives is evident as well. However, the fact that diminutive suffixes are used to such an extent means that some words are actually relatively long and contain many consonant clusters with palatal sounds, typical of the Slovak diminutive suffixes. This means that difficult and long combinations are used rather than being avoided.

Both parents used several CDS features, although there were differences. Changes of tone were not used as often by the father as by the mother. The mother also used considerably more diminutives since they are typical of CDS in Slovak. English diminutives are more limited, however, the family invented some diminutive forms by affixing the -ie suffix to a noun, such as 'cranky wombie' ('cranky wombat' referring to Ria's grizzly moods), 'coughie' (referring to Ria's typical coughing sound when she spotted an object she liked).

Main differences were noted in the style of interaction each parent employed with Ria.

Both parents reacted to Ria's vocalizations and allowed her to follow her own interest, but the form of talk with Ria was different with each parent. The mother talked considerably more than the father and used a lot of repetitions of her own utterances. She allowed Ria to follow her interest and then provided descriptions or commentary on Ria's actions or activities, thus providing her with the linguistic form of what was happening in the context. Thus she was attempting to convey Ria's attention as well as to gain reaction from Ria, as in the above example.

The father on the other hand attempted to gain Ria's interest. If Ria was not interested, he started an activity himself, which triggered her interest. She gave clues in the way she was looking at the father and vocalized, as if wanting to initiate communication, as shown in the following excerpt:

- %sit DAD is playing with RIA on the floor in her room. He is showing her a hand puppet but RIA is looking at a book
- *DAD Hello! Hello Ria! Tutututu! Tuttururu! Hello! Tup tup tup tup! Tututututu! Hello!
- %com Using interjections and actions in attempt to engage Ria

%act DAD pretends the puppet is biting RIA, but she is not interested. DAD puts the puppet down and cleans his glasses. RIA looks at him.

*RIA [ma:]

*DAD [ma:] what?

%com mirroring

%act RIA continues looking at DAD

*DAD What's the matter? Cutie pie! You reading your book? Snowy? The little kitten? Good book? Good book, isn't it? Yes it is!

%com diminutive, description, expansion, repetition

%act DAD picks up a toy vacuum cleaner, RIA picks up the lion hand puppet and they are looking at the objects independently

%act RIA looks at DAD

*RIA [a]

%act RIA becomes interested in the toy DAD is looking at and she crawls up to him, looking at him as he is trying to figure out how to use it.

*RIA [waɪ]

%glo yyy

*DAD Ria's Dyson.

%act DAD pretends to vacuum RIA and she smiles

*DAD Cutie!

(0;9.18)

Another difference was in parental responses to Ria's initiation of interactions. The father responded to her cooing by pretending to hold a conversation, he nodded his head and responded with 'Yeah' as if agreeing with Ria, encouraging her to continue cooing. He did not alter the intonation contour or tone of voice during such exchanges, making the interaction sound phonetically more like adult speech. This form of interaction was also observed when Ria was babbling extensively, especially when she was herself trying to 'hold a conversation', babbling and pausing much like in a dialogue. The father interpreted Ria's babbling as words, assigning a meaning to them based on the situational context. When Ria's babbling changed and the sound patterns resembled words, often English

words, the father targeted these comparable sound patterns and pretended they were words uttered by Ria. Thus he assigned linguistic forms and meanings to sound patterns that unintentionally resembled an adult word, assigning a specific meaning to Ria's babbling vocalizations. He also kept a dialogue with Ria if she continued babbling, as if she was responding to his utterances with adult speech.

CDS changed considerably over the two years of the study with changing contexts and Ria's developing communicative abilities. Initially the parents used mainly statements, descriptions and questions that did not require answers. When Ria was able to read communicative intentions, the parents included questions that anticipated Ria's response. As Ria became more mobile and interested in her environment, imperatives became prominent. With Ria's developing comprehension and production, the tone of voice and intonation contours of the mother's speech approximated adult directed speech. Towards the end of the first year CDS included more expansions, especially by the mother. Apart from commentary and labelling of objects and actions, she provided further descriptive terms, such as colour, size, shape and function. She also related the content to Ria's previous experiences. The following example demonstrates these features:

- %sit RIA and MAM are playing on the lounge floor, RIA is rolling around and playing with objects found around the room
- *MAM No čo ty moja? Čo si to našla na tom stole? Čo si tam na tom stole našla?
- %tra What is it love? What have you found on the table? What have you found at that table?
- %com repetition, the question seeks Ria's reaction
- *RIA [aa: a]
- *MAM Takú miskú drevenú?
- %tra A wooden bowl?
- %com labeling
- *RIA [aa]
- *MAM S takou si sa ešte nehrala, však? S takou miskou?
- %tra You haven't played with one like that before, have you? With a bowl like that?
- %com relating

*RIA [ɛə:ə] [m: m: m:]

*MAM S takou si sa ešte nehrala, čo?

%tra You haven't played with one like that before, have you?

%com repetition

*RIA [ə:m:]

*MAM mm! Ešte nie? No čo? Moje dievčatko!

%tra Not yet? What is it? My little girl!

%act RIA starts fussing as she is trying to get a feed

*MAM Dievčatko mamičkine? No čo ty?

%tra Mummy's little girl? What is it?

%act RIA fusses

*MAM No čo? Dievčatko! Ty moja! Moja!

%tra What? Little girl! Mine! Mine!

%com repetitions and diminutives, maintaining attention

%act RIA is crawling away

*MAM Ria pod' sem, pod'! Pod' sa sem pozreť, pod'. Pozri aké knižočky tu sú!
Všetko možné tu je. Pozri sa, a tu je takáto miska hore. Fíha! To ťa
nezaujíma?

%tra Ria come here, come! Come have a look here, come. Look at these books!
All different things are here. Look, and up here there's this bowl. Wow!
You're not interested in that?

%com imperatives, engaging interest

*MAM Mami tam má oriešky! Mami chrumká oriešky. Lieskové oriešky.

%tra Mummy has nuts in there! Mummy's crunching nuts. Hazelnuts.

%com expansion

%act RIA crawls up to MAM

*RIA [m:m m:]

*MAM Chrum chrum!

%tra Crunch crunch!
%com expansion, engaging interest
(0;8.11)

In this example the mother firstly related the new object (wooden bowl) to Ria's experience, then explained the function of the object (used as a container for nuts), which triggered further expansion (mother eats the nuts, new label for the type of nuts and onomatopoeia for the sound produced when chewing). Imperatives and questions anticipated some response from Ria - the mother was calling her to come closer and attempted to engage her attention.

In the second year CDS changed further as Ria became familiar with daily routines and her comprehension repertoire included words and expressions associated with such routines. Questions requesting to identify objects, people and animals were used, such as

‘Kde je xxx/ Where is xxx?’

‘Prosíš si/Do you want xxx?’;

as well as open invitations to actions and activities:

‘Pomôžeš mi xxx/ Can you help me xxx?’.

A question aimed at comprehension ‘Čo je to?’ “What is it?” also emerged, but did not yet expect Ria to provide an answer, since the parents provided the answer themselves. They were, however, modelling how to request labels for objects. Comprehension related features of CDS were modelling specific language for Ria to reproduce.

The structure of parental utterances was also changing. Utterances were longer and contained more explanations with more complex phrases. Holophrases were still used by the parents relatively often, but their purpose was now limited to teaching and modelling of new words.

The parents were giving Ria more space for active communication and response, aimed at allowing her to demonstrate comprehension of speech. They gave Ria time to respond to a request or invitation to do something by pausing for a moment before trying to repeat the utterance, especially if Ria was focusing on different activity, to allow time for change.

Ria's early utterances and attempts at producing adult words were mirrored. Through parental mirroring Ria's productions were supported and encouraged with positive feedback. This strategy was used especially by the mother, and it started by mirroring

Ria's cooing and babbling vocalizations, thus actively encouraging her to use more vocalizations in response. When Ria started producing linguistic forms the mother mirrored Ria's utterances mostly to confirm that Ria's intended meaning was understood, but also as a form of acknowledgment that the mother had heard the utterance, even in instances when there were no doubts as to the intended meaning. Thus the mother was not only showing Ria that the forms she had chosen to express were correct and meaningful, but she also modelled a particular linguistic behaviour – repetition after the other speaker. It is likely that the imitative behaviour itself was often imitated by Ria, and thus when the mother had produced an utterance, this was the reason Ria would reproduce it. In fact, first words were initially reproduced after the adults, and then used as spontaneous productions. Thus both parents interacted with Ria in a responsive way, oriented towards maintenance of conversation with her. Especially the mother's more prominent use of CDS in Slovak was largely child-centred. Döpke (1986, p. 504; 1988, p. 110) found that similar linguistic realisations of child-centred behaviour, such as acceptance of the child's attempts at interaction and maintenance of verbal interaction, especially by the minority parent, were among factors influencing acquisition of the minority language.

4.5.3 Parental language choice and code-switching

Input patterns shape the bilingual child's use of the languages. How parents chose to present their languages gives children important cues on acceptable and preferred language choice. Parents also model when code-switching (CS) is considered appropriate and when it is not.

In section 4.3 language presentation patterns were analysed, showing that the two languages were presented to Ria both in monolingual contexts, as well as in bilingual contexts with occasional instances of code-switching. Situations when code-switching occurred were then analysed qualitatively following Goodz (1989, p. 31). Input aspects such as who initiated mixing, extent of mixing by each speaker, triggers for mixing, and parental response to child initiated mixing when addressing parents were considered.

Parental CS in the data was influenced mainly by the interlocutor and activity. The bilingual mother was frequently required to make an appropriate language choice. When interacting with Ria, her aim was to model Slovak in a variety as close as possible to the variety used by monolingual speakers of Slovak. CS when addressing Ria was therefore not frequent and was limited to specific contexts in several instances:

- Occasionally Ria's mix triggered maternal code-switching. The mother followed Ria's mix and repeated it in her response by integrating the mixed word or phrase into the base Slovak language. However, she realized the error and self-repaired by recasting the utterance in the appropriate form in Slovak.
- In bilingual contexts, when the whole family was interacting together, the mother was in a bilingual language mode and occasionally initiated code-switching when addressing Ria in English. However, since the relationship with Ria was established through the Slovak language, an address in English felt unnatural and she self-repaired in an attempt to model the appropriate Slovak form.
- In bilingual contexts the mother addressed Ria and the father simultaneously in English.

Thus the bilingual mother rarely initiated CS when addressing Ria, except for bilingual contexts when the trigger was bilingual language mode, or when there was a need to address both the father and Ria simultaneously.

However, for the mother CS was the normal form of interaction with other bilingual speakers within the domains of the Slovak language in Australia, as discussed in section 4.3. CS allowed for a natural flow of communication among bilingual speakers, and interactions with CS as appropriate language choice accounted for a proportion of overheard speech for Ria. Conversely, when interacting with Slovak speakers from Slovakia the mother made a conscious effort not to CS – she strived to use the variety of language that would be considered appropriate by those interlocutors.

The monolingual father did not have the opportunity to alternate language choice, thus his use of CS was limited to several instances of playful use of some Slovak expressions in his speech and to borrowing of family words, such as 'bábo' "baby/dolly" or 'book-ina' "little book".

Thus the main language models, the parents, did not model code-switching as an appropriate language choice pattern when addressing Ria. The bilingual mother provided Ria with some patterns of CS when appropriate in domains of the Slovak language, and through simultaneous address of two speakers in triadic contexts. The monolingual father did not model CS in English contexts.

However, parental language presentation is not the only factor influencing the child's language use. How parents react to the child's mixing, and how they negotiate appropriate language use can shape the child's choices. Such strategies may not be intentional, but

they play an important role in conveying which language the parents perceive as appropriate, as discussed in the next section.

4.5.4 Parental discourse strategies

The process through which a child learns the cultural behaviours, namely the expected bilingual behaviours in her bilingual language environment is called bilingual socialization. It is modelled by the people in the child's environment. While to date aspects of language socialization were explored extensively in the field of monolingual first language acquisition, the study of bilingual socialization in BFLA was limited to language choice and mixing.

In a discussion on language socialization Ochs & Schieffelin (1995) discuss cross-cultural differences in approaches to child language and different expectations of children's linguistic behaviour in various social situations. When interacting with children parents use various culture specific discourse strategies. Moreover, the kinds of strategies used change overtime with a child's developing linguistic abilities.

The family in this thesis perceived Ria as an active participant in interactions, expecting her to be an early interlocutor from birth (Ochs & Schieffelin, 1995, p. 78). They conveyed these expectations of Ria's role through several discourse strategies:

- Addressing Ria directly, describing actions and activities, labelling objects, commenting on situations or voicing their affect
- Interpreting and talking about Ria's emotional states or actions
- Interpreting and verbally expressing Ria's sounds, actions or other signs of meaning making
- Voicing Ria's address of/response to interlocutors on her behalf, well before she was able to speak, in interactions between the parents directly addressing each other, but in a manner that one parent was inferring what Ria might be saying. Although they used 1sg, they indicated that they had assumed Ria's position by speaking in a higher pitch of voice, as if impersonating her, to voice utterances on her behalf. The parents were actually expressing their own thoughts rather than interpreting Ria's sounds or actions. They were assigning these to Ria, thus including her as an active interactional partner in conversations.

The following example demonstrates the discourse of voicing Ria's thoughts, shown in bold:

%sit The family is sitting in the lounge, chatting about Ria's vocalizations

*MAM Ty rozprávaš! So talkative this morning!

%add RIA , then DAD

*DAD Yep, she doesn't say much.

* RIA [ɛ ɛ]

*MAM What do you mean doesn't say much?

*DAD She's not making different sounds.

*MAM Yeah. Just a content...

*RIA [aɥ]

*MAM She's gotta explain why she was up all night, and why she woke up at 5:30.

%add DAD

*DAD She sure does.

*RIA [gɛ gɛ]

*MAM **I was growing daddy, I was growing!**

%add DAD & RIA

%com With a higher pitch voice MAM is assuming RIA's role and assigning a meaning to RIA's cooing

*DAD Couldn't sleep?

*MAM **You even said it yourself this morning how big I was all of a sudden.**

%add DAD & RIA

%com MAM is assuming RIA's role and voicing on her behalf

*RIA [gɛ gɛ]

*MAM She's very chatty.

%add DAD

*RIA [gɛ gɛ]

*DAD She's on the camera, that's why.

* RIA [ɛ]

*MAM [aqɤ]

%com Mirroring

(0;4.12)

In this example the mother assumes Ria's role by using 1sg and a higher pitched voice to mark this utterance as Ria's. She is not interpreting her cooing sounds, but inventing meaning that would make sense within the interaction taking place between the adults.

Other specific forms of interaction were various social routines and games played with Ria, such as traditional rhymes and songs used with children by native speakers of the two languages. During familiar routines the parents expected Ria to anticipate what followed.

When Ria produced speech new parental strategies emerged through which she was regarded an equal interactional partner:

- Repeating the word Ria attempted to produce in order to model the correct adult form
- Praising Ria's attempts at using adult words to encourage further speech production
- Expanding on Ria's utterances, thus providing additional information.

These strategies are shown in the following example:

While helping with the washing Ria pointed at father's shorts and uttered [ʃo:]; the mother responded 'Ano, to sú daddyho šortky' "Yes, that's daddy's shorts." (1;7)

Thus the mother acknowledged Ria's attempt to produce an adult word, modelled the adult form and expanded on the holophrase.

In a bilingual family discourse strategies play an important role in successful development and maintenance of both languages. Bilingual families make a choice about which languages are used with which person and in what situations. These expectations need to be conveyed to children through daily interactions. Parents achieve this through different responses to child's language mixing. They respond by indicating what is appropriate language use and negotiating a specific language context with a child, giving her opportunity to co-construct the context in her responses to their strategies (Lanza, 2004, p. 261). Several authors provided detailed analyses of such parental responses to child mixing (Hiroko, 1998; Lanza, 1992, 2004). To analyse parental discourse strategies in this thesis Lanza's (2004) framework was adopted. Lanza (2004, p. 262) classifies such responses into 5 possible discourse strategies ranging along a monolingual - bilingual context continuum:

- Minimal grasp – indicating no comprehension and requesting clarification
- Expressed guess – asking a yes-no question in the other language and requesting clarification
- Adult repetition of the content in the other language
- Move on strategy – continuing in the interaction
- Adult code-switch.

Although parental discourse strategies were not a direct focus of this thesis, they were nevertheless considered, since they influenced Ria's language choice. Due to space restrictions, only a qualitative analysis of parental strategies evident in the video-recordings and diary records was carried out. A summary of strategies used by each parent is produced below, while examples and Ria's response to such strategies will be discussed in more detail in section 8.2.1.

Ria was socialized into the pragmatic skill of appropriate language choice with each interlocutor through parental language choice when addressing her from birth. When Ria started producing speech the parents' discourse strategies had to include ways of negotiating the expected language choice. During the case study the parents maintained their preferred language choice, and never switched completely following Ria's mix. Both parents also accepted any language used by Ria and did not explicitly reject her language choice with the 'Minimal grasp' strategy, although the monolingual father had to seek clarification of words he did not understand. Both parents used Lanza's (2004) bilingual strategies in response to language mixing, but there was a difference in the type of strategies used by each parent.

The parents developed their strategies in response to Ria's use of the two languages in different contexts. The father did not read guides to bilingual parenting, but intuitively developed several strategies in his reactions to Ria's use of Slovak, depending on his ability to understand or infer meanings of Slovak words:

- **Requesting clarification** of a word, focusing on the meaning
- **Requesting the English equivalent**
- **Explicitly stating who would normally use the word, supplying the TEs and relating them to a particular person**, e.g. "Yes, and daddy says xxx. Mami says xxx."; this strategy was also used when the whole family was interacting together while focusing on a new object or activity, and was particularly evident during the family's stay in Slovakia

- **Inferring the meaning from the context** if Ria used a word he was not familiar with, although such inferences were not always correct
- **Continuing in the interaction** if Ria used a Slovak word familiar to the father; since by the end of the first year he was able to understand many Slovak words related to Ria's contexts he also understood most early Slovak words uttered by Ria
- **Adopting and regularly using the Slovak word** as if it was the correct word in both languages (e.g. bábo "baby", havo "doggie"), which occurred mainly with Ria's preferred and frequently used words.

Thus although the father was a monolingual speaker who at times clearly stated through 'minimal grasp' and 'expressed guess' strategies that he did not understand Slovak, he also allowed Ria to see that he understood some Slovak words by using the bilingual 'move on' and 'repetition' strategies in responses to her mixing. In his attempts to understand Slovak he occasionally made inference errors, which in turn emphasized his monolingual identity. Examples of the father's strategies are reported in section 8.2.1.

The mother was undertaking background reading on bilingual parenting throughout the study. Although it can be argued that being knowledgeable on the topic had potentially created an environment more conducive to successful bilingual development in comparison to other families, previous research found it is common in families that choose to raise their children bilingually to seek out sources of information and guidance (Barron-Hauwaert, 2004, p. 7; King & Fogle, 2006, p. 697). It appears bilingual families establish greater language awareness in general. Moreover, it is necessary to point out that recording sessions for the purpose of this thesis preceded analysis, and the mother was not familiar with the theoretical basis of discourse strategies prior to recording, and her strategies were also developed intuitively in response to Ria's language choice.

The mother used mainly bilingual strategies and allowed Ria to be aware that she understands English utterances, but without explicitly pointing out which person normally used which word. The mother relied on recasting Ria's utterances into Slovak, which is a form of 'repetition' strategy:

- **Acknowledging Ria's attempt and supplying the Slovak TE:** Ria uttered "/ku/" and pointed at the father cooking, the mother responded: 'Ano, daddy varí.' "Yes, daddy is cooking"

- **Repeating the English word and recasting with Slovak TE**, especially if the English word was a first token of use by Ria, in order to model the adult form in both languages
- **Recasting the content of Ria's utterance in the Slovak language with question-like intonation**, thus seeking clarification. Thereby the mother modelled the repaired and preferred form in Slovak, as well as negotiated the maintenance of the Slovak monolingual context. It worked also as a word learning strategy since it encouraged Ria to actively use the words or phrases in the Slovak language after the mother had modelled the repaired utterance.

Examples of the strategies used by the mother are discussed in section 8.2.1.

As pointed out by Quay (2001, p. 182), Lanza's framework overlooks one important strategy. The mother in this thesis repeated the mixed lexical item by incorporating it into her utterance in the other language. Thus a complete switch did not occur, but the child's utterance was accepted and then the mother moved on using the preferred language. This strategy appears to be intermediate between a temporary 'code-switch', 'repetition' and 'move-on'. Lanza (2001a, p. 211) indeed includes this response as 'code-switch strategy', since it is used as intra-sentential switch by the parent. However, this strategy could be incorporated in the framework in its own right, because although the item was accepted in the 'wrong' language, the parent repeated the child's utterance in both languages, thus insisted on returning to the preferred language.

A similar strategy was described also in Saunders (1984, p. 77), where the mother often modelled both equivalents to the child to provide new vocabulary or to check knowledge of an equivalent. Such focus on both languages helps the child with bilingual awareness, since it makes the use of both languages in the family explicit, and reinforces the importance of knowing TEs to be able to communicate effectively in both languages.

Each parents' strategies were guided by a different set of circumstances. The bilingual mother perceived it important to establish a Slovak only context while interacting with Ria, aiming to provide as much support for the minority language as possible. The monolingual father established English context as the only option available. However, the manner in which each parent maintained the desired monolingual language context differed.

The bilingual mother's main concern was the lack of monolingual models of the Slovak language. Therefore in interactions with Ria she was trying to negotiate mostly

monolingual Slovak context. However, she was required to use both languages in daily interactions in front of Ria (see section 4.3), and thus had to indicate which language was appropriate when. She mostly used the ‘Adult repetition’ of the content of Ria’s mixed utterance in the Slovak language, or repetition of the content in both languages. Although this strategy did not strictly negotiate monolingual context in the minority language, it modelled the mother’s preferred language. Thus overall the mother modelled bilingual identity, since she was presented daily with situations in which the use of the majority language, English, was appropriate. She was modelling language separation and preference for monolingual language use, but through a bilingual identity.

As a monolingual English speaker the father modelled monolingual English identity through daily interactions without the need to consciously implement a strategy. However, in his attempt to avoid communication breakdowns with Ria he also indirectly allowed bilingual context. If Ria mixed a Slovak word into an English utterance and the father was familiar with the word, he used the ‘Move on’ strategy and continued the conversation in English, because he understood and there was no need to request a clarification. Likewise, adopting family Slovak words in his speech allowed somewhat bilingual context. The father could afford accepting Slovak words, since English was the dominant language of the community and Ria received many monolingual models of the language. However, since he explicitly stated that he did not understand all words, and occasionally made errors in inference, he negotiated monolingual context in his interactions with Ria. Bilingual strategies which specified particular speaker for each language also reinforced his preference for monolingual English context. Thus despite the use of bilingual strategies that accepted Slovak words he was familiar with, Ria was able to infer from the usual input, overheard speech and the father’s discourse that he was a monolingual English speaker who was keen to accept Slovak. Therefore she most likely did not perceive the father’s identity as bilingual.

A similar difference in parental approaches was noted by Saunders (1984, p. 78). In this case study from an Australian environment the English speaking mother could afford a bilingual context, since her language was supported by the community, whereas the father, a non-native speaker of German and the only speaker who modelled German to their children, preferred a monolingual German context to support the minority language.

In this thesis both parents used some form of repetition. However, the mother’s repetition in the form of a question appeared the most successful in maintaining the Slovak language context. By phrasing the repetition as a question, the mother provided Ria with a repair

cue, since she elicited a response (clarification) in the Slovak language. This reinforced the use of the language, by directly modelling the appropriate form to Ria, inviting her to practice the form immediately and then to move on in the interaction with minimal disruption, maintaining the use of the same language.

In fact, the repetition strategy was previously found to be the most favourable in raising a child's bilingual awareness, since it provided the child with the missing information in the other language, which was in many cases the reason for mixing (Juan-Garau & Pérez-Vidal, 2001, pp. 77-79). Thus it avoided communication breakdown, which could occur in cases where the parent used the minimal grasp strategy. Moreover, the repetition strategy invited the child to reproduce the utterance in the target language (Juan-Garau & Pérez-Vidal, 2001, p. 74).

Having examined the language learning environment, in the following chapters I will turn to descriptive analysis of Ria's linguistic developments in the two languages. The case study data pertinent to pre-linguistic bilingual awareness, development of cumulative vocabulary, use of TEs, grammatical development, Ria's developing sense of bilingualism and aspects such as language choice and mixing will be addressed.

5 Becoming Familiar with the Languages (birth-1;3)

In this chapter I will present data from the prelinguistic developmental stages, focusing on Ria's developing awareness of two input languages.

5.1 Prenatal stage

Linguistic development starts before a child is born (Pearson, 2008, p. 45). The auditory system is functional as early as the twenty-fifth week of gestation (de Boysson-Bardies, 2001, p. 23). According to Huotilainen (2004, p. 5), a foetus is therefore exposed to its linguistic environment already in-utero. Sound is the only element of the outside world that the foetus is able to perceive, and allows the foetus to become familiar with the rhythm of the mother's language, and to memorize this auditory information and use it after birth (Huotilainen, 2004, p. 4).

If the mother is bilingual, the rhythms of both languages that the mother uses on a regular basis become familiar to the foetus, thus the process of recognition of her two languages can start prenatally, and she becomes naturally attuned to the mother's language straight after birth (De Houwer, 2009b, p. 29).

The most striking examples, as summarized by De Boysson-Bardies (2001, p. 25), are the preference of the mother's voice over another female voice, even when the mother is speaking a foreign language, as well as recognition of voices of people who frequently spoke to the mother during pregnancy. What is familiar to the infant are prosodic features of the mother's voice, the contour of the voice and alteration of speed. Another type of auditory information which foetuses are capable of memorizing in-utero is music (de Boysson-Bardies, 2001, p. 26; De Houwer, 2009a, p. 29).

Linguistic development therefore begins through exposure to the sounds of the language(s) which form a child's linguistic environment, and by learning to recognize how these languages sound when spoken by familiar people. Huotilainen (2004, p. 5) further argues that the presence of familiar sounds after birth plays an important role for the infant in adjusting to the new experiences, and to direct the infant's attention towards the voices over any other auditory stimulation in the environment. The infant is primed to direct her attention and to respond to speech, to social interactions, and to direct her listening to the linguistic models.

Diary data collected for this thesis provide some evidence of intrauterine priming related to a nursery rhyme the mother used to sing to her foetus frequently. Immediately after birth,

and for several months after, the mother was able to settle crying Ria with the familiar sounds and rhythm of the nursery rhyme over any other rhyme.

5.2 Prestages

The next stage of linguistic development begins at birth. Traditionally in research literature this is described as the first developmental stage, however, in this thesis it follows the prenatal period as the second stage. The beginnings of language acquisition are termed *the prestages*, since they subsume two developmental periods prior to linguistic productions:

- the earliest stages
- the babbling stage (Oksaar, 1983).

The prestages extend for a period of approximately 10 months, with individual differences between children (Oksaar, 1983). During the pre-stages an infant is becoming familiar with her environment - the important people and the languages they speak. She starts learning how to interact with the familiar people through observation of the ways they interact with her by means of their languages.

Case studies in BFLA tend not to focus on the preverbal stages of linguistic development, but are concerned mostly with later developments such as unitary vs. separate language systems (Genesee, 2007; Volterra & Taeschner, 2007), development of morpho-syntax (De Houwer, 1990), language mixing (Lanza, 2004) and lexical development (Pearson, 1998). On the other hand, main topics of experimental studies in the early pre-linguistic stages focus on early language processing and discrimination (Bosch & Sebastián-Gallés, 2001; Fernald, 2006).

Indeed in the first 10 months of the infant's life, which is the period of the pre-stages, it is difficult to directly observe any signs of bilingual language development. There is no bilingual data available, since the production is limited to cooing, babbling, paralinguistic means of communication and proto-words, which were invented by the infant herself, and as such are not based on any languages.

Likewise, in the first year when phonetic development takes place it is not logical to talk about the development of two phonological systems as yet, but rather the sounds a child is producing (De Houwer, 2009a, p. 177). In first linguistic productions a child is not yet producing individual sounds of the language.

Addressing language discrimination is not possible outside laboratory experimental settings with measurements of indices of brain activity. Experimental studies using such

technologies to determine BFLA infants' speech perception show that at least up to the age of 11 months bilingual infants are not yet able to distinguish the sounds of their native tongues from each other, or distinguish them from sounds of a different unfamiliar language (Fernald, 2006, p. 22). Perceptual narrowing that allows bilingual infants to discriminate their two languages occurs at a later stage (Garcia-Sierra et al., 2011, p. 556).

5.2.1 Bilingual sensitivity

During the pre-stages Ria accepted equally being addressed by the languages in her environment, Slovak and English. When distressed she appeared to settle solely with the familiar rhythm of the mother's language and her voice rather than the individual sounds of the language. However, the mother observed at a later stage (after the age of 1;0) that Ria tended to become unsettled and was more likely to request the mother's attention more intensely if the mother spoke English around her to other English speaking interlocutors or on the telephone. It was as if Ria had an awareness of the usual language in the dyad and when the mother was speaking English, she was therefore not addressing her and not paying attention to her. Thus at this later stage Ria was most likely able to discriminate the sounds belonging to the language usually spoken to her by the mother.

Apart from this example there is no data that would provide any direct evidence of language discrimination, thus this ability was observable at a later developmental stage.

5.2.2 Recognizing linguistic forms in the input

During the prestages the emphasis is on the development of comprehension of the first familiar words and expressions, which is difficult to measure correctly. However, an insight to the developing receptive bilingual skill was gained, and considered an indication of the developing bilingualism.

According to Tomasello (2003, p. 20) an ability to recognize sound patterns in speech sequences emerges around 4-5 months when an infant is able to recognize word-like sound patterns and associate them with objects or events.

In this thesis recognition of sound patterns in the input first emerged at the age 0;4. Ria showed signs that she remembered the familiar aspects of her daily routines and associated certain places with particular routines, such as play time in the family lounge, feeding in the bedroom, play-time on the change table. Ria responded to familiar sound patterns of utterances the parents tended to repeat during such routines, as in the following examples:

- when the mother was strapping Ria in the car safety seat, she used to ask ‘Kde je macík?’ “Where’s the teddy?” and Ria would reach out for the toy;
- when the mother asked Ria if she would like a feed ‘Dáme si hami-hami, áno, hami-hami?’ “Should we have a feed, yes, a feed?”, Ria turned towards the mother and open her mouth, wanting to attach;
- the mother often asked Ria about the father, ‘Čo robí daddy, kde je daddy, čo robí?’ “What’s daddy doing, where’s daddy, what is he doing?”, and Ria looked towards the father.

In the above examples Ria was most likely responding to the familiar words ‘hami-hami’ “feed” and ‘daddy’. Likewise, favourite toys appeared to be known by the label. Thus when Ria was responding to familiar, regularly occurring sound patterns, she started linking them to a person, object or action.

At 0;5 months Ria associated linguistic sound sequences with familiar contexts. Initially she reacted to utterances that were linked to a familiar situation. In anticipation of the familiar activity she expressed happiness or excitement through paralinguistic means, usually by kicking, jiggling, smiling, or laughing. This occurred in relation to daily routines with relatively same order of events such as bath time or feeding. She also responded to utterances regularly occurring in particular contexts, e.g. when the father called out ‘Come to daddy!’, she looked at him with a happy expression; Ria responded by leaning towards the mother when called with the command ‘Pod’ sem, pod’! Ria, pod’!’ “Come here, come’n! Ria come’n!”. At the end of the sixth month Ria also responded to her own name by turning head towards the person who uttered it. Thus comprehension was not limited to words alone, but it included longer utterances to which Ria was able to respond appropriately.

From recognition of familiar sound patterns in certain situations Ria was gradually learning to recognize individual words. With word comprehension the ability to use a deictic pointing gesture emerged. A microanalysis of this development suggests interpersonal interactions are crucial in linguistic development. The pointing gesture emerged during joint attention in a specific context and in reference to one specific word ‘nose’ – the parents were pointing at a toy, showing parts of the face and Ria imitated the pointing gesture. In this context she also pointed in response to familiar questions asking her to identify the referent. More importantly, Ria responded equally to the English question ‘Where is Kaloo’s nose?’ and the Slovak TE involving a different toy, ‘Kde má

Piglet nos?’. Thus she recognized the equivalent linguistic forms in the two languages: the meaning of the questions, as well as the TEs ‘nos’ and ‘nose’ as used by the parents. She referred to the correct referent on the respective objects with a pointing gesture. At first she was able to identify the referent on few favourite toys only, but soon extended the category for the words and pointed at the referents on other toys, pictures in books and people.

This microanalysis demonstrates several aspects of developing bilingualism. Ria understood the TEs ‘nos’ and ‘nose’, as well as the general category of objects the words referred to. She also understood the more complex request to locate the referent. Thus by pointing she demonstrated that she was able to segment speech, extract familiar words, map them onto the referents.

Since Ria’s input consisted of two languages it was necessary to consider whether she responded equally to both. Diary records state that indeed most familiar sound patterns in Ria’s comprehension appeared as TEs, for example:

- the Slovak request ‘Kde je daddy?’,
- the English request ‘Where is daddy?’.

In this example, the Slovak equivalent expression extended to various objects, while in English it initially related only to the caregivers, and later extended to other objects and persons as well. Thus comprehension of TEs did not necessarily emerge simultaneously.

The pace at which Ria was acquiring translation equivalents in comprehension was assessed through observations of behavioural responses when Ria’s attention was directed to the same referent by each parent (using their respective languages) on two separate occasions. Comprehension of referents was established through elicitation. Responses such as turning eye gaze towards the object, pointing at the object, or looking around for the labelled object and smiling when located were considered as correct comprehension of the word.

In the last month of the prestages (0;9) Ria’s comprehension repertoire included TE labels for several familiar objects. She was able to identify the correct referents with a pointing gesture in response to two TE questions:

- ‘Kde je xxx?’
- ‘Where is xxx?’.

Although the number of referents was rather limited at this stage, it increased at a steady pace in both languages in the following months. Initially more Slovak words or expressions were in comprehension, but their English TEs did not lag behind for more than a few weeks. This slight difference can be explained by the imbalance in the input, as the mother who addressed Ria in Slovak was the main carer. The exact extent of bilingualism could not be determined, however, based on the analysis of the input during this period, the general assumption was made that since Ria was exposed to the two languages consistently from birth, she was considered a bilingual since her receptive abilities in the two languages, which led to productive abilities, were developing in parallel.

The above developments marked the onset of intention-reading communication. According to Tomasello (2003, p. 21) intention-reading skills emerge around 9-12 months as a new set of social-cognitive skills that allow the infant to:

- engage in joint attention
- understand communicative intentions
- learn cultural aspects by imitation and role reversal.

The basis of intention-reading is in the infant's ability to share attention to objects and events with others, to follow attention of others as well as to direct attention of others, to understand others' communicative intentions, and to learn various cultural aspects imitatively (termed imitative learning or role reversal imitation) (Tomasello, 2003, p. 3). While prior to the social-cognitive development of intention-reading an infant was capable of dyadic communication with a parent, the communication now became triadic, since the child is capable of coordinating and sharing attention to a third entity (an object or an event) with the adult. These skills enable symbolic communication and are crucial for language development such as acquisition of linguistic symbols, expressions and constructions. By 0;10 Ria was making the transition into the next developmental stage.

5.3 Transition to language

The transition period extended approximately from 0;10 until 1;4. This period has been suggested as a separate developmental stage by several authors as based on their case studies (Halliday, 1975, p. 139; Oksaar, 1983). It is viewed as a phase between the babbling stage and the one-word stage when a child's semantic abilities start developing (Oksaar, 1983).

In this thesis the transition period was significant for two major developments: rapid development of linguistic comprehension and intention-reading communication. It was

also marked by the use of proto-words and first adult words. In this stage the early months of language familiarization were peaking and transformed into comprehension and production of early linguistic forms.

Ria's linguistic repertoire included three types of productions:

- Pure babbling
- Proto-words
- First adult words.

5.3.1 Pure babbling

During the transition period canonical babbling became prominent. Ria continued to babble freely to play with sounds, such as [dada dadadada] [baba ba] [pa:pa: pa:pa:] [ma mama] [hehehehe] [hahaha]. She was also stringing sounds into combinations to which she was assigning particular rhythm and intonation much like in a stream of speech. Thus babbling served as a practice of the speech organs, various sounds and rules of prosody.

In the early transition period babbling sounds and their combinations did not appear to be language specific as some authors observed (Cruz-Ferreira, 2006, p. 63), but reflected sounds and the prosody of the two languages towards the end of the transition period (1;3.8). Such combinations differed from canonical babbling, since they were not reduplications of the same syllables, but random combinations of sounds with intonation and phonetic and syllabic rhythm characteristic of the two languages. The following excerpt shows Ria's babbling combinations with English like prosody used in a bilingual context while interacting with the English speaking father:

%sit RIA is learning how to stand on a stepping stool in the dining, DAD is helping

*RIA [ak]

%act RIA runs up to the stool

*MAM Can't believe herself?

*DAD She can't stop doing it. I'd like to put it away.

%act RIA is trying to step up

*RIA [au]

*DAD Careful! Very careful! Very careful. You didn't have your second foot on far enough.

*RIA [ja aga a:]

*DAD Yeah, you got it.

*RIA [au wa]

*DAD Yeah. You're probably getting tired.

*RIA [a:]

*DAD You probably getting tired from doing it now. Ah, you're gonna have a sleep on there, couldn't you? That's a good idea.

%act RIA tries holding onto DAD's hand

*DAD You cheat, you use me. Oup, that didn't work, hey?

%act RIA slips off the stool

%gpx RIA shakes her head

*DAD She shakes her head. She slipped off and she's like...no.

%gpx DAD mimics RIA and shakes his head

*DAD That didn't work at all. Hihhi!

*RIA [agwɜ:k aŋɪ:a agaɾ wɜ:]

*DAD Anger?

%com DAD assigned one babbling sequence to a similarly sounding English word 'anger'

*DAD Good, that's one good foot up there, now the other one. You had it. Ah, you gonna do it different way? You try to do it without leaning down? That's the funniest! She's got her hands on there and she puts her foot up on her hand and then she can't get her hand out.

*RIA [aut]

(1;3.5)

The second excerpt shows Ria interacting in a Slovak only environment and using combinations of sounds that resemble Slovak syllables:

%sit RIA is learning to sort blocks through a shape sorter, MAM is passing her shapes

*MAM A túto? No. No, aj tam sa zmesťí, dobre! A túto? Túto kam dáme?

%eng And this one? Yeah. Yeah, it fits there too, well done! And this one? Where will we put this one?

*RIA [tato]

*MAM Kam ju dáme?

%eng Where are we going to put it?

*RIA [jo:gec aɹi baɹi ɹikoje]

%gpx RIA is looking directly in MAM's eyes and MAM is looking at her too

*MAM Ano?

%eng Yes?

*RIA [sem tɛ:ja ɛp ojc]

*MAM Kam ju dáme?

%eng Where are we going to put it?

*RIA [aui xɛɹoc cɛ:bac dowə]

*MAM Ano, naozaj?

%eng Is that right?

*RIA [nimdau xu: ɹabau]

*MAM Naozaj? No, kam ich dáme?

%eng Really? Well, where will we put them?

*RIA [ɛpsɛc]

(1;3.21)

After the first year (1;0.7) babbling filled a gap where Ria had no alternative for vocal expression, but needed the interactional exchange with an adult. Thus the purpose of babbling address to others was social interaction.

5.3.2 Protolanguage

Halliday (1975) described prelinguistic development according to what a child was achieving with his communicative intentions before language emerged. Other creative means to communicate intentions were used – the protolanguage, kinetic and paralinguistic means. According to Halliday (1975), proto-language emerges when a child's expressions become symbolic rather than involuntary (babbling) prior to the transition to the adult

language. An infant's social world has only a limited number of contexts in which he can use symbolic expressions to communicate. Protolanguage allows the child to communicate his intentions within his social context (Painter, 1985, pp. 52-55).

Halliday termed the expressions protowords (also called babbling words, vocalizations or idiomorphs). Protowords consist of random combinations of sound sequences that are both phonetically and semantically regular, can be variations of a sound, or '*a continuum of intervening articulations*' (Painter, 1985, p. 56). Protowords are invented by the child and are not based on any language. They are used repeatedly to refer to a particular object, person or request, but always in contextually similar situations. They are accompanied by paralinguistic elements such as gestures or kinesics.

In this thesis, symbolic productions that carried intentional meanings emerged during the transition stage (0;9), but were more limited in comparison to Halliday's (1975) data. Ria used several short-lived vocalizations that could be classified as protowords, however, she preferred one *universal proto-word*. It appears the vocalization emerged first as a ritualization, since the rather agitated nature of the sound had the desired effect on the parents – they always attended to Ria and acted on her request. Thus it became an effective means of communication and Ria started using it frequently in various contexts. The proto-word was used equally when interacting with both parents, thus it was not tied to a specific language. It was used frequently, served several functions, and had the greatest scope of meaning, which continued to extend over time.

The protoword emerged towards the end of the babbling stage as a sound produced in the throat, a [hm:] sound, which resembled a consonant produced with a closed mouth with a long rising tone giving it a nervous, urgent tone held for a longer period. It was produced with varying intensity. The vocalization did not have one stable form but several variations were recorded. As Ria turned 1;0, the initial sound changed into a rather vocal vowel [ə:]. Later variations were [ə:] [e:] or [a:], all long, stretched vowels. All variations showed a level of urgency and resembled a straining sound one might produce when trying to reach out for something. When the request was more urgent, it approximated a vowel, and when Ria was more content, it approximated a [hm] sound. Ria also produced this vocalization more often and more urgently when she was tired and easily upset. Around 1;0.13 the vocalization assumed a more stable form and from this point it was recorded most often as a reduplicated [ə: ə:] with a rising tone.

The vocalization was often used in combination with physical means of achieving an outcome, such as pulling herself up or towards the direction she wanted to go, stretching her arms up to be picked up, with a pointing gesture when requesting objects.

If Ria did not achieve the desired response from adults, she continued repeating the same vocalization, with or without gestures, until the parents reacted according to the request, knowing that it was an effective way that served to achieve the desired outcome. When vocalizing repeatedly, its tone became gradually more urgent and frustrated, depending on how quickly the parents reacted, and if they understood Ria's request correctly, e.g. they passed her the desired object.

However, variations in tone were not differentiated across specific functions, as shown by the following example:

- two variations, [hm:] and [a:] were used within one situation while Ria was requesting the same object - the family was at the dining table and Ria pointed at an object. The mother did not immediately understand which object was requested and passed the wrong one, after which Ria pointed again vocalizing, then repeating the request but with a different variation of the vocalization, until the mother responded appropriately (1;1.9).

This example indicates the variations were interchangeable, since there seemed to be no change in the meaning, only an added emphasis.

There were two initial functions - request for objects, request for involvement or to be picked up. It then extended to a request for actions and activities Ria would like to do, as well as a request for a service from the parents. Ultimately the aim was to be engaged in an interaction with either parent and /or their activity, to be directly involved in the activity, observe, participate and imitate. The functions gradually expanded towards the end of the first year and where most varied just after the first birthday. By the end of 1;0.26 the vocalization became Ria's most typical expression. The variations, functions and examples within specific contexts are shown in APPENDIX B.

Thus while Halliday's (1975) protolanguage analysis consisted of a rich repertoire of idiosyncratic vocalizations, in this thesis proto-words formed only a small part of Ria's expressions of meanings. Ria used primarily kinetic and paralinguistic means which served various functions, as discussed in the following section.

5.3.3 Using gestures to communicate intentions

The use of gestures in the early stages of linguistic development appears as an idiosyncratic development, since each child develops her own ways to communicate intentions (Goldin-Meadow, 1998, p. 30).

During the transition period Ria's early communicative acts were based on gestures, body language and other paralinguistic means of communication. Such gestures were more symbolic, since they served not only declarative purpose as previously, but also imperative purpose. Ria directed an adult's attention to an object or an event in order to communicate her intentions, to direct the parents to act on objects and requests. The most prominent form of communication were various ritualized gestures (the deictic pointing, holding up and passing objects) and kinetic means of requesting (body positioning, turning eye gaze).

Paralinguistic forms of communication were not tied to specific languages. Ria was able to engage both parents equally, regardless of the language used to address her, as in the following example:

The family was playing in Ria's room. Ria passed a musical toy to the mother, who turned it on and Ria started dancing. Simultaneously, the father picked up a doll and pretended the doll was dancing. When the song finished the parents put down the toys. Ria passed the toy to the mother again, then turned to the father and passed the doll to him, requesting them to perform the same actions again. When they responded appropriately Ria's facial expression showed contentment. (0;11.11)

In interactions with several people simultaneously, Ria combined two or more gestures, such as holding up an object and directing her eye gaze to a specific person, thus requesting that person to perform the desired action with the object.

5.3.4 Emerging Word Comprehension

According to Pruden et al. (2006, p. 267) there are two competing theories on word learning in the field of first language acquisition. One theory suggests that word learning takes place through associative mapping of words onto referents from the child's point of view, in other words developing associations between a linguistic form and a referent following repeated object-label pairings in her input. The opposing theory suggests that word learning takes place through the exchange of social information and social cues that allow the child to interpret social intent of her interlocutors, and thus map words onto referents from the speaker's point of view (Pruden, et al., 2006, pp. 266-268). However, Pruden et al. found that both mechanisms appear to be employed in word learning. While

10 month old infants were learning words through associative learning not relying on social cues, at 12 months they became sensitive to social cues but were not yet able to use them for word learning. This ability developed around 18 months, and up to 2 years children were relying on social cues to map labels to referents (Pruden, et al., 2006, p. 277). Thus it was suggested that word learning moves along a continuum from associative learning to socially influenced word learning, and that the latter is made possible when infants become able to read communicative intentions of others. Word learning rates could also be explained by this developmental shift, since the initial associative learning requires repeated pairings of a word with its referent, while socially guided word learning occurs at a faster pace (Pruden, et al., 2006, p. 278).

Similar observations were made in this thesis both in regards to the mechanism, as well as the rates of word learning over the age periods from 10 months to 2 years. The early word learning was slow and related to salient items in the input, as will be analysed in the following paragraphs. Later word learning occurred at a considerably faster rate and items did not require repeated pairings in input to be learnt, as analysed in Chapter 6.

In the babbling stage early association of familiar sound patterns with familiar contexts was said to emerge at the age of 5 months (See section 5.2.2). In the following months Ria was able to associate increasingly more contexts with familiar sound patterns. However, such associations now related to particular words or expressions rather than similar sound patterns. Thus the comprehension was of adult words. As demonstrated through the diary records, Ria was gradually able to respond to increasingly more questions, requests or even non-direct requests addressed to her by the parents:

- during the bath time routine the mother said ‘A teraz si umyjeme vlásky!’ “And now we’ll wash hair” and Ria spontaneously leaned backwards to wet her hair
- when the mother asked Ria to show endearment, such as ‘Urob daddymu mój daddy!’ “Do my daddy!” (inviting Ria to stroke her father) or ‘Daj mame pusu.’ “Give mummy a kiss”, Ria responded with the appropriate actions (0;10.27).

During the transition period there was a considerable increase in the comprehension of individual words, which emerged with several familiar words. When Ria made the association between the phonetic form and the referent (including animate and inanimate objects) she was able to recognize the word in a stream of speech, and her attention focused on the object, as was shown through signs such as head-turn and eye gaze towards the object. She was then able to simultaneously indicate the referent with paralinguistic

communication means, either gestural (eye gaze, pointing) or vocal (babbling or protoword). This was evident firstly in elicitation by the parents, as they asked her to identify a familiar object. However, Ria also spontaneously responded to familiar words in a stream of speech by directing the parents' attention towards the referent. Examples from both languages were captured. The first example shows comprehension in Slovak context with the mother:

- %sit RIA and MAM are playing with a musical toy in RIA's room, RIA is pressing buttons, MAM provides commentary
- *RIA [aba wabu:]
- %glo xxx
- *MAM Peek-a-boo!
- %com Repeating sounds produced by the toy
- %act RIA turns a butterfly shaped button
- *RIA [he a:da]
- *MAM Dá sa otočiť motýlik, však? To je taký motýlik.
- %eng You can turn the butterfly around, can't you? It's a butterfly.
- %act RIA turns left, looks up and points at a butterfly decoration on the wall
- %com comprehending the word butterfly RIA responds by directing the mother's attention to a familiar referent
- *MAM Tam sú, ano, aj tam sú motýliky!
- %eng There they are, yes, there are butterflies too!
- *RIA [aja]
- %act RIA looks up at the light shade with butterfly motive and points at it
- *MAM Aj tam sú, ano, Rianka má veľa motýlikov.
- %eng And there they are, yes, Ria has many butterflies.
- %act RIA turns to her right and points at another butterfly wall decoration
- *MAM Aj tam sú motýliky, ano. Aj tu je motýlik, aha. Aj tu je. Aj tu je. Aj tu je. Vidíš, to je motýľ.

%eng There are butterflies too, yes. And here's a butterfly, look. Here's one too.
 Here's one too. Here's one too. See, it's a butterfly.

%act MAM points at the butterfly on the toy

(0;11.15)

The second example was taken from an English context while interacting with the father:

%sit DAD and RIA are playing in the room, RIA is pulling out various objects
 from toy drawers and DAD provides commentary

%act RIA pulls out the whole drawer

*DAD Hoho!

*RIA [baba:]

%act RIA is looking inside another drawer; there is a balloon next to it, but RIA
 does not notice it, and DAD comments

*DAD There's a balloon there, a purple balloon.

%act RIA turns and looks at the balloon

%com RIA comprehends the word balloon

*DAD Yeah, balloon.

%act RIA starts playing with the balloon

*DAD Yay!

%act RIA is laughing

*DAD Yay!

*RIA [m m]

(0;10.31)

In both examples Ria responded to familiar words she segmented from the stream of speech, and directed the parents' attention to the usual referent she associated with the word. Ria's spontaneous pointing indicated a response to the familiar words, and initiated interaction about the referents with the parents, thus communicated her intention of joint attention. Therefore the nature of the interaction changed from being purely interpersonal and focused on the two people to involvement of a third entity – object or event.

Until the end of the transition period Ria's comprehension related to the immediate situational contexts in which an interaction took place. However, she was developing the ability to relate familiar words to experiences removed from the immediate context. This was demonstrated in several examples recorded in the diary:

- While reading a picture book with the mother and focusing on a picture of a strawberry Ria pointed in the direction of the refrigerator and laughed, thus pointing out the usual place for strawberries (1;3.27).
- Ria responded to pictures of a cart and a stacking toy by pointing in the direction of the garden, where she was normally accustomed to play with these objects (1;3.28).
- While reading a book about birds with the mother, Ria first looked in the direction of the garden, then pointed in the direction of her room, and uttered a word that approximated [ta:tʃi] 'vtáčik' "birdie". In an attempt to understand Ria's intended meaning the mother asked 'Čo tam je?' "What's there?", to which Ria responded by walking to the window in her room and pointing at the roof of the neighbouring house, where birds often perched and Ria was accustomed to watch them with the mother.

In these examples Ria demonstrated that word comprehension extended to all types of a particular referent and not just a specific item, since both the objects and pictures of those objects belonged under one conceptual meaning. Moreover, she related them to experiences outside the context, and using gestural communication means directed the mother's attention to this connection.

5.3.4.1 Comprehension in bilingual environment

In studies of monolingual children there is a well-established observation that comprehension precedes production (De Houwer, et al., 2006, p. 332). In this thesis evidence for *comprehension preceding production* in a bilingual child was found. When Ria began to speak, she already understood words in both languages. In fact, word comprehension extended to both languages as soon as it emerged. Bilingual development of Ria's receptive vocabulary therefore preceded the development of expressive vocabulary.

To date in BFLA research there is little empirical evidence on whether and how bilingual children comprehend translation equivalents (TEs). One study found that children as young as 13 months understood TEs and accepted cross-language synonyms (De Houwer, et al., 2006, p. 344). Ria also understood meanings of TEs across the two languages, thus

the Mutual Exclusivity Bias was not supported in comprehension, which reflects the findings in De Houwer et al. study.

There were also instances in which she understood only one member of a TE pair, yet was unsure of the meaning of the other member. However, she generally picked up TEs with a short time lag. Comprehension of TEs first appeared around 0;11, as in the following example from the diary:

- The family was talking and playing in the lounge when the father addressed the mother, with the word ‘pussycat’ contained in an otherwise English stretch of utterances; when Ria recognized the word (responding to the morpheme ‘cat’ rather than the compound), she immediately pointed at a wooden statue of a cat placed on a bookshelf. Several minutes later the mother set up a small experiment: she uttered a Slovak sentence containing the TE ‘mačka’, but pretended to address the father rather than Ria directly; Ria recognized also the Slovak word and immediately pointed at the statue again. This form of ‘probing’ for comprehension of TEs became a game for the family, as the mother asked Ria to identify various objects in the room using the question ‘Kde je xxx’ “Where is xxx?”. Ria responded by pointing appropriately at the correct referents each time, even if she did not spot it immediately, she looked around to locate it. The father then asked to identify the same referents in English. Ria was able to identify most, with slight delay in reaction to the English TEs. She did not recognize all English TEs, such as the referent for ‘shoes’, however, she was able to locate it when the mother provided her with the Slovak translation ‘topánky’. (0;11.11)

It was difficult to quantify how many words Ria understood at any given time. She understood more than individual words, but whole structures that carried the meanings of various concepts, for example descriptions and commands.

However, when the parents attempted to test comprehension they did not ask about embedded meanings, they asked questions which probed for single referents, and thus did not reflect comprehension fully, for example when reading a picture book with pictures of children, Ria correctly identified referents for concepts such as ‘ryšavé dievčatko’ “little girl with red hair” or ‘blond’avý chlapec s modrými očami’ “blond boy with blue eyes”. The parents also probed for clear categories of objects with exact referents that Ria had many different examples of, such as ‘oči’ “eyes”, ‘mrkva’ “carrot”, ‘medved’ “bear”.

Moreover, in Slovak, a language with complex morphology and declinations, referents have several forms of a single word linked to them. This is due to the fact that various

forms of a word carry different grammatical meaning, which is expressed with different suffixes, whereas in English the forms are limited to singular and plural forms. Thus in Slovak a child needs to map multiple linguistic forms onto one referent while decoding the grammatical information relayed in that form. For example where in English the referent “eye” has two forms ‘eye’ and ‘eyes’ in singular and plural respectively, it has the following forms in Slovak:

Case	Singular	Plural
Nominative	‘oko’	‘oči’
Genitive	‘oka’	‘očí’
Dative	‘oku’	‘očiam’
Accusative	‘oko’	‘oči’
Locative	‘oku’	‘očiach’
Instrumental	‘okom’	‘očami’ ⁷ .

There is also the added variation of various forms of diminutives used especially in CDS. Diminutives are frequent in Slovak CDS, which is also reflected in child speech (Stejskalová, 1998, p. 11). They are a reflection of positive emotional charge that children evoke in adults, which is transferred to interaction between an adult and a child (Hlavatá, 1998, p. 18). Thus the emotional charge provides the linguistic model, and will necessarily be echoed in the child’s comprehension and speech. In fact, in a study with a Brazilian Portuguese-English BFLA child the author treated diminutive forms and counterpart standard word forms in the child’s input as different types of words (Nicoladis, 2001, p. 139).

This approach suggests diminutives generally expand word comprehension, since the form carries an additional meaning, for example in this thesis the Slovak forms ‘oko’, ‘očko’, ‘očičko’ all referred to a single referent, “eye”, and forms ‘ucho’, ‘uško’, ‘ušinko’ all referred to a single referent, “ear”. However, the diminutive forms ‘očko’, ‘očičko’ and ‘uško’, ‘ušinko’ (meaning “little eye” and “little ear”) carried the additional information which expressed the mother’s attitude to the referent showing affection.

⁷ There are 6 nominal cases in each singular and plural number in the Slovak language, and as such there are actually 12 different grammatical forms a noun can have. However, some case endings are polysemic, resulting in single forms with several grammatical meanings, which need to be inferred from the context.

Frequent use of Slovak diminutives was recorded in this thesis through both the diary and video-recordings. They were not limited to the Slovak language, but also appeared in English input. While there is no standard diminutive form in the English language, diminutive forms are widely used by English speaking parents when addressing children. In this thesis the father ‘softened’ already emotionally charged words, especially appellatives and affectionate terms, with the use of suffixes *-ie* and *-ies*. As well as the standard forms birdie ‘bird’, doggie ‘dog’, horsie ‘horse’, tootsies ‘toes’, sweetie ‘sweet’ other creative family forms appeared, such as lambie ‘lamb’, angelie ‘angel’, darlingie ‘darling’, munchkinie ‘munchkin’, housie ‘house’.

The difference between the languages in the use of diminutives was that in English, diminutives were not as diverse, they were not used as frequently, fewer word types occurred in diminutive form, and they were formed with two interchangeable suffixes. In Slovak diverse word types occurred in diminutive form, the morphological process was less regular with wide range of suffixes and changes in some stem forms.

In this thesis comprehension vocabulary in the two languages was not recorded systematically, thus there is not a complete list of words in each language, but rather sporadic records of word learning. What is available, however, are insights in the ways in which Ria acquired early TEs in receptive vocabulary. Several mechanisms were observed:

- Individually in a monolingual English/Slovak context
- By association in a bilingual context
- Simultaneously in a bilingual context

In a monolingual context Ria learnt an equivalent in one of the languages. This was the case mainly with vocabulary from the stronger language, Slovak. Thus Ria needed to acquire the corresponding English equivalent at a different time and in separate context when interacting with the father, if similar context occurred, as in the following diary example:

Ria was interacting with the mother and her Slovak aunt, the mother pointed several times at the aunt’s dimple in the cheek and provided a label; she then asked Ria to identify the referent herself ‘Kde má Robi jamku?’ ‘Where’s Robi’s dimple?’; Ria responded by pointing appropriately (1;0.11).

In this situation the father was not engaged in the conversation, thus there was no opportunity to acquire the English TE immediately.

Other typical monolingual contexts when words were acquired included book reading, when the mother pointed at pictures and provided labels, then reversed the roles and asked Ria to identify the referents on the pictures.

Instances of word acquisition in a monolingual English context were more limited due to the exposure patterns, nevertheless they were recorded through reports by the father. Reporting of new words by either parent created contexts in which the other parent had the opportunity to introduce the TE with some delay, as in the following diary excerpt:

Ria and the father were playing with a ball, and Ria learnt to associate the verb in the utterance ‘Kick the ball. Kick it!’ with the action; later that evening the mother invited Ria in Slovak to perform the action ‘Kopni loptu, no, kopni!’ “Kick the ball, yeah, kick it!”, but Ria did not respond until the father rephrased the utterance into English; thus the Slovak TE was introduced by association with the already familiar English TE; having acquired both TEs Ria was able to perform the action in response to a request in either language (1;2.14).

In a bilingual context, the learning of TEs occurred through two possible learning mechanisms. The first mechanism was by association with an existing equivalent, thus through the same associative learning as above, but since the second TE was introduced immediately after the first, without the time lag, as described in the following diary record:

The family was in the garden when Ria noticed the moon and pointed at it. The mother provided the Slovak label ‘mesiačik’ “moon”, repeating it several times: ‘To je mesiac. Mesiačik.’ “That’s a moon. The moon.”. Ria pointed at the moon several times, with the mother providing commentary each time. Then the roles reversed and the mother asked ‘Kde je mesiac?’ “Where is the moon?”, to which Ria responded by pointing. Several moments later the father asked Ria in English ‘Where’s the moon, Ria?’ and Ria responded by looking around, trying to locate the referent - she was not certain of the referent, but understood the prompt to identify an object. The mother rephrased with the familiar Slovak TE ‘mesiačik’ and Ria looked up and pointed at the referent immediately. Subsequently, the father repeated his English commentary several times: ‘Moon, that’s the moon.’, then probed again: ‘Where’s the moon?’, Ria responded by pointing at the referent immediately (0;11.14).

Around Ria’s first birthday, during the family’s overseas trip, the father was Ria’s only source of English and she was exposed to more Slovak input from varied sources. Naturally, her comprehension repertoire in Slovak increased at a greater rate in comparison

to English. The diary records state there were many occasions when the father asked Ria a question in English, to which Ria did not respond. The father overcame this by requesting the mother to rephrase his utterances into Slovak, and then he followed in with repetitions of English TEs. Through this strategy Ria responded to the Slovak utterance immediately, while she was introduced to the English TE. Thus she had an opportunity to learn both equivalents (words or expressions) by association with only a short delay. Moreover, this strategy reinforced bilingualism, since each parent used different language as a tool to express the same meanings, falling back onto the other language when necessary.

Thus although comprehension extended to both languages, during the early comprehension stage (0;11) Slovak appeared to be Ria's stronger language, and her receptive vocabulary was greater in Slovak than in English. The mother often helped Ria by supplying the Slovak TE as an explanation, after which Ria was able to identify the referent. Thus she was able to observe both equivalents simultaneously and acquire them directly in relation to the referent. As a result more English equivalents were acquired by association with Slovak TEs than vice versa, which further amplified during the family's overseas trip (1;0).

The second word-learning mechanism in bilingual contexts was simultaneous acquisition of TEs within the same joint attentional frame with both parents. In triadic interactions each parent labelled an object or provided a short commentary in their respective languages. Thus on such occasions Ria learnt both TEs simultaneously. While to an outsider this may seem rather chaotic, Ria was used to the parents addressing her in two languages simultaneously from birth, making it the norm. Learning was taking place in a systematic fashion, since within the joint attentional frame all three members were focusing on the same object. Ria was able to use the parents' eye gaze as a cue while each parent was labelling the object in the usual language of address.

Sharing picture books with the parents offered an opportunity to probe for Ria's comprehension of TEs, especially since during this stage the parents often read by asking Ria to identify objects on the pictures. Ria was able to identify referents appropriately in both languages, suggesting that her comprehension of the contexts in familiar books was at a similar level. Indeed there were many opportunities when Ria asked one of the parents to read a book and then requested the other parent to read it again⁸. She was aware the

⁸ The mother read all picture books to Ria in Slovak, rephrasing written texts into Slovak. This was the usual reading routine until Ria became aware of print, and requested all English books to be read in English.

parents read books differently, each using their respective language, thus showing early metalinguistic awareness of two input languages.

There are important implications for BFLA infants that stem from the above observations. A bilingual child may or may not use translation equivalents in production for a particular concept even if she has both TEs in her receptive vocabulary. Indeed, differences in Ria's comprehension and production in the two languages were observed towards the end of the transition period (1;4). While she understood both languages more or less equally, at this stage she seemed to draw her expressive vocabulary mainly from Slovak. This disparity can be explained by Ria's language exposure patterns, since overall she received more interpersonal input in Slovak than in English. Thus although production appeared to be dominant in Slovak at this stage, Ria's comprehension was relatively equal in both of her languages. Indeed, De Houwer (1998, p. 257) argues it is not relevant to talk about language dominance or even proficiency when we are concerned with a linguistic system that is still developing. It is more appropriate to use the term *stronger language*, while the strength of each language can change over time with changing circumstances and language exposure.

5.3.5 First words

The onset of speech is a period rather than a specific point in time. In this thesis it started with single word utterances mostly reproduced after adults. Ria was firstly observing language in her environment and then reproduced it. This form of reproduction, called imitative learning (Tomasello, 2003, p. 27), was prominent during this stage not only in Ria's speech but also in reproduction of the family's activities and actions the parents engaged in, such as pretending to feed a doll, weeding and watering plants in the garden, reading books, as well as various actions performed with objects. Ria initiated such reproduction of adults' actions also spontaneously, without previous interaction within a joint attentional frame which was focused on the object and its use. The same form of spontaneous imitative learning was observed with first linguistic reproductions. During joint interactions Ria participated not only by coordinating her attention accordingly, but also through vocal response. She attempted to reproduce adult words by producing sound approximations which did not have the conventional adult word forms yet. According to Vihman & McCune's (1994, p. 522) criteria, correct use of the early words was validated through many situational contexts in which Ria used them. Thus by reproducing linguistic and other behaviours Ria strived to connect with the people by participating in events that

took place in her environment. She did not absorb only those experiences that were mediated by an adult's attention, but learnt from independent observation as well.

5.3.5.1 The role of onomatopoeia

The first reproductions were not yet dictionary words, but included onomatopoeic words which had a symbolic relationship with their referents, and were consistently used in relevant contexts. Ria learnt first onomatopoeiae through ritualization, thus they were related to referents iconically. However, onomatopoeiae were reproductions of sounds produced by different animals which belong to baby-talk and are commonly used in both Slovak and English languages in CDS, thus are culturally specific. Vihman and McCune (1994, p. 521) also treated similar productions as first word candidates. Onomatopoeic sounds initially form the basis of expressive repertoire of infants who are starting to use adult language (Stejskalová, 1998, p. 10). According to Stejskalová onomatopoeiae further form the basis of first combined utterances, as well as the basis for creative morphology in children's productions of nominals, verbs and adjectives derived from them.

In the data in this thesis, the family often used sounds produced by various animals during playtime. Ria knew which ones to expect for which referent and anticipated them with a smile. Some onomatopoeic sounds appeared as early as in the babbling stage. Not all were linguistic sounds, however, all were used consistently to refer to one entity and Ria was able to produce them when elicited by the parents. During the transition stage they became more symbolic, since they signified the referents as well as imitated the sounds associated with the referents. Thus they held an important place as the first words. Ria's onomatopoeic productions were variations of baby-words used in the adult languages and contained sounds that closely approximated them. She started by reproducing the sound impression and gradually approximated it to an adult onomatopoeia, as shown in APPENDIX C. Most importantly, onomatopoeiae appeared as constant productions in regular contexts, and were used spontaneously (without parental elicitation) during joint attentional frames. They were used extensively throughout the transition period as spontaneous productions, for example when Ria saw pictures of the referents in a book. As such they formed the greatest semantic group of words during this period. Ria used more Slovak onomatopoeiae, since more forms are conventionalised in comparison to English.

5.3.5.2 Producing words

The first spontaneously used adult words appeared just before the first birthday and were related to aspects of Ria's life necessary for survival. As with onomatopoeia, early productions gradually developed into forms that approximated the adult targets.

There were several early words that occurred frequently. The first was a Slovak baby-word both parents used to refer to Ria's breastfeeds, 'hami', 'hamiki' or 'hami-hami' meaning 'eat'. The closest English equivalent often used by English speaking parents is 'boobie'. The mother usually asked 'Prosíš/Dáš si hami-hami?' "Would you like/Do you feel like boobie?" Ria did not use this vocalization in other situations, only to request a feed. Several variations emerged at first, [ham], [h h] or [am] (0;11.02). After the first birthday the word was pronounced as [hama hama], thus approximated the adult word closer (1;0.6), or [hamɪ] (1;0.4) in which case the production matched the target word. It was often accompanied by a gesture that intended to achieve the result physically, as demonstrated in the following video excerpt:

%sit RIA and MAM are playing on a rug, RIA is asking for a feed
*RIA [hama ham]
%act RIA is grizzling
*RIA [a:u a:] [ham ham ham]
*MAM Ham ham, dáš si hami, ano?
%eng Ham ham, would you like boobie, yes?
%act RIA is grizzling and reaching for MAM's breast
*RIA [hamɪ]
(1;0.19)

For a short period Ria extended the meaning of the production to other food and eating in general, as in the following examples:

- while the mother was preparing lunch and setting the table Ria was becoming unsettled anticipating eating. She pointed at the food and leaned towards the food uttering [hama hama] (1;1.20)

- as the family returned home after shopping Ria took a block of chocolate from a shopping bag and unwrapped it, when the father asked ‘Ria what are you doing?’ she responded [hamham] (1;3.15).

The reduplicated combination [ham ham] was also extended to a utensil used for eating:

- as Ria picked up a spoon during play she held it up and uttered [ham ham], with the intended meaning being most likely ‘We eat with a spoon’.

The word was used in both language contexts, since it was a family word, and the father also referred to Ria’s breastfeeds as ‘hami’. Thus it belonged to both languages. An example from the English context occurred during play with dolls with the father, where it was used in its extended meaning ‘food’ (Ria was not accustomed to a bottle with milk and did not form this association):

- Ria passed a bottle to the father, who pretended to feed a doll, after which Ria uttered [ham].

Other first words were appellatives for the parents. Ria used several variations to refer to the mother [mama] (1;0.4), [mam] and [mamɪ] (1;2.7). Other variations appeared as well, such as [mamajama] (1;2.3) or [mamaja] [maja], which were interpreted as ‘mama moja’ “my mummy”, a phrase the mother often used herself when picking up Ria. Later variant, also used by the mother, was a diminutive ‘mamička’ “mummy”, produced most often as [mamɪja], and occasionally with the consonant cluster [mamicka] (1;3.8). An appellative for the father was at first produced much like the babbling combination [dada] or [dadada] (1;2.7), however it was clearly distinguished by the situational context that the word was referring to the father. Both appellatives assumed the adult forms [mamɪ] and [dedɪ] (1;3.21) by the end of the transition stage.

Among appellatives Ria’s own name referred to self, e.g. when Ria spotted her reflection in the mirror she pointed at it and uttered [ana] (1;1.17). Only days later the production approximated the target word even closer [jana] (1;1.24), and it was also used when pointing at a photograph (1;1.25). Her own name was also one of the first words used in the form of a holophrase when requesting to do an action herself, replacing the usual proto-word vocalization [ə:], as shown in the following examples:

- Ria liked to watch the father while cooking, she requested to hold the spoon by repeating her name until the parents interpreted the request appropriately.

- Ria uttered her name as she picked up a bottle of baby oil and applied it to her stomach (1;2.21).

During this stage, however, reproduction of words after adults was more characteristic of Ria's speech. After the first birthday adult words emerged as consistent reproductions during various routines and activities, following a new visual or auditory stimulation, through sharing picture books with the parents as they were labelling objects in the pictures, or after direct elicitation by parents, especially when appellatives of family members were requested. Ria repeated appellatives slowly and clearly, such as [mama] after a prompt 'Povedz mama!' "Say mama!" (1;0.27).

Thus word reproduction took place mostly within joint attentional frames. Ria was attempting to produce either words she was familiar with or the key words from the parent's utterance. In a bilingual context she reproduced after the parent with whom she was engaged in direct interaction, as in the following excerpt:

%sit RIA and MAM are playing with sorting blocks in the lounge, DAD comes in and they talk about their day

*MAM And we made a snake, daddy!

*DAD Yes?

*RIA [snɛ]

%glo snake

*DAD You made a snake?

*MAM Ria, pod' ukázat' daddymu, akého hada sme urobili v knižnici, pod'.

%eng Ria, come and show daddy the snake we made in the library, come on.

*DAD Mami said you made a snake.

*MAM Pod' mu ukázat'.

%eng Come and show him.

*DAD Where is it?

*RIA [x]

*MAM Because they've

*DAD Is that your snake? Cool!

*MAM changed the program, you know. We got there and yeah, they've changed the program, they don't have baby bounce anymore.

*RIA [xtə gov xɪc]

%glo xxx xxx xxx

%gpx RIA grabs the snake and carries it to DAD, holding up the snake

*DAD Snake! Ssss! Cool!

*RIA [ku]

%glo cool

*DAD You made it, did you? Ssss!

*RIA [ɪsss]

%glo ssss

*DAD You stuck decorations on? Cool!

(1;3.16)

Reproductions were the most typical form of production between 1;0-1;3, period during which it was not possible to capture an exhaustive list. Examples were occurring in both languages, Ria was imitating after the parent's address in the respective language.

By age 1;2.30 Ria gained enough control of the articulatory system to be able to reproduce many words within varied situational contexts with the mother and father. Occasionally she was able to self-repair productions, as in the following examples:

uttering [zaʒa] followed by [aba] 'žaba' "frog", (1;3.16);

uttering [baba] followed by [babo] 'bábo' "baby" (1;3.21),

thus attempting to reproduce the words correctly within the same situation.

Reproductions prevailed for approximately two months, after which Ria became confident with the forms and reached readiness to produce spontaneous utterances. Many of the spontaneous utterances were responses elicited by the adults in the form of open questions about objects and people ('Where is daddy?' 'What's that?' 'Who spilt the water?'). But most importantly, Ria also initiated interaction with words rather than gestures or proto-words.

Spontaneous productions were preceded by Ria's spontaneous choice to perform certain actions (around 1;3.20). Rather than imitating actions she performed them spontaneously,

or after an adult's request to do something, e.g. placing dirty clothes into the washing machine, shopping items into shopping trolley, rubbish in the bin, replacing various household objects where they belonged.

The first ten spontaneous words, shown in Table 5.1, were drawn from both languages:

Table 5.1 First 10 words

	Age of first use	Phonetic form and variations	Target word	Meaning	Source language
1.	0;11	[hama] [hamɪ]	hami	requesting feed	Slovak (Family word)
2.	1;0	[mama]	mami	mummy	Either
3.	1;0	[ano] [aɲo]	ano	yes	Slovak
4.	1;1	[ana] [jana] [nana] [ɲana]	Riana	Riana	Either
5.	1;1.25	[am]	tam	there	Slovak
6.	1;2	[dada] [dædɪ]	daddy	daddy	Either
7.	1;2	[ɲɛ ɲɛ]	nie nie	no (don't do that)	Slovak
8.	1;3.20	[ɹɪs]	this	this	English
9.	1;3.20	[je]	yeah	yes	English
10.	1;3	[ba:]	bác	baby talk for 'fall'	Slovak

As shown in Table 5.1, these words were appearing one at a time, with a gap of approximately one month inbetween, and the first milestone of 10 words was reached only at the end of 1;3. Semantically, these words were mainly appellatives for the parents and self, and function words. All of these words were used frequently by the parents.

On occasion, Ria used an utterance spontaneously in one instance, then stopped using it for some time and resumed its use at a later stage:

[bu] 'bus' (1;2.1)

[kokoko] 'kohút' OR 'kotkodák' "rooster" OR "cluck-cluck" (1;3.25)

[jogu] 'jogurt' "yoghurt" (1;3.25).

There were also periods when a particular utterance was dominant over others, e.g. [ba:] 'bác' "up-a-day" used often when Ria was learning to walk.

The end of the transition period was also marked by holophrastic use of words. One of the first words used in this way was [mama] 'mami' "mum". Its meaning was not limited to asking for the mother, but to request services, direct the mother's actions and indicate

ownership. The particular meaning was determined by the situational context, as shown in the following examples:

- Ria pointed at toothbrushes uttering [mama], indicating agency. The parents' immediate interpretation was that the mother was to brush Ria's teeth, but Ria was not satisfied until the mother interpreted the holophrase as brushing her own teeth (1;3.25);
- Pushing the stroller outside the room uttering [mama], requesting the mother to leave a room where Ria did not want to be;
- Pointing at the vacuum cleaner uttering [mama], indicating agency;
- Pointing at the mother's suitcase and uttering [mama], indicating ownership (1;3.26).

Towards the end of the transition period first attempts at combining words appeared:

- [mama hama] 'mama hama' "mummy eat" - the mother and Ria were watching the father prepare Ria's favourite fruit, in anticipation Ria pointed at the mango (1;2.30)
- [dada. dada .ʃaʊ. dada. ʃaʊ. ʃaʊ.] 'daddy. daddy shower. daddy. shower. shower.' - interacting with the father while he was providing a commentary on his actions (1;2.30).

However, such combinations did not become typical of Ria's speech until 1;7.

In summary, the transition period was a stage marked by rich communicative and linguistic development. Firstly Ria's social-cognitive development allowed her to understand communicative intentions of others, and she was learning ways to direct their attention. Interpersonal communication in joint attentional frames played an important role in this development. Attempts at communication by means of protolanguage and paralinguistic means served the achievement of needs and requests. The development of comprehension as a precursor to speech was the prevalent aspect of this stage. Ria was becoming familiar with adult words and phrases from both languages, including TEs, related to her everyday contexts and physical environment. By the end of the period, she responded appropriately to utterances in both languages addressed to her by the parents.

During this stage Ria also experienced imitative learning both in non-linguistic aspects of development and in the use of language. She reproduced several adult words after the parents, and gradually progressed into spontaneous productions of first words. First words were used in a holophrastic sense. Ria also demonstrated awareness of her own productions, gained better control of the articulatory system and consciously attempted to approximate adult words.

6 Using words (1;4-1;6)

In Ria's spontaneous productions several first words emerged in the transition period. However, due to the small number of items that were used frequently (see section 5.3.5.2) the decision was made to mark the onset of the one-word stage at the start of 1;4, when Ria achieved the first milestone of 10 words in expressive vocabulary. Thus there is an overlap of the stages, which emphasizes the gradual transition into adult language. While proto-words and babbling were the main forms of expression in the transition stage, in the one-word stage words became dominant.

The one-word stage ended towards the end of 1;6 when two and multiple-word combinations emerged. This stage was marked by major growth in both comprehension and production of adult words. Ria used words as the predominant form of communication, and combined them with other forms, such as kinetic and gestural means, often connected into sequences.

When Ria was unable to express her intentions with words she relied on gestures combined with proto-words or pure babbling, for example the typical proto-word vocalization [ə:ə:ə:] used with a pointing gesture to request objects and services (1;4.19). At times it appeared more gestures than in the previous stage were used. This could be explained by the fact that her receptive vocabulary was growing rapidly, while the expressive vocabulary did not reach a similar level yet, thus Ria aimed at communicating and expressing her intentions in whatever way was available.

Babbling also served as a substitution strategy to fill gaps in Ria's developing expressive vocabulary. This was evident when she combined babbling with adult words, as in the following example:

Ria was watching the father cook in the kitchen, while producing strings of babbling combinations intensely adding her name [jana] 'Riana' at the end of the string, as if explaining something about herself (1;6.6).

Babbling was also used in a 'pretend' way when Ria could not express herself using adult language as yet. An example of this was while reading by herself, as in the following excerpt:

%sit RIA is pretending to read MAM's book

*MAM Čo tam je napísané?

%eng What does it say?

*RIA [ʃɛcɛta:wado fɛf aue uwowo]

%glo xxx

*MAM Čo všetko tam je?

%eng What's in there?

*RIA [bɛ ʃɛ cɛ ʃɛ]

%glo xxx

*MAM Je tam napísané?

%eng That's what it says?

*RIA [ano]

%glo ano

%eng yes

*MAM Héj? No, prečítaj to mamičke.

%eng Really? Well, read it to mummy.

(1;6.23)

Babbling combinations were also used in play with sounds, such as an invented sound combination [gogɪ gogɪ gogɪ] used playfully just for pleasure in different situations (1;5.1 to 1;5.22).

6.1 Early word development

According to Tomasello (2003, p. 87) there are two main aspects of the word learning process. The first is the social environment that consists of numerous reoccurring social interactions such as routines, activities and games that a child and her carers engage in. It is these interactions that provide *joint attentional frames* and which lead to the learning of cultural *communicative conventions* (Tomasello, 2003, p. 89). The second aspect is a child's own social-pragmatic capacity that allows her to participate in her social environment (Tomasello, 2003, p. 89). She participates by coordinating her own attention with the communicative intentions of other people, by learning to read such intentions, as well as identifying specific utterances and interpreting their functional purpose within the situation, and within the overall social context. How a child interprets linguistic symbols contained in adult's utterances is therefore dependent on the social context. She then learns

to produce the linguistic symbols in interactions in order to communicate her intentions to others (Tomasello, 2003, p. 90). This process has been termed the *interpersonal principle* by some authors who focus on the social context of such interactions (Halliday, 1975, p. 101; Painter, 2006). There seems to be a parallel with explanations that emphasize the act of directing each other's attention on the same referents, and thus creating joint attentional frames around which interaction occurs (Tomasello, 2003; Tomasello & Farrar, 1986).

In this chapter the social-pragmatic word learning theory will be illustrated on the bilingual data. In the following sections the underlying process of acquiring words in a bilingual context will be described. Observations will be made on how Ria became familiar with two words for one concept and learnt to produce them in appropriate contexts.

The data show first words were acquired through the process of socialization, through daily interactions between Ria and the parents. Each parent-child dyad in the bilingual family engaged in different contexts, guided by the cultural conventions of each language. The data contain examples of interactions when Ria and either or both parents focused their attention jointly onto an object or event. In these situations the parents directed Ria's attention and then verbalized the joint experience in the form of commentary whilst repeating words, and thus allowing her to relate them directly to the concept represented by a concrete physical object or event. Ria reproduced the words and received acknowledgment of her attempts from the parents, who responded by repeating the attempted word, giving further confirmation of the form. Ultimately Ria began to spontaneously direct the parents' attention by uttering the word for known referents while pointing them out with a gestural or kinetic expression.

6.1.1 Rate of vocabulary growth

In the initial period there were two forms of word production:

- Words reproduced after an adult
- Spontaneously used words or responses to adult address.

Reproductions were direct repetitions of words used by adults immediately before. The fact that a word is reproduced in a context does not show whether the child actually understands the word, since it is difficult to determine whether a reproduction reflects her ability to use a word productively. On the other hand, if a word is spontaneously produced in an appropriate context, it is likely that the word is understood by the child (Pearson, Fernández, & Oller, 1993, p. 113).

In the following analysis of vocabulary growth only spontaneous productions were considered. This included Ria's initiation of an interactional exchange as well as response to adults' address. Reproductions of words uttered by adults were not considered. While they were most likely in Ria's perceptive vocabulary, she also reproduced words which she did not use productively until considerably later. However, they were considered in the discussion of the phonetic shape of words in the following sections.

Conversely, spontaneous uses of onomatopoeiae and interjections were included in the word count for several reasons. These words belong to baby-talk, nevertheless, they were used by adults in the input and thus they were modelled to Ria as adult words. Moreover, many of the Slovak onomatopoeiae were recorded and recognized as non-standard yet conventionalised and frequently used words in Slovak CDS (Hlavatá, 1998, pp. 20-23). Secondly, Ria's productions approximated the adult forms consistently and they were regularly used in appropriate contexts, thus fulfilling inclusion criteria suggested by Vihman & McCune (1994, p. 522).

As mentioned in section 5.3.5.2, Ria used first adult words spontaneously in the transition stage, starting around 0;11. However, rates of production were slow, and over the 5 months of the stage only several words were added to the vocabulary. The first milestone in lexical development, the first 10 words was reached by the end of the transition period at 1;4. Thus Ria entered the first-word stage using 10 spontaneous productions. Over a span of 3 months during the one-word stage Ria reached other major word learning milestones, and rapid vocabulary growth occurred:

- 30 words reached within a period of one month, by the end of 1;4
- 50 words reached by the first half of 1;5
- 100 word milestone reached a month later at 1;6
- 245 words reached towards the end of the first-word period at 1;6.

In the literature on language acquisition the 50 word milestone is followed by a vocabulary explosion - a rapid exponential growth in a child's vocabulary, as well as by early word combinations (Cattell, 2007, pp. 5-6). This development was supported in the bilingual data in this thesis as well. Overall, during the one-word stage vocabulary growth progressed from 10 at the beginning of the stage to over 200 at the end of the stage within 3 months. The first 50 words used either in spontaneous productions or when responding to an adults' address during the one-word stage are reported in APPENDIX D. Bilingual

aspects of the vocabulary composition will be discussed in section 6.2. Emergence of combinatorial speech will be addressed in section 7.3.

6.1.2 Reproduced words

Reproduction of words adults uttered in interactions with Ria emerged around 1;1 in the transition stage, and included onomatopoeiae, appellatives for the important people, some function words and other words related to immediate contexts. Initially Ria chose to reproduce key words that were the focus of a joint attention of any given utterance within a particular context. She reproduced words after both parents, in bilingual contexts often both TEs simultaneously. This usage reflected the parents' strategy to introduce both TEs in triadic interactions, as described in sections 5.3.4.1 and 6.2.1.

Ria's early forms were simplified and approximated the adult forms phonetically. Initially only the first sound (in words with difficult clusters) or the first syllable was used. When the stress fell on the second or last syllable Ria reproduced the stressed syllable:

[ma:] 'tomato', natural stress;

[ci] 'deti' "children", unusual stress, reproduced after the mother who stressed the second syllable for emphasis (1;5.3).

However, it was possible to check correct association of such approximations with an object or event, since they were observed on several occasions and consistently used in relation to the same referents (Vihman & McCune, 1994, p. 522).

Reproductions were used extensively throughout the one-word stage and formed the greatest part of Ria's productions for several months. By 1;5.6 they became so frequent that it was difficult to capture and record all instances. While spontaneous productions were used as well, they became more prominent only gradually in the second half of the stage. Around 1;6.18 the diary records state that spontaneous utterances were used as frequently as reproduced utterances, and towards the end of the stage spontaneous productions prevailed over reproductions. However, overall reproductions formed the largest part of Ria's productions during the one-word stage.

6.1.3 Spontaneous productions

Regular spontaneous productions emerged around 1;4 as holophrases on their own or complemented with gestures, which emphasised their function. Thus the word as a communicative act carried a more complex meaning than merely a label for a particular

referent. By combining the word with other modalities Ria was able to emphasise the intended meaning of the utterance, as in these examples:

- **Requesting service or object**

- passing a book to the mother uttering [dɪs] ‘this’ –a request to read (1;4.2)
- pointing at her plate uttering [ʃɔʃɔ] ‘čučoriedku’ “blueberry” – a request to eat (1;4.19)
- holding the father’s finger, physically trying to move him, uttering [mami] ‘mami’ “mummy” – a request to follow the mother (1;4.8)

- **Requesting a parent to act**

- passing an object to the mother uttering [mama] ‘mama’ – specifying who is to perform the action (1;4.19)

- **Maintaining interaction**

- [ano] ‘ano’ “yes” used with the nodding gesture - agreement
- pointing at a photograph of the father uttering [dada] ‘daddy’
- pointing at her own cheek uttering [jana] ‘Riana’, meaning ‘this is Riana’
- cuddling the mother or favourite toys uttering [mɔ:] ‘moja’ “my” (1;4.21)

- **Expressing self and reacting to the environment**

- uttering [namɪ namɪ namɪ] ‘malilinký’ “tiny” while putting her two index fingers together as if indicating the meaning in gestural modality as well - emphasizing the word with a gesture (1;4.8)
- uttering [baba] ‘bábo’ “baby” and imitating baby’s cry after she had heard an infant’s cry (but did not see the infant), thus expressing the actor
- uttering [jana] ‘Riana’ and pointing at red pants she was wearing, which were of the same colour as a red object in a picture book, thus identifying her experiences with something represented in a picture (1;4.19)
- pointing at herself and uttering her name as a response to a question ‘Kto to urobil?’ “Who did it?”, when something was spilt or messed up (1;4.26)
- pointing at her own head and uttering her name while looking at a picture of a hat - indicating she was also wearing a hat
- when Ria achieved a new skill, such as manipulating shapes to fit through a sorting block, she pointed at her face and uttered her name – indicating agency.

Thus the gesture which accompanied holophrases suggested the meaning, for example the use of Ria’s own name in various contexts above could be glossed as statements or exclamations:

“Riana is wearing red pants/a hat.”

“Riana did it!”

“Riana managed to do it!”

Some words were used spontaneously as a holophrase without a gesture and included mainly Ria’s own name and appellatives of other family members. The function of appellatives was regulatory, and it was focused on the person to perform the action:

- when Ria wished to perform a particular action herself, she uttered her name [jana] ‘Riana’, which could be glossed as “Riana will do it!”
- when Ria approached a hot object such as an oven or hot cup, and reached out to touch it, she immediately retracted her hand and uttered [mamı # mamı] “mummy # mummy” glossed as ‘Mummy will do it.’ (1;5.27).

Other holophrases conveyed Ria’s reactions to the environment:

- when feeding ducks Ria repeated the word [gaga] (1;4.2) ‘kačka’ “duck” several times
- the Slovak interjection [ba:] for ‘bác’ was used spontaneously whenever an object fell, as well as when Ria fell while walking.

Although in the above examples Ria produced the words spontaneously, they reflected the usual comments provided by the parents in similar situations. Thus the items she had learnt were observed in multiple object-label pairings and salient in the input, mirroring Pruden, et al.’s (2006, p. 277) findings on associative mapping of words onto referents before 18 months.

6.1.4 Attention to language

According to De Boysson-Bardies (2001, p. 150) children arrive at language through different approaches and different choices they make when using language as a tool for communication. She states that “*infants have not all noticed the same aspects of the language during the course of the first year*” (de Boysson-Bardies, 2001, p. 151). In the initial stages of word learning this is reflected in different *styles of language acquisition*, which were observed in several studies of French and American children. Using a cross-linguistic comparative approach *learning styles* were determined by a child’s attention to and choices in two aspects of language: strategies of production and the types of words generally used. Two basic tendencies were identified (de Boysson-Bardies, 2001, pp. 151-152):

- *referential or analytic* - typical of the use of mainly nominals in terms of word types, while in production paying attention to phonetic structure in syllables, which results in mainly monosyllabic words.
- *expressive or holistic* - typical of the use of more varied word types such as predicates and function words, with frequent fixed expressions, while in productions focusing on syllabic rhythm and intonation.

However, De Boysson-Bardies (2001, p. 175) emphasizes that children do not adopt a single style, instead there are many variants depending on a child's focus of interest, their mother's style, and the native language, since the structure of the language guides the child's choices. In a bilingual child the presence of two languages undoubtedly influences her choices further.

Diary records of cumulative vocabulary showed Ria chose a style that used aspects of both the expressive and referential tendencies. She tended to use the analytic style in productions. She focused on the word as a basic unit and articulated productions clearly from early on. First words were monosyllabic, however, initial sounds varied phonetically, apart from a small number of cases. She tried to keep to the structure of the target word, and managed to produce familiar words as closely as possible to the target. Where a sound was difficult to pronounce in certain positions, she developed a pattern of regular substitutions. Familiar words were used with high frequency.

However, Ria also used some fixed expressions, which are more characteristic of an expressive style. On the other hand, the general trend in Ria's choice of the first word types suggested she preferred the expressive style, as discussed in section 6.1.4.2.

6.1.4.1 Strategies of production

First words produced by Ria did not have stable forms. Single word could be realized by several variants, while each was approximating the target word differently, more or less closely, until the form stabilized. Such gradual development was also observed by other authors (de Boysson-Bardies, 2001, p. 145). In general, a word was first produced in a form less similar to the adult word, and gradually developed into a form that more closely approximated the target word, as in these examples:

Early	Transient	Stabilized	Meaning
[mama]		[mami] (1;4.21)	'mami' "Mummy"
[dada]		[dædi] (1;4.21)	'daddy'

[a:ɔ]	[na: ja: ja:] (1;4.12)	[na:ɔ] [mna:ɔ](1;4.21)	‘mňáu’ and ‘meow’
[m m]		[mu: mu:] (1;4.21)	‘múmú’ or ‘moo moo’
[ɲamɲamɪ]	[maɲimaɲɪ]	[mɪɲa mɪɲa]	‘malilinký’ “tiny”
(1;4.8)	(1;4.21)	(1;5.6)	

Ria’s phonological development was evident mainly through reproductions, which were the first to approximate adult words more closely in pronunciation. She attempted to approximate the correct form as much as possible by repeating the word several times in one instance:

[tado] and [lɛta] - reproducing two different forms of the Slovak word ‘lietadlo’ “aeroplane” after the mother (1;4.8);

[pa:] [pawɪ] [papɪ] [pa:ɪ] [pabɪ] – attempting to reproduce the adult word ‘pavúk’ “spider” as closely as possible while seeing a spider for the first time (1;4.26);

[pa. pa. pau:] attempting to reproduce ‘pavúk’ “spider” in a different instance (1;6.19);

[apu] and [æp] ‘apple’ reproduced after the father in an English context.

Thus she had the correct form in her perception and reproduced several possible variants in an attempt to approximate to the target word. In some instances the reproduced and spontaneous forms differed, as demonstrated by the following examples:

- the Slovak word ‘vlas’ “hair” was first reproduced as [vl] (1;5.21), then produced spontaneously as [ac] (1;5.21), but in subsequent tokens the word was produced as [va:] (1;6.18), however, in the next developmental stage it changed momentarily to [wa] (1;7.2) before it was pronounced as a closed syllable [vas] or [vasɪ] ‘vlasy’ in the plural (1;7.28);

- the Slovak word ‘deti’ “children” was at first reproduced and elicited in a response as [ci:] (1;5.3), but when produced spontaneously, the form [jɛ] (1;5.21) replaced it.

However, the change in the second example possibly occurred due to the fact that in the first instance the mother applied stress on the second syllable, momentarily resulting in a greater salience of that syllable to Ria. By the time Ria produced the word spontaneously, enough examples of the word appeared in the input, and thus Ria adjusted the form accordingly.

Spontaneous productions, on the other hand, were undergoing natural phonological processes. Before Ria reached the 100 word milestone she relied on various strategies of

production for a limited time (aged 1;4-1;6). In some words, and only at the beginning of the one-word stage, the very first tokens of spontaneous productions approximated the adult form closer in both the sounds produced and the syllabic structure, while in subsequent tokens, the word was reduced to initial syllable or sound, fitting a typical pattern of production. Thus the words were subject to a reduction process, as shown in the following list:

Initial form	Subsequent tokens	Meaning
[pa:lɪ] (1;4.9)	[pa:] (1;6.16)	‘páli’ “hot/burning”
[konɛno] (1;4.9)	[kɔ] (1;6.10)	‘koleno’ “knee”
[kɛwɔ] (1;5.3)	[kɛ] (1;5.18)	‘kvietok’ “flower”
[xɔwɔ] (1;5.10)	[x] (1;5.26)	‘chlpy’ “body hair”
[fta:] (1;5.12)	[fa:] (1;5.21)	‘vtáčik’ “birdie”
[aʊɔ] (1;5.12)	[a:ʊ] 1;6.13	‘auto’ “car”
[ɔku] (1;5.22)	[ɔ] (1;6.2)	‘okuliare’ “glasses”
[ta:wa] (1;6.4)	[ta:] (1;7.1)	‘tráva’ “grass”
[sɛjɛ] (1;6.10)	[zɛ] (1;6.25) / [zɛ] (1;7.1)	‘zelená’ “green”

The initial tokens showed mainly omission errors with only few substitutions, while the form was relatively close to the adult form. The later tokens reflected a specific monosyllabic/initial sound pattern, which departed more from the adult form.

The initial tokens were in fact produced in a way similar to several most frequently used words important for survival, which developed in the initial period of word acquisition. Ria produced stable forms of these words which closely, if not entirely, approximated the target words. These included appellatives for the parents, Ria’s name and request for feed (‘mami’, ‘daddy’, ‘Riana’, ‘hami’), etc. These important words were also produced as wholes, close to the adult form.

After the initial period, approximately after the first 50 words, productions seemed to stabilize into a regular pattern. This process was evident with majority of the later words produced spontaneously across both languages, a developmental pattern also noted by Vihman (2002, p. 246). Vihman described a similar mechanism underlying early productions. She termed the early words *selected* and later words *adapted*. Early words reflected the adult forms much closer, and were produced as individual words. However,

once regular patterns were found in production, which occurred around the 50-100 word milestones, words tended to be *adapted* and produced according to templates. This development was taken to “*signal that the child has begun the process of building a phonological system*” (Vihman, 2002, p. 250).

In Ria’s data several reduction processes were observed:

- **Reduction to first syllable or the initial sound**, e.g. [ʊ] ‘uhorka’ “cucumber”, [ɔ] ‘ostrý’ “sharp”
- **Omission of the initial syllable** resulting in a monosyllabic form of the stressed syllable, mainly in some English words where the stress was on the second syllable, e.g. [ma] ‘tomato’
- **Omission of mid-word sounds** in some longer words resulting in a monosyllable formed by the initial and final sounds, e.g. [dɔ] for the Slovak ‘dievčatko’ “little girl”, where the initial ‘d’ and final ‘o’ were retained to form a monosyllabic word.

Initial consonant clusters in words were simplified according to three possible patterns:

- **Reduction of consonant clusters** to the initial sound, e.g. the initial cluster *hr* reduced to single sound *h* in [ha:] ‘hrášok’ “sweet pea”, *pr* reduced to *p* in [pa:] ‘prášok’ “washing powder”, *gr* reduced to *g* in [gi:] ‘green’, *mr* reduced to *m* in [ma:] ‘Mráz’ “Santa”
- **Omission of unstressed word initial sound** in a consonant cluster, e.g. [nʊ] ‘dnu’ “inside”, where the initial dental stop is omitted, since it is unstressed in normal speech.
- **Substitution of clusters** (consisting of a fricative *s* and other sounds) by an initial *f*, e.g. *sl* substituted as [ʃi:p] in ‘sleep’, *sp* substituted as [ʃi] in ‘spi’ “sleep”, *sv* substituted as [ʃɛ] in ‘svetielko’ “light”.

Thus the most common structure of early words was a monosyllabic CV or disyllabic CVCV in familiar words. By the end of the stage, 1;6 - 1;7, Ria produced more complete words:

- monosyllabic words were produced complete with a closed syllable structure CVC, e.g. [sɛm] ‘sem’ “here”, [mɪʃ] ‘myš’ “mouse”, [aɪs] ‘ice’, [wɔm] ‘von’ “outside”, [fam] ‘fun’
- polysyllabic words were reduced to a single closed syllable, e.g. [zip] ‘zipper’, [kɛm] ‘krémik’ “body cream” (1;7.1), thus retaining the first closed syllable, or omitting

middle syllables and retaining the word final sound, which created a monosyllabic form

- Difficult sounds in the middle or final positions following a vowel were omitted or substituted, mainly the lateral approximant *l* and fricative labiodental *v*, thus creating a diphthong, e.g. [pa:ʊ] ‘pavúk’ “spider”, [ba:ʊ] ‘ball’, [dɔʊ] ‘dolu’ “down, [ʃɪʊ] ‘šiltovka’ “cap”, [fa:ʊ] ‘fall’.

Difficult sounds within words were simplified, such as reducing consonant clusters to a single sound, usually the first sound of the cluster. Overall, words extended in length rather than being reduced to one sound or initial syllable, and assumed more varied structures.

The same sound substitutions appeared in both languages, such as the final nasal alveolar *n* in monosyllabic words with the nasal bilabial *m*, as in [wɔm] ‘von’ “outside” (1;6.22) and [fam] ‘fun’ (1;7.1). Ria also used similar reduction processes in productions in both languages. This led to the emergence of homophones within and across languages.

Homophones had the same form but different meanings, which could be ascertained by the parents only within the specific situational context. The correct meaning was evident since at this stage Ria used the pointing gesture when labelling objects. Table 6.1 demonstrates monosyllabic words, some used for two or more concepts in one language, others for concepts across the two languages. Meanings of the homophones could belong to different word categories. However, the homophones reflected two or more different sound-meaning pairings (Pearson, et al., 1993, p. 101), and the monosyllabic form was a result of the reduction process.

Table 6.1 Monosyllabic homophones

Monosyllabic form	Target words and language			
	Meaning 1	Meaning 2	Meaning 3	Meaning 4
[ʃa:]	vtáčik “birdie” Slovak	outside English	hračky “toys” Slovak	
[mɔ]	mucha “fly” Slovak	mušlička “seashell” Slovak		
[ja]	jablko “apple” Slovak (later [ja])	jahody “strawberries” Slovak (later [va])		
[pa]	paprika “capsicum” Slovak	paradajka “tomato” Slovak		
[ʃɔ]	stolička “chair”	slon “elephant” Slovak	shorts OR šortky	šoférovať “to drive”

Monosyllabic form	Target words and language			
	Meaning 1	Meaning 2	Meaning 3	Meaning 4
	Slovak		Either language	Slovak
[pɪ]	pretty English	pit' "to drink" Slovak	Piglet (toy character) Either language	princess English
[kɔ]	koleno "knee" Slovak	korytnačka "turtle" Slovak		
[ʃɪ]	spať "sleep" Slovak	sleep English	slivka "plum" Slovak	
[kɪ:]	knižka "book" Slovak (later [kɪ])	keksík "biscuit" Slovak (later (kɛ))	kíblík "bucket" Slovak	
[ma:]	(Dedo) Mráz "Santa" Slovak	má "has" Slovak		
[mi:]	meat English	Meeka (story character) Either language		
[ʃɛ]	červená "red" Slovak	svetielko "light" Slovak	semiačka "seeds" Slovak	sedí "is sitting" Slovak
[nɔ]	nos "nose" Slovak	noha "leg OR foot" Slovak	nôž "knife" Slovak	
[ma]	marhule "apricots" Slovak	tomato English	maco "teddy" Slovak	
[pɔ]	postaviť "to stand up" Slovak	pohárik "glass/cup" Slovak	postielka "bed" Slovak	podprsienka "bra" Slovak
[bɪ]	bicykel "bicycle" Either	bib English		
[ʊ]	ucho "ear" Slovak	uhorka "cucumber" Slovak		
[ɛ]	ešte "more" Slovak	elipsa "ellipsis" Slovak		
[tʃɛ]	čelo "forehead" Slovak	češe sa "is brushing hair" Slovak		

Since the words in the above list reflected multiple sound-meaning pairs, and their appropriate and consistent use in context was confirmed for each, they were counted for each meaning separately when measuring Ria's expressive vocabulary.

6.1.4.2 Vocabulary composition

According to de Boysson-Bardies (2001, pp. 178-183) word learning is influenced by cultural variations more than any other aspect, such as content of parental speech addressed to children and children's individual style or preferences. This is because such aspects are influenced by the surrounding culture:

"...each child must speak the language of his or her environment and conform to certain formal and social customs imposed on both the language and the culture. Children's vocabulary grows out of contact with the adult language, which, from the outset, dictates the objects in the world that must be seen and learned, the manner in which these objects are to be spoken of, and the modes of expression that allow children to be recognized as speakers and understood." (de Boysson-Bardies, 2001, p. 177)

Among the languages in the study (French, American English and Swedish) nouns were the most represented word types in children's vocabularies (p. 182). Certain semantic categories were identified as constant: nominals related to familiar people, objects necessary to survival, household objects, animals and games. Among other word types social words were represented. Similar semantic categories were observed among Ria's first words as well. The following paragraphs describe Ria's choices of new types of words.

As mentioned in section 5.3.5.2 the order in which first words were acquired was guided largely by Ria's needs and interests - the important people, objects and events in the environment and objects which captured her interest. New types of words appeared first as reproduced productions. Initially, the dominant class were nouns, followed by onomatopoeiae, verbs, adjectives and function words. Towards the end of the period reproductions of more varied function words appeared. For example the first prepositions:

- the Slovak 'v' "in OR at", was reproduced in a form of a blend with the following word. Thus the blend had a form of the preposition 'v' + the initial sound of the following word, [vɔ] 'v robote' "at work" (1;6.22); in this blend Ria omitted the initial difficult liquid [r] and instead used the following vowel [ɔ], creating a monosyllabic word;

- the Slovak [pɪ:] 'pri' "by", while the father and Ria were looking for her shoes, the mother called out in Slovak where to look, uttering 'pri kresle' "by the sofa", which Ria reproduced (1;6.28). It appeared Ria chose to reproduce the preposition rather than the noun it was related to because the location, as indicated by the preposition, was the key

information communicated, thus emphasising the location, rather than the noun, which would have been more precise information.

The first 10 spontaneous productions reflected the most important concepts in Ria's life:

- names for the important people, including her own name
- an item necessary for survival – requesting feed
- function words needed for referral to objects and events ('tam' "there", 'this') and words that facilitated correct identification of actions, events and objects for both Ria and the parents ('ano' "yes", 'yeah', 'nie nie' "no no"),
- baby-word related to the dominant skill of this stage - learning to walk (interjection 'bác' "up-a-day").

Overall among the first 245 spontaneous productions in the one-word stage by far the most common types of words were nouns and proper nouns, adding up to 141. Various semantic categories were found among nominals:

- Proper nouns - appellatives, names of favourite story/toy characters
- People (boy, girl, etc.)
- Survival – objects such as food and drink and biological needs such as washing, toileting
- Body parts
- Animals
- Outdoors and nature
- Toys
- Household objects
- Utensils and crockery
- Clothing
- Games
- Transport.

Nominals showed the greatest variation. Ria's emerging awareness of self as a separate being was manifested in the interest of body parts, items of clothing and games she was able to play. Various objects related to daily activities and the physical environment of the house and garden were also well represented, especially objects Ria was able to touch, handle and manipulate, and plants and animals which were especially of interest. The food category consisted of many words for seasonal fruits the family grew in the garden, which

were not used after the season finished. Lastly, objects seen generally outdoors on walks and in parks were also represented.

Predicate forms (verbs and adjectives) were also used from early productive stages, although much less than nouns. A total of 22 verbs were found, while only a few appeared initially, and most emerged in the second half of the stage. Verbs included mainly words which described actions Ria was able to perform (dám “I will give”, sedí “is sitting”, vysávam “am vacuuming”), actions she wished to do (pit’ “to drink”, see, go, spi “sleep”) or was requesting others to perform (otvorit’ “open”, umyt’ “wash”, postavit’ “to stand up”) or observed others to perform (píše “is writing”, šoférovať “to drive”, cooking). States were also among the verbs (gone, páli “it’s hot”, má “has”, chceš “you want”).

A total of 17 adjectives appeared throughout the stage, describing characteristics of people, properties of objects (malilinké “tiny”, big, mokré “wet”, pretty, hot, ostrý “sharp”) and several colours.

Onomatopoeiae were well represented especially at the beginning of the stage, and they also belonged to the words with the greatest number of tokens per word in the early months of the stage. Towards the end of the stage they were not used as often. Some onomatopoeiae overextended to label the animals that produced the sound. Words for the sounds produced by inanimate objects were also used (bell, train).

Ria used 7 interjections regularly during the stage and they were either related to games (kukikuk “peek-a-boo”, šúch “wee”) or expressing Ria’s surprise (wow, jáj “oh”, oh oh) as well as a baby-word used to announce something fell (bác “up-a-day”), often used in the function of a verb.

Several examples of function words such as adverbials (7), locatives (6), deictics (8), pronouns (2) and a conjunction also appeared among the first 245 words. Ria used varied deictics in both languages (this, tam “there”, here, there, that, sem “here”, to “that”). Locatives related to various places Ria wished to go (von “out”, dnu “inside”, outside), requests to be picked up and placed back down (up, dole “down) and a request to get dressed (on). Adverbials included negators (nie nie “no no”, nie “there isn’t”), affirmatives (ok, ano “yes”), denoted quantity (veľa “lots”), as well as used to request more food (more, ešte “more”). Among first pronouns was the associative dual ‘my’ “we” and interrogative ‘kde’ “where”. One conjunction ‘and’ was used. Lastly, 4 social words were regularly used from early on (cool, please, pá/papa “bye”, ta).

Thus overall, Ria’s repertoire included mostly nominals, while other parts of speech, such as predicates, function words and onomatopoeiae were also represented from the very early stages.

6.1.4.3 Fixed expressions

Some early utterances were fixed expressions produced in one breath as a one-word utterance. This was the case mainly with speech formulae Ria heard in her input frequently, and were most likely learnt as one unit (de Boysson-Bardies, 2001, p. 199). Only few of these were used regularly, and the first instances of such expressions were tied to specific contexts. The early context-bound examples are shown in Table 6.2.

Table 6.2 Fixed expressions

Age	Expression	Meaning	Context
1;4.26	[ʃɛʃɛ]	‘kde je?’ “where is it?”	looking inside a glass trying to find berries from a smoothie she had just finished
1;5.6	[cɔtɔ] [cɔjɛ] [cɔjɛtɔ]	‘čo je to?/ čo to je?’ “what is that?”	requesting labels for referents while reading
1;4.9	[mamajama]	‘mami moja’ “my mummy”	expressing affection
1;5.14	[madædɪ]	‘my daddy’	expressing affection
1;5.20	[jamam]	‘ja mám’ “I have”	reacting to environment
1;5.23	[pɛrianɔ]	‘pre Rianu’ “for Riana”	requesting object
1;6.4	[toɪɛ]	‘tu je’ “here it is”	found an object
1;6.19	[wɔs]	‘what’s’	requesting label for object

Ria’s use of the Slovak wh-questions reflected the mother’s usual discourse - looking for objects and probing for comprehension of various words while sharing books. The intonation was rising, which is typical for a Slovak interrogative sentence. However, the forms were not constant, since Ria attempted to pronounce them as close as possible to the target form, producing several variants. Especially at a later stage, whilst trying to control her articulation, Ria produced new variants: [ʃɛʃɛ] [ʃɛdɔ] [ʃɔdɔ] (1;5.12) and a shorter [ʃɛdɪ] [ʃɛdɛ] (1;5.17). The latter variant appears to be a bilingual blend ‘Čo this/there?’ “What’s that/there?” combining the two languages. Approximately a month later Ria also used the English wh-question equivalent. By this stage the expression was dissociating from the previous context of book reading, and Ria pointed at various objects in her environment. As De Boysson-Bardies (2001, p. 148) also noted, the individual constituents of the questions were not used on their own, only as parts of the fixed expressions.

Conversely, the affectionate expressions, although uttered in the form of a single unit, contained a constituent which was used on its own regularly – parents' appellatives. Since these were affectionate terms, the expressions were not absolutely fixed, a phenomenon which was also observed by De Boysson-Bardies (2001, p. 168). The other expressions were used in single instance only during this stage.

6.2 Bilingual Repertoire

For a BFLA child the word acquisition process differs from a monolingual child of the same age. Where a monolingual needs to learn one sound-meaning pairing, a bilingual child's lexical knowledge will spread across two languages, since she interacts with speakers of two languages. To assess a BFLA child's vocabulary inventory accurately, lexical knowledge in both languages needs to be considered by assessing her lexical representations in both languages. According to Pearson (1998, p. 350) there is no consensus on a definition of lexical representation. It is generally referred to as a sound-meaning pairing. Where a monolingual child acquires one concept and the word linked to it, a BFLA child will have to learn two words for each concept. Thus she will learn a Translation Equivalent (TE) pair.

It is likely that knowing a lexicalized concept in one language will facilitate learning of the equivalent word in the other language, if the concept is shared across the languages. However, this is dependent on the extent to which the two languages in contact share concepts and have direct translation equivalents for words (Pearson, 1998, p. 361). Thus when a bilingual child acquires a conceptual representation for an item in one language, she may not necessarily be able to link a cross-linguistic synonym from the other language with that representation. Instead she may need to acquire a different concept with a link to another word altogether.

Similarly, there are considerable individual differences in the amount of TEs bilingual children use productively (Pearson, 1998, p. 368). However, studies show that BFLA children do in fact produce TEs as soon as they start producing adult words in their early utterances (Holowka, et al., 2002, p. 241). The number of TEs in a child's repertoire is dependent on many factors, such as quantity and regularity of input in the two languages, individual differences, language preference, the most frequently used language, language of the social network, cultural differences between the languages and other.

To measure a bilingual infant's vocabulary Pearson et al. (1993, p. 102) suggest multiple measures consisting of two *Single measures in each language*, and two double measures

that assesses the infant's abilities in both languages taken together, while accounting for shared abilities between the languages (Total Vocabulary and Total Conceptual Vocabulary). The *Total Vocabulary* sums all the words in one language and all the words in the other language, and subtracts phonetically similar doublets. The *Total Conceptual Vocabulary* counts the number of concepts known by the child across the two languages, thus when she knows a different word in each language for one concept, the concept is counted once only.

However, these measures were based on words coded on the MacArthur Communicative Development Inventory (CDI) and as such do not fully reflect true language use and a child's complete lexical ability. They do not take into account words that could belong to either language, such as proper nouns, or words in which source cannot be easily determined. Thus inadvertently they underestimate a child's lexical ability. In assessing a bilingual child's vocabulary more attention needs to be paid to the shared aspects as well as differences between the languages. Moreover, the people who model the languages in a bilingual child's environment influence the acquisition of the languages, which is reflected in a child's productions. Thus a child's vocabulary needs to be assessed in light of what is modelled as appropriate language use in the input. Therefore, in this thesis the following 6 measures are suggested to describe the bilingual child's lexical development adequately:

- *Combined total vocabulary* including all lexical forms used
- *Total conceptual vocabulary* that accounts for the concepts known across languages (each concept is counted once)
- *Language neutral* lexical items that belong to *both* languages
- *Indeterminate* lexical items
- *Two separate measures* for *each* language.

In section 5.3.4.1 evidence was presented that Ria's comprehension of TEs preceded production of first words, and it was evident as soon as word comprehension emerged around 0;10. The same was observed in production. From 1;4 – 1;6, during the one word stage, Ria's productive *combined total vocabulary* was 245 lexical items. The total number of TE pairings used was 25. This means that of the 245 spontaneously produced words (lexical items) Ria's *total conceptual vocabulary* consisted of 220 representations. Of the 25 TE pairs, 21 shared conceptual representations consisted of two lexical items – one for each language – for a total of 42 items. The 42 doublets, i.e. members of TE pairs are shown in Table 6.3.

Table 6.3 Translation equivalents in expressive vocabulary

	Age	Slovak member	Age	English member
1	1;4.9	[hh] 'hav hav'	1;4.21	[ww ww] 'woof woof'
2	1;4.9	[ba:ba] 'bábo'	1;5.14	[bebɪ] 'baby'
3	1;4.9	[ano] 'ano'	1;4.9	[je:] 'yeah'
4	1;4.23	[pa:lɪ] 'páli'	1;6.16	[ho] 'hot'
5	1;4.23	[koneno] 'koleno'	1;6.16	[ni:] 'knee'
6	1;4.23	[am] 'tam'	1;6.16	[de] 'there'
7	1;5.10	[aʊʊ] 'auto'	1;5.10	[ka:] 'car'
8	1;6.19	[kʊ:] 'kľúče'	1;5.10	[ki:] 'key'
9	1;5.14	[ma] 'mravce'	1;6.25	[e:n] [e:nɪ] 'ant, ants'
10	1;6.29	[va:] 'vláčik'	1;5.26	[ten] 'train'
11	1;6.16	[ʒʊ] 'zuby'	1;5.14	[tɪ] 'teeth'
12	1;6.4	[ja] 'jablko'	1;5.14	[apu] [æp] 'apple'
13	1;6.16	[ɛ] 'ešte'	1;5.18	[mo:] 'more'
14	1;6.16	[vejɪ] [ve:] 'veľký'	1;5.26	[bi:] 'big'
15	1;6.16	[tɔ] 'to'	1;6.4	[da] 'that'
16	1;6.10	[sejɛ] 'zelená'	1;6.25	[gi:] 'green'
17	1;6.16	[a] 'ľad'	1;6.31	[aɪʃ] 'ice'
18	1;6.16	[pa] 'paradajka'	1;6.31	[ma] 'tomato'
19	1;6.16	[ma] 'maco'	1;6.16	[be:] 'bear'
20	1;6.16	[nɔ] 'nôž'	1;6.22	[na] 'knife'
21	1;6.22	[wam] 'von'	1;6.31	[ʃa:] 'outside'

In addition, in 4 TE doublets one English form was paired with two meanings in the Slovak language. With these items the meaning is expressed with different words in the

Slovak language, while in English the same word carries both meanings, therefore each pairing was counted as a separate concept, as shown in Table 6.4.

Table 6.4 Translation equivalents in expressive vocabulary - continued

Age	Slovak member	Age	English member
1;4.30	[kaga] 'kakala'	1;5.6	[pu:] 'did a poo', verb
1;5.10	[hɔbw] 'hovienko'	1;5.6	[pu:] 'poo', noun
1;6.4	[tɔ] 'tu' (nonstandard from 'tuto')	1;5.27	[hi] 'here, at this place'
1;6.16	[ʃɛm] 'sem'	1;5.27	[hi] 'here, to this place'

The acquisition of TEs varied considerably. For each pair it ranged anywhere from doublets being used on the same day in different contexts, up to a time lag of 2 months between spontaneous productions of the doublets in a pair. However, even during the lag periods Ria showed comprehension of the TEs, and sometimes even reproduced the word before she used it spontaneously.

There were 14 language neutral lexical items. This category subsumes words which could belong to either language since they were used by speakers of *both* languages in the input, although they actually originated in one (e.g. English 'Piglet' used by both parents). It includes all proper nouns, appellatives, names of toy/story characters used by both parents, and brand names used by the family to refer to specific items, as shown in Table 6.5.

Table 6.5 Language neutral words

Age	Word	Meaning
1;4.9	[mamɪ]	mami "mummy"
1;4.9	[hama] [hamɪ]	hami "boobie"
1;4.19	[jana] [nana] [ɲana]	Riana
1;4.20	[dædɪ]	daddy
1;4.23	[oke]	o.k.
1;5.18	[ɔmɪ]	Romi
1;5.27	[gedɛ]	grandad
1;6.3	[mi:]	Meeka (cartoon character)
1;6.10	[ne]	Nela
1;6.16	[mi]	Miša
1;6.28	[pɪ]	Piglet (toy & story character)
1;6.28	[wɪ]	Winnie (toy & story character)
1;6.28	[tɪ]	Tiger (story character)
1;6.31	[ʃe]	sketchers (brand name of shoes)

The *indeterminate* category comprised of 9 words for which the target language was not easily determined. This was the case with onomatopoeiae which were homophones and words that were close cognates in the two languages. The category also subsumed several words that were different in the two languages yet shared some sounds. Due to phonological processes under which Ria produced words the resulting simplified form (usually initial sound/syllable) made it impossible to determine the target language. The possible interpretations were two options, one for each language. Use of indeterminate words is typical of very young bilingual speakers, and it was identified by several authors (De Houwer, 2009a, p. 41; Deuchar & Quay, 2000, p. 54; Lanza, 2004, p. 128). Table 6.6 lists indeterminate words used during the one-word stage.

Table 6.6 Indeterminate words

Age	Word variations	Meaning	
		Slovak	English
1;4.9	[na:] [na:na:]	mňáu	meow
1;4.21	[mumu] [mu:mu:]	mú	moo
1;5.26	[fo:]	šortky	shorts
1;5.27	[penɪ]	peračník	pencil case
1;6.3	[gaga]	kačka / čajka (overextension)	duck / seagull (overext.)
1;6.4	[mɪ]	my (1pl 'we')	me (1sg object pronoun)
1;6.4	[wɔ] [vɔ]	voda	water
1;6.16	[ho]	horúco	hot
1;6.16	[gɪ]	gaťky 'undies'	give (me)

The two *separate measures for each language* account for the number of words known in each language. They were determined by summing the number of singlets and doublets with shared concepts in each language separately. Of the singlets 130 belonged to the Slovak language and 34 to the English language. Thus the Slovak vocabulary consisted of 155 words (130+21+4) and the English vocabulary consisted of 57 words (34+21+2). This difference in the number of words known by Ria in each of her languages is consistent with other studies, which found that bilingual children's lexical learning does not occur in parallel fashion, but vocabulary growth in one language is followed by a growth in the other language, rather than growth occurring simultaneously (De Houwer, 2009a, p. 227; Pearson, 1998, p. 360).

The most important factor influencing the learning rate for each language was Ria's emerging language preference. Due to the division of carer duties in the family, Ria spent

most of her waking hours with the mother as the primary carer, who addressed her in Slovak. Thus they engaged in more varied contexts, which provided greater variation in the input and more joint attentional frames. This is consistent with previous studies finding that even very young bilingual speakers start showing preference to the most frequently used language, which becomes the language of the primary sociolinguistic group (Holowka, et al., 2002, p. 243). The primary sociolinguistic group was defined as “*the person or group with which the child had both the strongest bond and the most constant contact*” (p. 243). It is emphasized that this language can change overtime with changing circumstances. Thus during the one-word stage the sociolinguistic environment had the greatest influence on Ria’s rates of word acquisition.

6.2.1 Using TEs

The theoretical grounds of the Principle of Contrast, claiming that young children accept only one label for a category at the earliest stages of lexical acquisition, have been criticized in monolingual development (Clark, 1988, p. 327). Likewise, the Contrast was not supported in the literature on bilingual development. Deuchar & Quay’s (2000, p. 47) review of BFLA studies found no evidence for the Principle of Contrast, and on the contrary found that bilingual children use cross-linguistic synonyms from early stages of lexical development. This was also supported in their own study, and evidence was presented that the child used TEs from the onset of speech at 0;10. The authors suggested a close link between TEs and the child’s input, and concluded that the use of TEs did not indicate appropriate language choice. Indeed, it is not yet clear from previous research whether presence of TEs in a child’s repertoire is linked with appropriate language choice, and it is suggested that different BFLA children follow different paths (De Houwer, 2009a, p. 240).

The data in this thesis also suggest language choice is a pragmatic ability a bilingual child needs to acquire so that she is able to judge which language is appropriate in which language context. TEs were observed as soon as Ria was using the first 10 words (aged 1;3). However, TE acquisition was not always occurring simultaneously. Since first words were learnt through frames of joint attention with the parents, the types of words acquired depended on the contexts in daily interactions. Each parent and child dyad engaged in different talk and thus different concepts were learnt through each language at a different time. TEs were acquired in the expressive vocabulary through the same mechanisms as in comprehension vocabulary:

- In monolingual contexts of each language
- By association in bilingual contexts
- Simultaneously in bilingual contexts.

To determine how Ria came to use TEs appropriately the process of acquisition and use of cross-language synonyms for one concept will be demonstrated through microanalysis of several examples.

In the initial one-word stage TEs were not always used in appropriate language contexts. For example the first doublet members [ano] ‘ano’ “yes” and [je] ‘yeah’ (1;3) were used interchangeably with the father. On some occasions Ria used the Slovak TE in response to his address in English:

*DAD So you are ok sweetie apart from being tired?'

*RIA [ano] ‘ano’ “yes”.

(1;4.21)

However, in different instances the father reported that Ria was responding appropriately using the English TE [je:]. Similarly, the negation [ɲɛɲɛɲɛ] ‘nie nie nie’ “no no no” was used in Slovak and bilingual contexts alike.

Most often a word was acquired in interactions with only one parent. The source for each word in either language was the social context or set of contexts most often engaged in with a particular parent who introduced it, or through a situation that made an impression on Ria. Thus the production of each member of the TE pair took place at a different time. An example demonstrating this was the word [pɪ] ‘pretty’ acquired as the first equivalent from the father who often complemented Ria after the mother dressed her in the morning. First she reproduced the word, and later used it spontaneously in both language contexts. Even when the father used a synonym, such as ‘beautiful’, or when the mother used the Slovak TE ‘krásne’, Ria’s preference was for the English equivalent.

Similarly to the development of comprehension vocabulary (section 5.3.4.1), emergence of new words in Ria’s repertoire created new opportunities for introduction of TEs. The family often engaged in a discourse in which they discussed new developments and the parents reported new words to each other in Ria’s presence, including her in the conversations. Thus they had an opportunity to introduce the missing words by relating the newly acquired word in one language to the equivalent in the other language, and emphasize the link between the two forms for one concept. Such discourse allowed the

word to enter Ria's vocabulary in both languages within a relatively short period, as demonstrated in the following example:

The word 'tea' was first acquired in the English context, since Ria often got up with the father in the morning and they prepared breakfast tea together. The father was providing commentary emphasizing the word with many repetitions. At first Ria reproduced [ti:] (1;4.23), and later used it in spontaneous interactions (1;4.30). Thus the concept was acquired in English, and Ria needed to acquire only the Slovak translation equivalent 'čaj'. The mother introduced it as soon as she noticed Ria using the English equivalent. At first Ria reproduced [ca:] (1;5.1).

Thus there was a short lag of only several days behind English from when Ria acquired the TE in her receptive vocabulary. However, in productive usage Ria initially developed a preference for the English equivalent, even in a Slovak context, and sometimes extended the meaning to water in a tea cup. It appeared that having both TEs in her receptive vocabulary was not sufficient to start using them productively. Rather, the equivalent acquired through the situational context as first was preferred in production.

However, certain awareness of the need for appropriate use of TEs was evident. Ria was able to repair her language choice when the mother responded with the repetition strategy, and used the word in Slovak. Likewise, she sometimes used both TEs simultaneously, which suggested that Ria was aware of a bilingual context and the need to use two different words for the same referent, as shown in the following video-recording excerpt:

- %sit The family is having breakfast, RIA is excited about her cup of tea
- *MAM Pijeme čaj všetci. Čo máme? Čo pijeme? Čo pijeme?
- %eng All of us are drinking tea. What do we have? What are we drinking? What are we drinking?
- %add RIA
- %act RIA has a sip of her tea
- *MAM She's, she got really good with that little one.
- %add DAD
- *DAD Yeah. Nice little handle.
- *MAM With a little handle.
- *DAD She likes the tea.

*MAM Čo to pijeme?
 %eng What are we drinking?
 %add RIA
 *RIA [keɲo]
 %glo yyy
 *MAM Čaj. Čo to je?
 %eng Tea. What is it?
 *RIA [tʃa ti]
 %glo čaj tea
 %eng tea tea
 *MAM Čaj, ano.
 %eng Tea, yes.
 (1;5.5)

In bilingual contexts TEs were acquired simultaneously as two words for one concept. When the whole family was interacting together, they engaged in a shared discourse, directing each other's attention to an object. In these attentional frames both parents modelled a word in their respective languages, as in the following video-recording excerpt:

%sit The family is in RIAs room, RIA is building blocks, DAD spots a pigeon on the roof next door
 *DAD Pigeon's on the roof.
 %act RIA looks towards the roof
 *DAD You see him? She smiled when she saw him.
 *MAM Holúbky tam sú, že?
 %eng There are pigeons, aren't there?
 *RIA [holu:]
 %glo holúbky
 %eng pigeons
 *MAM Holúbky, ano.

%eng Pigeons, yes.

*DAD She looked up there and then she smiled. Can she see ‘em from there?

*MAM Yeah. She wouldn’t smile, otherwise.

%add DAD

*MAM Holúbky tam sú.

%eng There are pigeons.

%add RIA

*RIA [holu]

%glo holúbky

%eng pigeons

*MAM Holúbky, ano.

%eng Pigeons, yes.

%add RIA

%act DAD makes a sound

*MAM What?

%add DAD

*DAD Ah, it’s gone.

*RIA [go:]

%glo gone

*MAM Ano, už sú preč.

%eng Yes, they’re gone.

*RIA [hi]

%glo here

*MAM Preč sú, ano.

%eng They’re gone, yes.

*RIA [pɛ]

%glo preč

%eng gone (lit. away)
*MAM Mhm. Už sú preč, holúbky.
%eng Mhm. They're gone, the pigeons.

(1;5.10)

In this example the TEs 'pigeons' and 'holúbky' were used directly in reference to one concept, and Ria showed comprehension of both, although she was not able to use them productively yet. She chose to reproduce the equivalent that was more salient in the situation, since it was modelled several times by the mother. In this excerpt Ria also observed the use of another TE pair, 'gone' and 'preč'. The English equivalent was already in Ria's expressive vocabulary and it was used consistently in both language contexts. In Slovak, however, the concept is expressed in different ways, depending on the action or state it refers to. This could explain why Ria preferred the English equivalent which was easy to produce, applied to varied situations and consequently more salient in the input.

However, as demonstrated in the examples of simultaneous interaction in the two languages within the family, it is unlikely Ria failed to accept two forms for one concept, especially since the parents addressed her in their respective languages consistently from birth. Indeed in Table 5.1, Table 6.3 and Table 6.4 it was shown that Ria used the first TE pair at 1;3.20, and the number of TE pairs expanded rapidly from the beginning of the one-word stage at 1;4, reaching 25 pairs by 1;6.22. Thus the Principle of Contrast was not supported in the data. This observation reflects claims by De Houwer et al. (2006, p. 344) who suggest that due to regular variation in input young bilingual children can develop flexible strategies to word learning and accept cross-linguistic synonyms.

Ria's use of newly acquired TEs reflected emerging language choice ability from approximately 1;6. This can be demonstrated on the example of TE pair 'keys' and 'kľúče'. The equivalents were used by both parents regularly in similar contextual situations, thus Ria was able to learn them at approximately the same time without simultaneous exposure. The first equivalent in Ria's vocabulary was the English word [kɪ:] 'key'(1;6.2) and reproduced after the father when the family was preparing for a bike ride. Spontaneous use of the TEs was observed few days later on two separate occasions occurring on two consecutive days:

Ria was watching the mother lock the front door and unlock the garage and spontaneously commented [ku] 'kľúče' "keys" (1;6.7). The next day the father was

unlocking the front door and as Ria was saying good-bye from the mother's arms, she turned towards the father and commented [ki:] 'keys' (1;6.8).

It is possible that in the Slovak context Ria mispronounced the English word 'key', while the mother had interpreted it as Slovak equivalent. However, prior to that occasion Ria did not produce any other English variants, which was the case with some other words. Thus it was rather convincingly an example of both TEs used in addressing the parents with their respective languages. The TEs were used appropriately in the two situations - the Slovak equivalent in a Slovak context, and the English TE when addressing the father in a bilingual context. Thus Ria chose contextually appropriate TEs to label the same referent.

It was not always the case that Ria had two direct TEs in her repertoire. Instead, she was able to use culturally appropriate variation for each language. Thus she expressed the same concept with two different linguistic means, pragmatically appropriate for each language, as demonstrated with the following example from bilingual context, where the addressee was not easily determined:

The family was at the breakfast table, and as they finished eating Ria pointed at empty bowls uttering [ɲɛɲɪ] 'neni' "(there) isn't" (1;6).

As noted in the diary, previously Ria preferred the English equivalent [go] 'gone' to indicate that food or drink were finished (1;5.23). It is difficult to determine why in this instance Ria chose the Slovak equivalent. What is significant, however, is the use of appropriate linguistic means for the concept: in English the past participle 'gone', while in Slovak a VP 'nie je.', meaning "(there) isn't (anymore)". Such distinction was learnt from the input, and it can be interpreted as example of emerging language differentiation.

Some words in Ria's early productions assumed a form which made it difficult to determine the target language, as was the case with homophones in Ria's productions of words originating from different languages. While in some cases the target language could be determined from the context, occasionally even the context did not provide a solution. This was the case with close cognates with a similar form in both languages, or with words that had the same or similar initial syllable, and therefore the same form in Ria's production, such as the TE pair [wo] for 'voda' or 'water' (1;5.22). This word was used with both parents, its form suggested it could belong to either language, and contexts of use did not clarify the target word, since the referent was the same. However, the series of learning contexts in which Ria became familiar with the concept suggest the target language was in fact the Slovak equivalent 'voda'. When Ria was requesting a drink, the

mother focused on the requested referent, making it explicit with questions such as ‘Prosíš si vodu?’ ‘‘Would you like water?’’ or ‘Čo si prosíš?’ ‘‘What would you like?’’, while the father focused on teaching the social word Ria should be using when making a request, as shown in the following excerpt:

%sit The family is at the dinner table

*MAM No. Už je prázdny pohárik.

%eng Yeah. The cup is already empty.

%gpx RIA is holding up her cup to DAD

*RIA [go ə]

%glo gone yyy

%com RIA uses protoword [ə] to request more water

*DAD Where is Riana’s gone?

%act DAD understood RIA is requesting more water

*DAD What do you say?

*RIA [ə]

*DAD What do you say to daddy? What’s the word?

%gpx RIA is pointing at her empty cup

*MAM Čo si prosíš?

%eng What would you like?

*RIA [pi]

%glo please

%add DAD

*DAD Please! Please, isn’t it?

*RIA [ə]

%gpx RIA turns her body and eye gaze towards the kitchen

*DAD Water please!

*RIA [wo]

%glo water

*DAD Water please!

*RIA [pi]

%glo please

*DAD Yeah!

*MAM Výborne. Ty si anjelic. Rianka je anjel.

%eng Excellent. You're an angel. Riana's an angel.

(1;5.23).

In this situation the father modelled both words 'please' and 'water' which Ria reproduced. However, in several repetitions he emphasized the social word associated with the request over the referent, which resulted in Ria receiving positive feedback when she used the social word herself.

In summary, at the end of the one-word stage Ria's total production vocabulary (245 words) was greater than the conceptual vocabulary (220 words), thus she knew more words than concepts. The total number of Slovak words (155) was greater than the total number of English words (57), showing an emerging preference for the Slovak language. However, Ria used words from both languages as well as translation equivalents as soon as she started producing adult words. The shared component across the two languages was 25 TEs. The presence of TEs was not directly linked to appropriate language choice yet. In productions Ria showed preference for the equivalent which was most salient in input even though she had both TEs in perceptive vocabulary. However, the skill of pragmatic language choice was developing gradually, which mirrors findings from previous research that there is a considerable age variation in the emergence of pragmatic differentiation in bilingual children (Nicoladis & Genesee, 1996, p. 460).

7 Using structures (1;7-2;0)

The progression from holophrastic utterances to expression of meanings with linguistic structures was gradual. Again there was an overlap of stages. The onset of combinatorial speech occurred at 1;7, however, holophrases still prevailed. After 1;7 two/multiple-word combinations became more frequent and remained dominant until the end of the study at 2;0. Thus during this stage Ria was communicating with rich repertoire of utterances:

- Holophrases
- Two-word combinations
- Multiple-word combinations.

Previous research found that for combinatorial speech to emerge as a milestone in linguistic development children need to learn a certain number of words (Tomasello, 2003, p. 51). This finding was reflected in this thesis, since Ria's development progressed into combinatorial speech when she reached a threshold of 200 words in combined expressive vocabulary.

According to Tomasello (2003, p. 92), learning of words is also interrelated with learning of grammatical constructions. There is a correlation between the number of words children understand and their understanding of syntactic constructions, while in turn, understanding more constructions facilitates learning of more words. This link was also reflected in Ria's productions. When she started producing word combinations, morphological markers emerged in all types of utterances (holophrases and word-combinations) and across both languages. The first grammatical markers appeared around 1;7, and by 2;0 Ria produced words with a range of markers. At the end of the study her utterances reflected incomplete, yet correct grammar of both languages. Thus overall, this stage was typical of acquisition of linguistic structures.

A BFLA child growing up with two morphologically different languages needs to learn different structures for each language and how to distinguish between correct uses in each language. Differences between Ria's languages were significant. While English relies on word order and function words to express grammatical relationships, Slovak is an inflective language with morphological changes in the form of suffixes as well as word internal changes in word stems. Grammar is expressed with complex inflection and declination systems. Verb suffixes mark for person, number, tense, and gender, and suffixes marking case, gender and number are attached to nouns, adjectives, pronouns and

some numerals. These morphological differences will be further highlighted in the following sections which discuss the developments in word production, combinatorial speech and lexico-grammar in detail.

Towards the end of 1;8 changes were noted also in Ria's ability to hold a short dialogue with the parents. This was mainly in the form of one-word or two-word utterances used in response to the parents' questions, with the dialogue extending to 3-4 turns. Previously, Ria did not take more than one turn in dialogic exchanges, even though the parents responded to all of her attempts to communicate. She did not answer further questions, thus the parents provided answers, or simply repeated Ria's utterance to acknowledge her attempt to communicate with positive feedback.

As a new development, Ria not only initiated an exchange to engage the parents in interaction, but when they responded by asking a further question, Ria took another turn, providing new information, as shown in the following excerpts from Slovak and English contexts:

*RIA [zənim. zənim.]

%glo za ním

%eng after him

*MAM Za kým?

%eng After who?

*RIA [ɔmim]

%glo Romim

%eng after Romi

*RIA [pɔʃac]

%glo poštár

%eng postman

*MAM Ano, poštár.

%eng Yes, postman.

*RIA [dɔɲesɔʊ]

%glo doniesol

%eng	brought
*MAM	Čo doniesol?
%eng	What did he bring?
*RIA	[pɔʃɔ]
%glo	poštu
%eng	mail
*RIA	[gon. gon.]
%glo	gone. gone.
*DAD	What's gone?
*RIA	[dis. bi:ə.]
%glo	this. beer.

Thus Ria's communicative competence was developing further and she was now able to engage in a short dialogue.

7.1 Changing words

During this stage Ria's word productions continued to evolve in:

- the structure of the produced word forms,
- the growth of expressive vocabulary.

During 1;7 changes occurred in Ria's productions mainly in the length of words, which were previously truncated to a monosyllabic form. Monosyllabic words from both languages were produced complete. If the target adult word was polysyllabic, Ria produced longer forms consisting either of 2 syllables (CVCV) or a single closed syllable (CVC). Several familiar polysyllabic words were produced much like the adult forms. By the beginning of 1;8 Ria's productions of polysyllabic words consisted of 2-3 syllables, thus reflected the structure of the adult words. By 1;9 most of Ria's productions were attempts at complete adult words.

Despite the lengthening of words some regular patterns emerged in the form of simplifications of consonant clusters and substitutions of difficult sounds. For example all consonant clusters with the sound [s] at the onset of the cluster were reduced to [ʃ], as in [ɔʃitac] 'ostrihat' "to cut hair" (1;9.8). Lateral sounds [l] and [r] were substituted with a

[j] in a vowel environment in the initial and mid-word positions, as in [jɪʃʊ] ‘ryžu’ “rice” (1;8.9), [kɔja] ‘kura’ “hen” (1;7.28) and [ɔkɔjɔ] ‘okolo’ “around” (1;9.8). The Slovak postalveolar retroflex [r] is the last sound Slovak speaking children acquire and is not mastered typically until age 6 (Štefánik, 2000, p. 82). Ria still produced English words with primary stress on the second syllable with the first unstressed syllable omitted, such as [ɔfəkeɪ] ‘certificate’ (1;11.29).

Thus over a period of 5 months, words which were in the one-word stage (from 1;4) produced in the form of an initial sound or monosyllable, were more complete. From approximately 1;9 Ria’s productions became longer, clearer, reflected the number of syllables in the target word and thus reflected adult forms. In addition, intonation patterns of the productions assumed the rhythm and stress of the individual languages.

7.2 New words

Ria’s production vocabulary continued to grow rapidly both in terms of vocabulary size and types of different parts of speech in both languages, such as:

- **Prepositions** - First instances of prepositions (around 1;8) were not produced as separate words, but pronounced as one unit with the noun under single intonation contour (See section 7.3.2), e.g. [pɔdsɔjəm] ‘pod stolom’ “under the table” (1;9.26). Prepositions appeared as individual words in both languages from the end of 1;9:
 - [andə] ‘under’ (1;9.26)
 - [ɪn] ‘in/inside’ (1;10.6)
 - [dɔ sanʊ] ‘do stanu’ “into tent” (1;11.18)
 - [ʊ mamɪ] ‘u mamy’ “by mum” (1;11.18)
 - [zɔ ʃɪnɛ] ‘zo skrine’ “from the cupboard” (1;11.18)
- **Conjunction** – a TE pair, English [ən] or [e] ‘and’ and Slovak [a] ‘a’, was used to name multiple coordinated subjects or objects, which were regularly referred to collectively by the parents:
 - [baba, ʃɛtɔ a jɔbɪ] ‘babka, dedko a Robi’ “grandma, grandpa and Robi” (1;10.10)
 - [brɪɡən e ʃɪtʊdʒən] ‘big one and little one’ (1;10.6)
 - [maʃʊms ən pa:sə] ‘mushrooms and pasta’ (1;10.6).
- **Numerals** in both languages were used in playful attempts to count:
 - [wan, tu], [ɛbən sɪks] ‘seven six’ (1;10.15)
 - [jɛdɛn, da, tɪ, ʃɪtɪ, pɛɪ] ‘jeden, dva, tri, štyri, päť’ “one, two, three, four, five” (1;11.1).
 Ria was also attempting to use numbers randomly, as she perceived their use by people

in the environment, especially in English:

[nambə sɪks] ‘number six’, [sɪksɪ naɪn] ‘sixty nine’ (1;11.1).

- **Subject pronouns** emerged around 1;10. The most salient was the Slovak 1sg [ja] ‘ja’ ‘I’, which Ria used to refer to self in multiple word utterances in various contexts:

[tə **ja** ma:m! dʒʊʃɪt sematʃɪk] ‘to ja mám! džúsik zemiačik’ “that I have! juice potato” (1;10.16)

[dɒnʊ:ta, **ja** daja] ‘dovnútra, ja dala’ “inside, I put” (1;11.3)

[sɛjɛj **ja** pɔsɪm] ‘zeler ja prosím’ “celery I would like” (1;11.9)

[ɔmɪjɛm **ja** taɪʃʊ] ‘umyjem ja tváričku’ “will wash I face” (1;11.10).

Only one other isolated Slovak pronoun appeared when referring to an inanimate object with masculine grammatical gender:

[ɔn vɪsava] ‘**on** vysáva’ “he (=vacuum cleaner) does the vacuuming” (1;11.6).

Amongst English pronouns the 2sg personal pronoun appeared:

[hajəʊ dedi. hajəʊ dedi. a: ju: hoʊm?] ‘hallo daddy. hallo daddy, are **you** home?’ (1;11.18)

[tenk ju:] ‘thank **you**’ (1;11.28).

However, it occurred only in formulaic expressions which Ria learnt as a whole from the father.

7.2.1 Overextension

Overextension of meanings is a phenomenon typical of child speech during stages of lexical development (De Houwer, 2009a, p. 216). In Ria’s productions only several cases of regular overextension were found.

The Slovak verb [pa:ɪ] ‘páli’ “it is hot” was initially associated with hot food, drinks and kitchen appliances. Ria overextended the meaning to denote any temperature different to room temperature, such as extreme weather temperatures, overheated car in the summer, hot sun ray coming into a room through the window, hot, warm and cold water, cold freezer and fridge items. When Ria labelled cold items as hot, the mother responded by recasting her utterance, ‘To je studené.’ “It’s cold”, which Ria reproduced as [sʊ:] ‘studené’ “cold” (1;7.7), thus voluntarily repairing the error.

Ria also overextended the Slovak verb ‘večerať’ to eat dinner’ as a label to all mealtimes, as in a 2-word combination [dædʊʃ vɛʃɛja] ‘daddush večeria’ “daddy is eating dinner” (1;10.19) during breakfast.

An overextension was introduced also by the parents since they regularly used the brand name to label the vacuum cleaner, thus Ria overextended the word [dason] ‘Dyson’, meaning “vacuum cleaner” (1;9.12), to all objects of the type.

Overextension also occurred in one language only or in production only. Ria understood the different meanings of Slovak words ‘mucha/ muška’ “fly/little fly” and ‘včielka’ “little bee” in her comprehension vocabulary and responded to them appropriately, however, in production she used only [mɔʃa] ‘muška’ (1;11.29) to refer to both objects, most likely due to easier pronunciation. Conversely, the English TE [fa:ɪ] (1;7.1) was observed only as a reproduced word, while the word [bi:] ‘bee’ (1;11.29) was used correctly.

7.3 Combining words

Tomasello (2003, p. 114) defines word combinations as consisting of two words or two holophrases, which are relevant to a specific situation, but do not yet show any grammatical categories. First word combinations string words into longer utterances which express varied communicative intentions. The order in which words are combined can reflect the ordering patterns of adult speech, however, they are not organised according to specific syntax just yet (Tomasello, 2003, p. 114).

In Ria’s productions spontaneous two-word and multiple-word combinations appeared as early as the one-word stage (1;4), however, until 1;5 there were only isolated examples, averaging 1-2 utterances a week. These consisted of words frequently occurring in Ria’s expressive vocabulary, and combined nouns and verbs, social word, negation, adjective and a demonstrative. They did not show regular syntax, but consisted of juxtaposed words relevant to a particular situation or of coordinated multiple subjects, as shown in the following example:

Ria and the mother were feeding ducks as the mother directed Ria’s attention to a mother duck with ducklings. Ria responded by pointing and uttering [mama dada gaga] ‘mami, daddy, kačiatka’ “mummy, daddy, ducklings”. (1;4.8).

The utterance was produced in one sequence of words, thus a combination. Early combinations provided Ria’s expression of her experiences of the context. These utterances are reported in APPENDIX F.

Word combinations became a typical form of expression at approximately 1;6 when Ria used them on multiple occasions daily to express varied intentions. From a structural point of view, Ria was combining words in two ways, which was apparent from the intonations used with each type of combination:

- **Fluid combinations** - utterances produced without prolonged pauses between words, with a sentence-like intonation showing they belonged together:
[tɪ dædɪ] ‘teeth daddy (is brushing)’ (1;5;15)
[jana ʃi:] ‘Riana spí’ ”Riana is sleeping” (1;6.22)
- **Telegraphic combinations** - haltingly produced utterances with words that belonged together and expressed a meaningful whole, but were uttered in blocks, as if two or more holophrases with similar intonation and a pause between:
[bɪ. ʃo:] ‘big shorts’ (1;7.10)
[[fa:. wom.].] ‘vtáčik. vonku.’ “birdie. outside.” (1;7.21).

These two forms occurred in Ria’s productions concurrently for approximately 3 months (1;4-1;6). From around 1;6 pauses between words were shorter, and around 1;10 telegraphic combinations were gradually replaced by fluid combinations consisting of two or more words. Towards 1;11 they were almost phased out, while only very short pauses appeared between words in some combinations, however without the falling intonation contour.

Similar structural differences were found in multiple-word combinations which appeared more frequently from 1;9 onwards. Three-word combinations consisted of:

- **Three one-word blocks** such as
[papuʃi. jana. obuc.] ‘papučky. Riana. obut.’ “slippers. Riana. put on.” (1;9.26)
[dan. dædɪ. jana.] ‘done. daddy. Riana.’ (1;8.9)
- **Two blocks:** a fluid two-word block and one-word block, such as
[atɔ, ɡɪn. naʃɛmɛ.]⁹ ‘auto, green. nájdeme.’ “car, green. we will find.” (1;9.26)
[a:ɪs, ju:kɪn. jana.] ‘eyes, looking. (at) Riana.’ (1;9.12).
- **Fluid multiple-word utterance**
[tɔtɔ, ʃupa, dɔkɔʃa] ‘toto, šupa, do koša’ “this, peel, in the bin” (1;9.13)
[buk, dædɪ, nadujan] ‘book, daddy, another one’ (1;11.5).

Thus the more complex meaning was expressed through three, two or 1 part of a whole utterance unit.

The diary states that at the beginning of 1;11 Ria used multiple-word combinations predominantly in Slovak, while she mixed some English words for which she had preference into otherwise Slovak combinations (see 8.1.2). Overall, combined English

⁹ The comma denotes that although the words formed one unit, they were separated by a very short pause, as described in (Vihman, 1985, p. 302)

utterances were shorter and used less often, and Ria relied mainly on holophrases to create meanings. During 1;11 three/four-word utterances were still used predominantly in Slovak, but they appeared in English as well.

7.3.1 Word order

According to Tomasello (2003, p. 112) majority of utterances children hear in input initiate with item-based frames consisting of two words or morphemes, such as *It's...*, *Can you...*, *Here's...*, *Look at...*, etc., which are used frequently. The nature of item-based frames is reflected in children's productions as well, since they learn and use them as whole units in their speech. Tomasello (2003, p. 115) calls words organized into consistent ordering patterns *pivot schemas* - constructions without syntax, which are reproduced from adult speech in the input. One word in the utterance determines its function, and remains constant, while the other word is variable. Tomasello (2012, p. 77) also argues that when morphology emerges in productions, children do not use morphological markers productively yet, but they organize words into *item-based constructions* which are based around specific verbs in forms children hear in the input. Thus each verb is learnt in a one-by-one basis.

Ria's two-word combinations had a variable word order. Changes in word order did not reflect changes in meaning. Different meanings were expressed by the types of words that were combined. With each utterance Ria focused on different aspects of the situation.

Function	English
Transitivity	[dædɪ. lo:n] 'daddy (is watering the) lawn' (1;7.10)
Agency	[dædɪ. ki:nɪŋ] 'daddy (is) cleaning' (1;9.12)
Possession	[teɪn. jɑ:nə.] 'train Riana('s)' (1;5.24)
	Slovak
Transitivity	[jana! xɛbɪk.] 'Riana chlebík' "Riana (wants) bread" (1;8.21)
Agency	[ʃɛ jana] 'sedí Riana' "is sitting Riana" (1;6.22)
Possession	[mamɪ tɛj] 'mami čaj' "mummy('s) tea" (1;7.28)

Word combinations consisted of various constituents, and included morphological markers:

- coordinated multiple subjects or objects:
[mamɪ dædɪ jana] 'mummy, daddy, Riana' (1;4.19)

- subjects + objects/indirect objects:
[zabɪʃ dædɪ] ‘rubbish daddy (is emptying)’ (1;11.4)
[jana. babus!] ‘Riana. (will do) bubbles.’ (1;8.21)
[japɛ mamɪ] ‘Riane mami’ “(to) Riana+DAT mummy (will give)” (1;8.24)
- subjects + adjectives:
[dædɪ, bɪk] ‘daddy big’ (1;8.31)
- subjects + adverbs/ determiners/ prepositional phrases:
[tɔtɔ, buʃɔ] ‘toto bruško’ “this tummy” (1;10.6)
- objects + indirect objects:
[posu. dædɪ.] ‘pusu. daddy(mu)’ “(I’ll give a) kiss (to) daddy” (1;8.11)
- utterances containing direct address of the interlocutor and thus not true word combinations:
[mamɪ:, jɪxɔ:!] ‘mami, rýchlo!’ “mummy, quick!” (1;10.18).

However, some regular ordering patterns were evident, which could be categorised as pivot schemas. Schemas were used across both languages and expressed several meanings. Other schemas were typical of one language only and reflected fixed constructions heard in input:

English

- [mo:, pɪtsa?] ‘more, pizza’ (1;11.7)
[epu mo:] ‘apple more’ (1;11.18)
[tubaʃ, gon] ‘toothbrush gone’ (1;8.31)
[mi:t, gon] ‘meat gone’ (1;9.19)
[dan dædɪ] ‘done daddy’ (1;10.6)
[dan. dædɪ. jana] ‘done daddy Riana’ (1;8.9)

Slovak

- [ɛʃɛ papɪka] ‘ešte paprika’ “more capsicum” (1;11.5)
[ɛʃɛ ma:toʊ] ‘ešte (to)mato’ “more tomato” (1;11.3)
[ja sama] ‘ja sama’ “I myself” (1;10.7)
[jana sama] ‘Riana sama’ “Riana self” (1;8.9)
[za nɪm. ba:bom.] ‘za ním. bábom.’ “after him. baby.” (Dative) (1;8.8)

[zapɪm. dædɪm.] ‘za ním. daddym.’ “after him. daddy.” (Dative) (1;8.9)

Word order in Ria’s combinations remained variable also when verb morphology appeared around age 1;7. Morphological markers marked the syntactical relationships between words, but they were still organized around item-based constructions. In Slovak utterances more morphological markers were observed, which resulted in more varied utterances, while in English meanings continued to be expressed mainly through juxtaposition of words as before. Two-word utterances consisted of various constituents, such as:

- subject+verb:
[ɪʃe kɔkɔdɪl] ‘ide krokodíl’ “crocodile is going” (1;10.7)
- object+verb:
[bukɪno pɛʃɛm] ‘book-inu¹⁰ nesiem’ “book-inu I am carrying” (1;11.3)
- subject + infinitive:
[dædɪ, hac] ‘daddy, hrať’ “daddy, (I want to) play” (1;8.21)
- verbs + prepositional phrases, preposition omitted:
[sɪt. tʃe:ə.] ‘sit. (on the) chair’ (1;7.21)
- verbs+ adverbials:
[dɔma ma:m] ‘doma mám’ “at home I have”(1;10.6)
- verb constructions (V+INF):
[ɪʃɛm, pɛʃɛc] ‘idem (sa) prezliecť’ “I’m going to get changed” (1;10.16)
- negated 2-word utterances:
[ha:dʒac nɪɛ] ‘hádzať nie’ “to throw not” (1;10.21)
- Wh-questions:
[ʃeje jana?] ‘kde je Riana?’ “where is Riana?” (1;10.7)

Such combinations of constituents appeared across both languages.

With increased utterance length approximations to the typical word order in the languages appeared. English has a fixed SVO order, while Slovak inflectional grammar allows variable word order, and the subject does not have to be expressed explicitly, since it is implicit in the verb inflectional ending. Ria’s multiple-word utterances in both languages had variable word order of the three constituents:

Slovak

SVO [dædɪ. vaji:. meso.] ‘daddy. varí. mäso.’ “daddy. is cooking. meat.” (1;8.21)

¹⁰ *Book-inu* is a bilingual blend discussed in section 8.1.2.

- OSV [nɛxɪ. mamɪ:. # os. os.] ‘nechty. mami. ostrihať. ostrihať.’ “fingernails. mummy. cut. cut.” (1;8.21)
- OVS [pɪʃamɔ. # seʒɛnɛ: nɛma:m ja.] ‘pyžamo. # zelené nemám ja.’ “pyjamas. # green don’t have I.” (1;10.8)
- VOS [ɔbabɪc, kɪmɔ, dædɪ] ‘opravit’, klímu, daddy’ “to fix, aircon, daddy” (1;10.31)
- VSO [pɔda: mamɪ, bukɪna] ‘podá mami, book-ina¹¹’ “will pass mummy. book” (mummy will pass the book) (1;11.3)
- SOV [ʃɪmak. vɔdɔ ma:] ‘slimák. vodu má’ “snail. water has.” (1;11.6)

English

- SVO [a:ɪs, jukɪn. jana.] ‘eyes. looking. Riana.’ “eyes are looking at Riana” (1;9.12)
- OVS [mi:t i:t, dædɪ] ‘meat eat, daddy’ (1;11.27) “daddy eats meat”
- SOV [mamɪ, epu, i:cɪn] ‘mummy, apple, eating’ (1;11.10) “mummy is eating apple”

However, the typical SVO order became more prominent in both languages during 1;11. Moreover, some Slovak utterances appeared with implicit subject:

[dɔma mam vatʃɪk] ‘doma mám vláčik’ “at home (I) have train” (1;11.6)

[tɔ mam mɔdɔ sɔɪtʃɔ] ‘tu mám modrú stoličku’ “here (I) have blue chair” (1;11.8).

Thus differentiation of syntactical relationships between the two languages was emerging in the last month of the second year.

7.3.2 Fixed expressions

In Ria’s productions pivot schemas and item-based frames appeared most typically in the form of fixed expressions. In the one-word stage fixed expressions were un-analysed, learnt as a whole, produced as single units and consisted of words which were otherwise not used separately (see section 6.1.4.3). As Ria entered combinatorial speech they were still produced as one unit, as suggested by the intonation contours, but they became less fixed. They consisted of one fixed element and one alternating element which carried the

¹¹ There is a rare error in case ending, as the Accusative should be an *-inu* suffix.

syntactical relationship. The individual components were used in combinations with other words as well. Thus the structure was of a fixed expression, but not a static unit anymore. Initially fixed expressions were directly reproduced after the parents, such as [ʃoju] ‘show you’ and [ʃomɪ] ‘show me’ (1;7.10), [maba:bə] ‘my bábo’ “my baby (doll)” (1;7.7). They became spontaneous and more frequent around 1;8-1;9. Several types of schemas and item-based frames with verbs were observed and they occurred in both languages, although considerably more in English. In English 63 tokens were recorded (44 addressed to father, 6 to mother, 13 to both), in Slovak 29 tokens (25 addressed to mother, 4 to both), and 1 mixed variant addressed to the father:

[adujana] ‘other one+a’ (feminine pronominal suffix reflecting grammatical gender of the referent) [1;11.4].

English types of fixed expressions are shown in Table 7.1 and Table 7.2.

Table 7.1 English fixed pivot schemas

English schema	Examples
ADJ+one/ones	[jɛdam] ‘red one’ 1;8.31 [nju:ans] ‘new ones’ 1;9.26 [jɪtʊrən] ‘little one’ 1;9.19
DEMONSTRATIVE+one/ones	[disams] ‘these ones’ 1;9.12
NOUN+on	[ʃokɒn] ‘sock on’ 1;9.12 [jartɒn] ‘lights on’ 1;9.12
NOUN+time	[naɪtəm] ‘night time’ 1;9.19 [bɑ:səm] ‘bath time’ 1;9.19
NOUN+up	[bɑ:nəp] ‘blind up’ 1;10.14
ALL+past participle	[oʊɡɒn] ‘all gone’ 1;9.20 [o:ɒdesd] ‘all dressed’ 1;11.3

Table 7.2 English fixed item-based frames

English item-based frame	Examples
DEMONSTRATIVE+is	[ðɪsɪz] ‘this is’ 1;9.12 [ðetɪz] ‘that is’ 1;10.6 [deə:ʃi:s] ‘there she is!’ 1;7.14 [de:əɪz] ‘there is!’ 1;8.21
INTERROGATIVE+is	[weəʃɪz] ‘where she’s’ 1;10.27
VERB+it	[kloʊʃɪt] ‘close it’ 1;9.12 [i:tɪt] ‘eat it’ 1;9.12
VERB+this	[hoʊðɪz] ‘hold this’ 1;10.22
VERB+me	[ʃoʊmi:] ‘show me’ 1;8.9
VERB+you	[mɪsu:] ‘miss you’ 1;10.19 [baɪtʃu:] ‘bite you’ 1;8.9
VERB+him	[kætʃɪm] ‘catch him’ 1;9.19
VERB+some	[heɪpsəm] ‘have some’ 1;9.19

English item-based frame	Examples
	[pɪtsam] ‘pick some’ 1;9.26
VERB+up	[pekap] ‘pack up’ 1;11.12 [geɪap] ‘get up’ 1;10.26

The construction ‘ADJ *one*’, ‘DEMON *one*’ and transitive ‘VERB *it*’ in English were particularly productive. The types of schemas and item-based frames used in Slovak are shown in Table 7.3 and Table 7.4.

Table 7.3 Slovak fixed pivot schemas

Slovak Schema	Meaning	Examples
pre+NOUN	for	[pɛjanɔ] ‘pre Rianu’ “for Riana” 1;5.23
za+PRONOUN	after/ towards (direction)	[zajɪm] ‘za ním’ “towards him” 1;8.21 [zajou] ‘za ňou (loptou)’ “after it (the ball)” 1;9.8
ku+NOUN	to/ towards	[kɔmame] ‘ku mame’ “to mummy” 1;8.21
do+NOUN	to/into	[dɔkɔpɛɛ] ‘do kúpeľne’ “to the bathroom” 1;9.12
v/v+ NOUN	in/at	[vaɔɛ] ‘v aute’ “in the car” 1;9.12 [vɔbɔɛ] ‘v robote’ “at work” 1;11.18
na+NOUN	on	[nasɛm] ‘na zem’ “on the floor” 1;9.26
pri+NOUN	by (place)	[pɪpɔtɪfɪ] ‘pri počítači’ “by the computer” 1;10.27
pod+NOUN	under	[pɔsɔjɔm] ‘pod stolom’ “under the table” 1;9.26

Table 7.4 Slovak fixed item-based frames

Slovak item-based frame	Meaning	Examples
kde+VERB	where	[ɛjɛ] ‘kde je’ “where is she” 1;4.26 [tʃɛsu:] 1;8.9
tu+VERB	here	[tɔjɛ] ‘tu je’ “here she is” 1;6.4 [tusu:] ‘tu sú’ “here they are” 1;8.9
čo to+VERB	what’s	[ʃɔdɔmaj] ‘čo to máš?’ “what have you got?” 1;8.21 [tɔtɔjɛ] ‘čo to je?’ “what is that?” 1;10.7

In Slovak fixed expressions accounted for prepositional phrases, some locatives and predicate constructions. Moreover, the Slovak items did not produce as many tokens as in English, suggesting that item-based learning was typical mainly in English. A full list is reported in APPENDIX E.

Ria used fixed expressions productively and at times attempted to combine items ungrammatically, as in the following examples recorded in English contexts:

[bukan] ‘book one’ (1;9.12) while choosing a book to read

[dʒɪpən] ‘jeep one’ (1;9.12) while reaching out to pick up a toy car.

Ria also maintained several social expressions which she learnt as one unit and used as unanalysed wholes. They were frequently heard in the input and included:

[aɪtəaɪtɔ] ‘aj to aj to’ “that and that” (1;9.20)

[hoidɒn] ‘hold on’ (1;9.26)

[tɛnku:] ‘thank you’ (1;10.11)

[kəmə] ‘come on’ (1;10.24)

[fju:s:un] ‘see you soon’ (1;10.31).

Another English construction initially learnt as one unit were tag questions. Ria was able to use tag questions in response to the father’s address in which he used a tag question.

Initially she used it in the form of reproduction:

*RIA	[pʊʃɪ:]
%glo	prší
%eng	It’s raining.
*DAD	It’s raining, isn’t it?
*RIA	[ɪsnɪtʔ]
%glo	Isn’t it?

Although tag questions were produced as a constant unit, Ria was also able to appropriately invert the word order:

*DAD	Where does it go? In your hair? Does it?
*RIA	[ɪdəs]
%glo	It does.

Tag questions were not yet used spontaneously.

7.3.3 Expressing negation

With combinatorial speech negation appeared as well. The two languages express negation differently: in Slovak to negate a verb *ne-* is prefixed to a verb, while English uses a particle *not*, which can be placed in several different positions depending on the tense and structure of the verb phrase. According to Meisel (2001, p. 20) cross-linguistic studies show that children initially negate the whole utterance, and when finite verb forms appear, negator is placed internally within the utterance.

These two stages of negation appeared also in Ria's data. At the outset Ria rendered negation in both languages with one structure. Slovak negator was juxtaposed to different word types. Initially a non-standard form derived from the negated verb *to be* 'neni' "isn't" was used (standard form is 'nie je'). Ria perceived this form as a single unit, since that is how it was used by the mother in utterances addressed to her. The entire holophrase was negated, as in the following examples:

[ɲɛɲi ʃa:] 'Neni vtáčik.' "isn't birdie." (1;6.4)

[ɲɛɲi. ɲɛɲi. hɪ. hɪ. ɲɛɲi] 'neni. neni. here. here. neni.' "isn't. isn't. here. here. isn't." referring to food not being on plate (1.6.19)

Negation was rendered with three possible forms of the Slovak negator until 1;8:

- negator 'nie' "not"
- standard form 'nie je' "is not" of the inflected verb *nebyt'* "not to be"
- non-standard form 'neni' "isn't".

All three structures were used interchangeably in both languages, juxtaposed before or after the word they were negating, such as adjectives, nouns, verbs:

[pʉnɛ:. ɲɛɛ.] 'plné. nie.' "full. not." (1;8.9)

[ɲɛɛjɛ. pa:sɪ.] 'nie je parsley' "(there) is not parsley" (1;8.9)

[ɲɛɲi ɲɪʃ] 'neni nič.' "isn't anything." (1;8.21)

[wək. ɲɛ.] 'work. nie.' "work. no." (1;8.31)

[ɲɪjɛ badə] 'nie butter' "no butter" (1;8.31)

[xʉɔɪ: ɲɛ] 'chutí nie' "I like not" (1;9.4)

[xʉɔɪ: ɲɛ] 'chodí nie' "goes not" (1;10.4).

The negator could be used as a holophrase, as in the following example, which prompted the mother to request clarification:

%sit Ria and MAM are eating lunch

*RIA [ɲɪɛ]

%glo nie

%eng no

*MAM Čo nie?

%eng What no?

*RIA [xʊɔɪ:]

%glo chutí

%eng I like

#

*RIA [janɪma]

%glo Rianina

%eng Riana's

*MAM Rianina ryža, ano.

%eng Riana's rice, yes.

*RIA [ɦɪ:bɪk. ɲɛɲɪ.]

%glo hríbik. neni

%eng mushroom. isn't.

(1;8.24).

The first negative verbs reflecting adult forms appeared in Ria's Slovak utterances approximately 3 months later, around 1;10. They were formed by the negative prefix attached to the verb and used productively in inflected verbs:

[ɲɛmɔ:ʒɛʃ] 'nemôžeš' "you can't" referring to self (1;9.4)

[ɲɛɪɛ] 'nejde' "isn't coming" referring to a duck approaching Ria (1;9.12)

[ɲɛma:mɛ] 'nemáme' "we don't have" (1;9.19)

[ɲɛjɔ:bɪm] ‘neľúbim’ “I don’t like” (1;9.26).

Unilingual English utterances with negation emerged around the same time as Slovak negated verbs. However, Ria still used the first stage negation, negating the whole holophrase with the juxtaposed English negator *no*. Only few examples were recorded before 2;0:

[si:ds, nou, si:ds] ‘seeds, no, seeds’ (1;9.19)

[nou jaɪts on] ‘no lights on’ (1;10.6)

[nou wək] ‘no work’ (1;11.3)

[nou bou go!] ‘no ball go’ (1;11.7)

Thus it appears that by 1;6 Ria was ready to express negation across both languages. In the first stage she applied the Slovak non-standard negator across utterances in both languages in an apparently undifferentiated pattern, where the Slovak negator was used to fill the gap in English. Language specific negation appeared in Slovak utterances at 1;9. At this stage English utterances were still negated through juxtaposition of the negator to an utterance, however, the English negator replaced the temporary Slovak equivalent. A similar sequence of stages with separate progression to the adult structure was found in Vihman (1985, p. 312) and Meisel (1989, p. 19), thus it can be explained as a universal acquisition feature rather than a sign of lack of differentiation.

7.4 Inflectional morphology

In Ria’s productions morphology emerged in both languages simultaneously. However, different aspects relevant to each language appeared, which provided evidence for separate development of grammars of the two languages in the one-word and early two-word stages (Sinka & Schelletter, 1998, p. 324). Morphological markers were used in both holophrastic and multiple-word utterances. Initially words with morphological markers appeared in forms which were used frequently by the parents in the input, and no generalizations across word classes were made, which is a developmental pattern observed by other authors as well (Tomasello, 2003, p. 118).

First morphological markers emerged around 1;7 in the form of reproduced words across both languages but especially Slovak, such as Slovak inflected verb forms (e.g. [maʃ] ‘máš’ “you have”, [tʃɛʃ] ‘chceš’ “you want”, [vɛʃ] ‘vieš’ “you know” in the 2sg), English continuous forms (e.g. [kami] ‘coming’); Slovak noun declinations (e.g. [mameɛ] ‘mame’ “to mummy”, [mamɪn] ‘mamin’ “mummy’s”), and English possessive suffix (e.g. [mamɪs]

‘mami’s’ ‘‘mummy’s’’). By the first half of 1;8 majority of the Slovak reproductions were complete words with appropriate suffixes. English reproductions were marked with necessary grammatical aspects (number, possessive, 3sg). Thus Ria distinguished between the different morphology in operation in the two languages in her input, and demonstrated this with correct reproductions.

In spontaneous productions morpho-syntax in both languages emerged at the beginning of 1;7, as soon as Ria ceased to truncate words, and produced longer and more complete adult forms, as discussed in the following sections.

7.4.1 Nominal morphology

First grammatical category in nominal morphology was the possessive marker emerging simultaneously in both languages, but only with few familiar appellatives referring to the parents, self and favourite toys. Holophrases consisting of a person’s name with the possessive marker were used while pointing at an object, thus Ria was denoting ownership of the object rather than labelling it.

Possessives were language specific. In Slovak utterances Genitive suffixes were attached to possessive adjectives related to familiar people, showing agreement with the referent’s grammatical gender:

[mamim] ‘mamin (zápisník)’ ‘‘mummy’s (notepad)’’ (1;7.8) pointing at the mother’s note pad, masculine grammatical gender

[mamina] ‘mamina (kniha)’ ‘‘mummy’s (book)’’ (1;8.9), feminine grammatical gender.

Neuter forms of the Genitive suffixes were used when referring to various objects that belonged to people, without mentioning the object label, which could be glossed as ‘to je *X-suffix*’ meaning ‘‘that’s X’s’’:

[dædixɔ] ‘daddyho’ ‘‘(that’s) daddy’s’’ (1;9.4)

[mamine] ‘mamine’ ‘‘(that’s) mummy’s’’ (1;9.8)

[jɔnɪnɛ] ‘Rianine’ ‘‘(that’s) Riana’s’’ (1;9.8).

In English utterances the possessive marker ‘s was attached to appellatives:

[dædɪs] ‘daddy’s’ labelling objects belonging to the father (1;7.10),

[mamɪs] ‘mami’s’ ‘‘mummy’s’’ labelling objects belonging to the mother (1;7.10),

[babos] ‘bábo’s’ “baby doll’s” (1;7.21) labelling items belonging to a doll¹²,

[janas] [janis] ‘Riana’s/Riani’s’ (1;7.28) referring to objects belonging to self.

The next morphological marker to emerge in both languages with language specific morphemes was the regular plural form of nouns. At first two masculine plural Slovak nouns were used:

[vasɪ] ‘vlasý’ “hair (plural)” referring to the mother’s hair and distinguished from the singular form used on the same day in a different context, when a hair got into Ria’s mouth and she requested to remove it uttering [vas] ‘vlas’ “a hair” (1;7.17)

[xɔp] and [xɔpɪ] ‘chl̩p / chl̩py’ “body hair(s)” used in both singular and plural forms appropriately (1;7.28).

With a lag of one month plurals were generalized across nouns belonging to various nominal classes, including feminine and neuter genders.

Masculine

[banɪɪ] ‘banány’ “bananas” (1;8.21)

[nɔsɪ] ‘nosy’ “noses” (1;8.21)

[manɔːʃɛ] ‘vankúše’ “cushions” (1;8.24)

Feminine

[kɪʃɪ] ‘knižky’ “books” (1;8.21)

[vɛtsɪ] ‘veci’ “things” (1;8.21)

[jasɪɪ] ‘rastliny’ “plants” (1;8.24)

Neuter

[ʃɛɪ] ‘deti’ “children” (1;8.21).

Nominal plurals of all classes were established by the second half of 1;9.

Simultaneously, in English utterances the regular plural suffix –s was observed with nouns that were most often used in plural in the input, referring to several items of the type:

[hæts] ‘hats’ used by the father when getting ready to go out (1;7.21)

[hæːns] ‘hands’ (1;7.21)

[tʃeːəs] ‘chairs’ (1;8.9)

¹² The family adopted the Slovak word ‘bábo’ “baby” when talking about the particular doll.

[babus] ‘bubbles’ (1;8.21).

Occasionally the English regular plural was overextended to mass nouns which do not require plural suffix, such as referring to two bank notes with [manis] ‘money-s’ (1;8.21). Such overgeneralizations are typical in English speaking children (Štefánik, 2000, p. 50).

Thus possessive and plural suffixes appeared simultaneously in both languages with language specific markers. Meisel (1989, p. 21) argues that if children express similar functions in the two languages through different grammatical means, this indicates differentiation of the two grammatical systems. Indeed, further morphological development occurred separately in each language, as discussed in the following sections.

7.4.1.1 Slovak nominal morphology

Slovak nominal morphology is complex in comparison with English. There are 6 cases with morphological markers expressing different grammatical relationships, as shown in Table 7.5.

Table 7.5 Slovak nominal cases

Case	Slovak meaning	Corresponding English structure
Nominative	subject of a verb	word order
Genitive	possessive relationship or other close semantic relation	possessive ‘s marker
Dative	indirect object	prepositions <i>to</i> and <i>for</i>
Accusative	object of a verb	word order
Locative	prepositional case expressing location and other relationships	Locative prepositions <i>in</i> , <i>at</i> , <i>on</i> , and prepositions <i>about</i> , <i>after</i>
Instrumental	Instrumentality	Prepositions <i>with</i> and <i>by</i>

Slovak nouns are divided into three classes - masculine, feminine and neuter - each with 4 inflectional subclasses. Masculine subclasses are further divided into animate and inanimate. Each subclass uses distinct suffixes for grammatical cases in the singular and plural forms which are determined by a prototype for that subclass. A suffix is attached to the noun stem and expresses the grammatical category of case, gender and number of the noun. Moreover, nominal suffixes are polysemic and a single suffix can express several grammatical meanings, as shown in the following inflected prototype word *žena* ‘woman’ for a subclass of feminine nouns:

Case	Singular	Plural
Nominative	žen-a	žen-y
Genitive	žen-y	žien

Dative	žen-e	žen-ám
Accusative	žen-u	žen-y
Locative	žen-e	žen-ách
Instrumental	žen-ou	žen-ami.

In this prototype word the suffixes -y and -e have 3 and 2 possible grammatical meanings respectively. In some feminine and masculine subclasses the Nominative case is the stem form without a suffix.

The Nominative was the first form of nouns Ria was able to produce in the one-word stage. The remaining nominal cases appeared in Ria's productions during the two-word stage, all within a period of three months (end of 1;7-1;9). Ria initially learnt inflectional endings with familiar words frequently used by the mother, before she extended them to other types of words. Thus familiar appellatives were among the first nouns with Slovak inflectional suffixes when used in a holophrastic sense. They emerged in most grammatical cases around the same time, as the following examples demonstrate:

- **Accusative**

[mamɔ] '(chytím) mamu' '(I will hold) mummy' (1;7.8)

[dedɔ] '(chytím) dedu¹³' '(chytím daddy)ho' '(I will hold) daddy' (1;7.8)

[janɔ] 'Rianu' 'Riana+ACC' (1;8.21)

- **Instrumental**

[dædɪm] or [dædɪms] '(pojdem s) daddy' '(I will go) with daddy' (1;7.18)

[babɔm] '(s) bábom' '(with) baby' (1;8.21)

[ɔmɪm] '(za) Romim' 'after Romi'

- **Dative**

[ɔmɪɔ] '(dám) Romim' '(I will give) to Romi' (1;7.18)

[dædɪmɔ] '(ukážem) daddym' '(I will show) to daddy' (1;7.18)

- **Locative**

[paʒɪ] '(na) pláʒi' 'at the beach' (1;7.18).

Approximately a month later inflectional case endings were extended to other noun types. Among the first was the **Accusative** case used in various functions, such as when talking about objects in the environment:

¹³ English proper nouns and appellatives in the mother's speech were morphologically integrated in Slovak utterances, using appropriate suffixes, thus this usage was modelled to Ria in the input. However, in this example Ria made an occasional error in suffix and used what appears to be the feminine suffix *-u* instead of masculine *-ho*.

[kaba] ‘(videli sme) kraba’ “(we saw a) crab” (1;7.28)

[pavɔ:ka] ‘pavúka’ “spider” (1;8.24).

Accusative was also used to request objects or food:

[jɪʃɔ] ‘ryžu’ “rice” (1;8.9)

[mahɔjɔ:] ‘marhul’u’ “apricot” (1;8.21)

Accusative was further used to talk about objects in Ria’s environment which she was able to manipulate herself:

[pɔsɔ] ‘(umývam ti) pusu’ “(I’m washing) your mouth” (1;7.28)

[metɔ] ‘mätu’ “(I’m picking) mint” (1;8.21),

or objects that were manipulated by others:

[ʃimɔ] ‘špinu’ “dirt/mess” referring to the result of a doll’s pretend actions (1;8.21)

[nɛxɪ] ‘nechty’ “finger nails” referring to the object mother was to manipulate (1;8.21).

Ria was aware of the need to use the form appropriate for a particular situation in the Slovak language, since she started self-repairing her utterances in some cases, for example:

when requesting almonds Ria uttered [mana. manɔ] ‘mandl’a. mandl’u.’ “almond. an almond.” (1;8.9),

where the Nominative suffix was self-repaired to the Accusative, since the word appeared in the grammatical position of an object.

Other nominal cases extended to all noun types by the end of 1;9:

Genitive used to express semantic relations other than possession

[sidɔ] ‘syru’ “of cheese” (1;8.21)

Ria was requesting “(a little bit) of cheese” during meal time and correctly applied the Genitive suffix, which expressed the notion of ‘a part of’. Accusative case could be used if requesting the object without specifying the amount.

Prepositional cases which may or may not use a preposition in Slovak also appeared around the same time, however, Ria often omitted prepositions:

Locative in function of a prepositional phrase

[titɔ] ‘(na) tričku’ “(on the) t-shirt” (1;8.21)

[kabitsɪ] ‘(v) krabici’ “in a box” (1;9.1)

Instrumental used to request manipulation or use of objects

[noʒíkɔm. mamɪnɪ.] ‘nožík**om**. mamini(m).’ “with knife. mummy’s.” (1;9.1)

[kɪʃu. sɛbow.] ‘knižk**u**. (so) sebow.’ “book. with you (=me)” (1;9.20)

[mɔmɔʊ] ‘(s) múm**ou** (=kravkou)’ “(with a) moo (=cow)” (1;9.20).

Thus nominal morphology was established by the second half of 1;9. Ria used English and Slovak noun forms appropriate in specific situations across all classes, reflecting correct grammars of the two languages. While nominal morphology was developing simultaneously across languages, it was taking place separately within each language, showing separate development of the grammars.

7.4.2 Gender and number agreement

In Slovak inflectional morphology modifiers such as adjectives or pronouns, as well as pronouns substituting a noun, must show gender and number agreement with the nouns they modify. There are three grammatical genders - masculine, feminine and neuter.

In Ria’s productions correct forms showing gender and number agreement with the grammatical gender of referents emerged during 1;7 with the possessive Slovak suffixes in Genitive (section 7.4.1). Same agreement was also applied to holophrastic pronominal modifiers in the Accusative or Nominative, which Ria used to request a different item of a kind:

Masculine

[ɪnɪ:] ‘iný (keksík)’ “different (biscuit)” (1;7.21)

Feminine

[ɪnɔ:] ‘inú (knižku / gumičku)’ “different (book / head band)” (1;7.21)

[dɔa] ‘druhá (papuča)’ “the other (slipper)” (1;7.28)

Neuter

[dɔɛ] ‘druhé (hami)’ “the other (breast)” (1;7.28).

Similarly, if adjectives were used as holophrases correct gender and number agreement with the referent was evident, as in the following examples:

Accusative feminine singular

[tʃɪsɔ] ‘čistú (plienočku)’ “clean (nappy)” (1;8.9),

Accusative feminine plural

[ʒʊtɛ:, mɔnɛ:, juʃanɛ: # ɔbtʃɛtʃɛ] ‘žlté, modré, ružové (plienočky) # (si) oblečie.’
“yellow, blue, pink (nappies) # will put on” (1;9)

Nominative masculine singular

[dohr:] ‘dlhý (nechet)’ “long (fingernail)” (1;8.21)

Nominative masculine plural

[dohɛ:] ‘dlhé (nechty)’ “long (finger nails)”.

Gender and number agreement was also maintained in two-word combinations:

[jʊki. pɔnɛ:] ‘ruky. plné.’ “hands. full.” (1;8.24).

Agreement between a pronoun and its referent appeared at the same time. However, Ria used the first pronouns only as a variable element combined with fixed preposition ‘za’ “after” (denoting movement towards) within specific pivot schemas. Thus the pronouns were used in the Instrumental case in a specific gender, and were associated with specific situations, requesting to go after/towards a person(s):

[zəɲɪm] ‘za **ním**’ ”to him’

[zəɲɪm. dædɪm.] ‘za **ním**. daddym.’ i.e. “(Let’s go) to him. (To) daddy.”

[zəɲɪmi] ‘za **nimi**’ “after them”, i.e. “(Let’s follow) after the rubbish removalists.”
(1;8.9)

[zəɲɔʊ] ‘za **ňou**’ “to her”, i.e. “(Let’s go) to the duck” (1;8.21).

A pronoun in the grammatical gender of the referent was used in a holophrase referring to a familiar object:

Neuter

[naʃɛ] ‘naše (auto)’ “our (car) (1;8.21).

Gender agreement was also evident in the first numeral Ria used in the Slovak language, [da] and [dɛ] ‘**dva/dve**’ “two”, which was produced with the correct masculine or feminine gender respectively, depending on the referent’s grammatical gender.

Thus the development of appropriate gender agreement took place hand-in-hand with the development of nominal morphology, suggesting Ria had awareness of the category of gender from early on. Early uses of appropriate gender in Slovak pronominal morphology also emerged, however, related only to specific referents at this stage.

7.4.2.1 Comparatives

The grammatical category of degree, namely the comparative, appeared in isolated instances in both languages:

[mekʃr:] ‘mäkší’ ‘softer’ (1;9.19)

[kousə] ‘closer’ (1;10.8)

[betə] ‘better’ (1;10.15).

The Slovak comparative reflected appropriate gender of the referent. However, in these instances comparatives were used as context specific items, and were not generalized across all adjectives yet.

7.4.3 Slovak verb morphology

Slovak finite verb forms are inflected and consist of the verb stem and a suffix. In addition, changes can occur in the verb stem. There are 7 irregular verbs, and 14 regular verb prototypes, each using different suffixes marking the following grammatical categories: person, number, tense, mood and gender (Mistrík, 1988, p. 135). In Ria’s early speech the indicative mood was most evident, with only several imperative forms and no conditional forms. In the indicative the grammatical category of tense is expressed with different suffixes for present, past and future, while gender (masculine, feminine or neuter) is marked in the past tense only. The inflectional paradigm can be illustrated on the verb prototype *chytať* ‘to touch’ inflected in the present, past and future tenses of the indicative:

	Present		Past	
	Singular	Plural	Singular	Plural
1 st	chytá-m	chytá-me	chyta-l/-la/-lo	chyta-li
2 nd	chytá-š	chytá-te	chyta-l/-la/-lo	chyta-li
3 rd	chytá-ø	chyta-j-ú	chyta-l/-la/-lo	chyta-li
	Future			
	Singular	Plural		
1 st	chytí-m	chytí-me		
2 nd	chytí-š	chytí-te		
3 rd	chytí-ø	chyt-ia		

There are three imperative forms derived from the 3pl present form *chytajú* by omitting the person suffix *-ú*:

2sg chytaj

1pl chytaj-me

2pl chytaj-te.

In Ria's speech verb morphology appeared in the Slovak language slightly earlier (1;7) than in English (1;9). The main observation in verb morphology was the fact that first inflected forms were context specific and related to activities, actions or events linked to the familiar people and to self. Initially verbs were used in those forms which frequently appeared in the input, thus the whole verb paradigm was not available with each type of verb. Similarly, each type of verb emerged in different tense and mood form.

Over 1;7-1;9 the first spontaneous uses of inflected verb forms were in the singular in all three tenses, past, present and future. They reflected CDS used by the parents, whereby the parents referred to Ria either in the 2sg or 3sg forms, while referring to self either with the 1sg or 3sg (e.g. 'Daddy do it.' used by the father). This usage was mirrored in Ria's language, and she was referring to self mainly with 2sg and occasionally 3sg:

2sg

Present

[jɔːbɪʃ] 'ľúbiš' "you love" (1;8.9)

[padaːʃ] 'padáš' "you are falling" (1;8.24)

[sejɪːʃ] 'sedíš' "you are sitting" (1;9.12)

Future

[ɔkaːʒɛʃ] 'ukážeš' "you will show" (1;8.21)

[ɔbʃɛʃ] 'oblečieš sa' "you will get dressed" (1;8.21)

3sg

Present

[pɔsɪː] 'prosí' "she would like" (1;8.21)

[vikoːka] 'vykúka' "is peeking out" (1;9.12).

Isolated examples of 1sg appeared as well, in both present and future tenses simultaneously:

Present

[ʒɔbim] ‘robím’ “I am doing” (1;7.28)

Future

*MAM ‘Donesieš to daddymu?’

%eng “Will you take that to daddy?”

*RIA [dɔɲesem]

%glo donesiem

%eng I will bring (1;8.9).

In her response Ria used the correct 1sg after the mother’s address in 2sg. Thus it was a productive use of inflected verb with appropriate person suffix, suggesting awareness of different meanings expressed by different forms.

The 1sg was occasionally overextended to refer to others during pretend play or when requesting a service from the mother, as in the following examples:

Present

[seɟi:m] ‘sedím’ “I’m sitting” referring to a doll (1;9.4)

Future

[ɔbkʊ:ɟam] ‘obkúšam (=obkúšem)’¹⁴ “I will bite around” referring to the mother (1;9.26).

From the second half of 1;9 verbs were inflected productively, and Ria was referring to self with 1sg in present and future tenses. She used 3sg only when referring to self with her name (1;10.6), thus talking about self as a different person. Varied verbs from all five Slovak verb classes were used in 1sg:

Present

[ɟɛm] ‘idem’ “I’m going/coming” (1;9.12)

[ma:m] ‘mám’ “I have” (1;9.20)

[patsɔɟem] ‘pracujem’ “I’m working” (1;9.26)

¹⁴ An occasional error in suffix, applying the *-am* suffix from a different class of verbs instead of *-em*.

[vɪsavam] ‘vysávam’ “I’m vacuuming” (1;9.26)

[tsɪtʃɪ:m] ‘cvičím’ “I am exercising” (1;9.26)

Future

[satam] ‘sadjám (si)’ “I will sit down” (1;9.26)

[zɔbejɛm] ‘zoberiem’ “I will bring” (1;9.26)

[ɔɔʃɪm] ‘odložím’ “I will put away” (1;11.18).

Productive use of verb inflections was evident especially through incorrect vowel substitution in some future suffixes:

[ɔpam] ‘opam = op(rav)ím’ “I will fix” (1;9.26)

[vɪbam] ‘vybam = vyb(er)iem’ ‘vyberiem’ “I will choose” (1;10.6)

[zapam] ‘zapam = zap(n)em’ “I will turn on” (1;10.6)

[najɛm a ju zɔbam] ‘nadem a ju zobam = nájdem a ju zob(er)iem’ “I will find and it I will take” (1;10.29).

In these examples Ria omitted parts of the word stems and treated the suffix *-am* from one verb class as a regular suffix and applied it to different verb classes where the correct suffixes would be *-em*, *-iem* and *-ím*.

When referring to familiar people and objects (father, mother, doll) Ria used 3sg forms in verb tenses relevant for the context:

Present

[vaji] ‘varí’ “he is cooking” (1;7.19)

[ka:ja] ‘krája’ “is cutting up” (1;7.19)

[kɔpɛ] ‘kope’ “is digging” (1;8.21)

[sɛjɪ:] ‘sedí’ “she is sitting” (1;8.24)

Future

[hɔjɪ:] ‘hodí’ “he will throw” (1;8.21)

[ɔtɛ] ‘utrie’ “she will wipe” (1;8.21)

[pɪ:jɛ] ‘príde’ “he will come” (1;8.21)

[xɔva:] ‘schová’ “will hide” (1;11.18)

Past

[daja] ‘dala’ “she put” (1;7.19)

[bɔʊ] ‘bol’ “he was” (1;7.21)

[ɔdɪfɛʊ] ‘odišiel’ “he left” (1;9.19)

[kɔ:prɔ] ‘kúpil’ “he bought” (1;9.26).

When an impersonal verb was related to a different object, but had an impact on Ria, the 3sg was correctly used to describe what Ria felt or liked:

[pɪxa:] ‘pichá’ “it prickles” referring to an object but having an impact on Ria (1;8.21)

[ʃɪ:pɛ] ‘štípe’ “it is stinging” referring to what Ria feels (1;8.21)

[xɔɔɪ:] ‘chutí’ “it tastes= I like” referring to Ria’s likes (1;8.24)

[bɔjɪ:] ‘bolí’ “it hurts” referring to Ria’s feelings (1;8.24).

Thus verb morphology also began with inflected forms of frequently used verbs in the input, which were related to familiar people and self. Inflected verbs referring to states or actions performed by inanimate or animate entities that were not familiar to Ria appeared approximately at the end of 1;8, however, they were much less frequent:

Present

[sɔʃɪ:] ‘(bielizeň) suší (sa)’ “(washing) is drying” (1;8.21)

[tɔʃɪ:] ‘(šnúra) točí (sa)’ “(washing line) is turning”(1;8.21)

[jɔbrɪ:] ‘robí’ “is doing” (1;8.23)

[ɪʃɛ] ‘(slimák) ide’ “(snail) is going” (1;8.24)

[zavadʒa] ‘zavadzia’ “is in the way” (1;11.7)

[pəʃɪ:] ‘prší’ “it’s raining” (1;8.21) - impersonal verb.

Forms inflected in the past tense showed relevant grammatical gender agreement with the referent:

Past

[bɔjɔ] ‘bolo’ “it was” (1;8.16)

[ɔdɪʃa] ‘odišla’ “she left” (1;9.12)

[padɔʊ] ‘padol’ “he fell” (1;9.26).

The fact that learning of verb forms was related to context can also be demonstrated on the plural forms in Slovak verb morphology. Early instances appeared sporadically from 1;8 in specific contexts describing actions done by familiar people or objects, and reflecting forms used regularly by the mother, in 3pl:

Present

[hajʊ:] ‘hrajú’ “they are playing” (1;8.16)

[ʃɛɾi kɪʃʊ:]¹⁵ ‘deti kričia’ “children are screaming” (1;9.12)

[havinkʊvɪa tʃɪnkajʊ:] ‘havinkovia spinkajú’ “doggies are sleeping” (1;10.31)

[jana mamɪ ʃɪnkajʊ:] ‘Riana mami spinkajú’ “Riana mummy are sleeping” (1;11.6).

Future

[pɪ:ɔʊ] ‘prídu’ “they will come” referring to the mother’s family (1;8.24).

Past

[tʊkəlɪ] ‘tulkali’ “were cuddling” referring to animals seen at the zoo (1;10.6).

The 1pl appeared at the beginning of 1;9 mirroring the mother’s parenting style, whereby she frequently used the associative ‘we’ in 1pl, as a directive to teach expected behaviour, as in the following example:

%act RIA throws a book on the ground

*MAM Knižky nehádzeme!

%eng We don’t throw books!

*RIA [tʃi:tameɛ]

%glo čítame

%eng we read (them)

(1;9.8).

This directive was increasingly more frequent in the CDS as Ria was becoming independent in exploring her surroundings, thus offering many types of verbs. The associative ‘we’ appeared in Ria’s talk about activities she was engaged in or about to do, thus reflecting the mother’s typical usage, for example:

¹⁵ In this particular example Ria overgeneralised the 3rd person plural suffix *-ajú* from one class of verbs and applied it to a prototype verb of a class which normally takes an *-ia* suffix in 3pl. This suffix substitution remained in Ria’s speech until 3;11.

[jɛʃi:mɛ] ‘ležíme’ “we are lying down” referring to mother and self (1;9.19)

[ɪʝɛmɛ] ‘ideme’ “we are going” referring to the family (1;9.12)

[pɔci:mɛ] ‘pustíme’ “we will turn on” referring to the mother and self (1;9.26)

[ʃabamɛ] ‘vstávame’ “we’re getting up” referring to the family (1;10.16).

The last Slovak verb form to be acquired was the 2pl, which appeared in an isolated example in the imperative at the beginning of 1;11 when Ria addressed both parents simultaneously:

[pɔcɛ sabac] ‘pod’te stavat’ “come build” (1;11.6).

Overall Ria used Slovak inflected verbs appropriate in contexts by the second half of 1;9. It is not possible to talk about the development of verbal inflections in each tense separately, since Ria did not learn individual tenses in a progression (e.g. present, past, future), but rather learnt verbal forms appropriate in the contexts in whatever tense or mood, in ways that reflected the use of verbs by the mother in the input. This could be explained by the fact that (as the diary states) by the time inflected forms appeared Ria had an understanding of past and near future events as differing from events taking place in the present.

7.4.3.1 Other verb structures

Other verb structures emerged during this stage, however, they were learnt as unanalysed, context dependent wholes. Among the first were Slovak infinitives which appeared as holophrases from 1;8. A Slovak verb is in the infinitive form if a suffix *-ť* is attached to the stem form, as in *chyta-ť* ‘to touch’. In Ria’s productions infinitives substituted a phrasal construction and were used to request an activity or as a commentary when Ria was about to start an activity, as shown in these examples:

‘chcem (sa) + INF’ “I want to *infinitive*”

[tʃi:tac] ‘čítať’ “to read” (1;8.21)

[tatʃic] ‘tlačit’ “to push” (1;9.12)

[kɛsic] ‘kreslit’ “to draw” (1;10.6)

‘pod’ (sa) INF’ “come and *infinitive*”

[hac] ‘(pod’ sa) hrať’ “(come and) play” (1;9.12).

Infinitives could also have the function of an imperative, as in the following excerpt:

%sit	Ria is getting dressed
*RIA	[ponoʃi]
%glo	ponožky
%eng	socks
*MAM	No, vyber si nejaké. Aké si vyberieš? Vyber si zo skrine nejaké.
%eng	Yeah, pick some. Which ones will you pick? Pick some from the cupboard.
*RIA	[ʒo ʃɪɲɛ. pəmɔts. pəmɔts.]
%glo	zo skrine. pomôct'. pomôct'.
%eng	from cupboard. to help. to help.
*MAM	Mám ti pomôct'?
%eng	Should I help you?
*RIA	[ano:]
%glo	ano
%eng	yes

(1;11.7).

Infinitives were not a direct command but they mirrored the mother's usual response to Ria's requests for help, a construction consisting of a modal verb and an infinitive, as shown in bold above. The function of a command was typically expressed with the inflected 2sg imperative form of several verbs in specific contexts, again reflecting the mother's talk:

[kɔʃ] '(po)kúš' "chew!" (1;7.18)

[pɔsɪ] 'pozri' "look!" (1;10.29)

[ɔkɑʃ] 'ukáž' "show (me)!" (1;11. 18).

It appeared Ria derived infinitive forms from inflected verbs rather than from stem forms. This was evident with verbs where in Slovak changes occur in the stem of the verb in some inflections, while the infinitive form includes the basic stem with infinitive suffix. Such inflectional overgeneralisation emerged with the reflexive verb *bát' sa*, where *bá-* is the stem and *-ť* the infinitive suffix (*sa* is a reflexive pronoun). The inflected present tense

forms *bojím sa* “I’m scared”, *bojiš sa* “you’re scared”, etc., have a *-j-* inserted between the stem and inflectional endings¹⁶. Ria overgeneralized this rule to the infinitive form as well:

[bajac] ‘bát (sa)’ “to be scared” (1;9.26).

This suggests that infinitives were a later production. Ria acquired inflected forms relevant to a particular situation first and derived the infinitive from them.

There are other grammatical verb categories expressed through morphology in the Slovak language. The category of Aspect denotes the contrast between completion and lack of completion of an action. It is marked with morphological markers in the form of prefixes. Such prefixes were also subject to item-based learning and depended on the mother’s use of the language. The first isolated instance in Ria’s speech was:

[petʃi:tac] ‘prečítat’ “to read through” (1;8.24)

This holophrase has the above function of the ‘I want to *infinitive*’ construction and could be glossed as ‘I want to read this through.’, while the verb itself has an additional syntactical marker, the Aspect prefix *pre-*, which denotes the fact that the speaker wishes the action to continue until completed. This particular verb construction was frequently used by the mother when referring to one of Ria’s favourite activities - reading with adults. Prior to the use of the additional grammatical aspect Ria requested reading books with the infinitive form [tʃi:tac] ‘čítat’ “to read” (1;8.21).

Later instances of Aspect appeared with frequently used verbs in the input:

[vixajɛnɛ:] ‘**vy**chladené’ “cooled down” (1;10.26) – a past participle of the verb *vychladiť*, in which the prefix *vy-* marks the resulting state

[mamɪ dɔpapajə] ‘mami **do**papala’ “mummy finished eating” (1;11.1) – past tense with a prefix *do-* marking completion of an action

[napɔɲɪc] ‘**na**plnit’ “to fill up” (1;11.3) – infinitive with a prefix *na-* marking result of an action

[mamɪ vɪpapajə] ‘mami (ja) **vy**papala’ “mummy (I) ate out” (1;11.3) – past tense verb with *vy-* prefix marking completion of the action

[pɔsɪnkac ɲɪɛ] ‘**po**spinkat’ nie’ “sleep no” – infinitive verb with a *po-* prefix marking duration of action.

¹⁶ There is also a vowel change from *a* to *o* in the inflected forms

Lastly, Slovak reflexive verb structures appeared, which consist of a verb and reflexive pronouns *sa* or *si*. The mother used such phrases frequently when addressing Ria, who learnt them in several fixed expressions linked to specific contexts:

[nɛbɔisa] ‘neboj sa’ “don’t be scared” (1;9;19), referring to self

[hacsa] ‘(pod) sa hrat’ “(come and) play” (1;9.20)

[vidɔ, pɔsimsi] ‘vidličku, prosím si’ “fork, I would like” (1;10.27).

These structures were produced under single intonation contour as one unit formed by inflected verb + reflexive pronoun throughout the two-word stage.

7.4.4 The verbs ‘*byť*’ and ‘*to be*’

The irregular verbs *byť* and *to be* have the following forms in the verb paradigms in the two languages:

Singular		Plural	
Slovak	English	Slovak	English
1 st (ja) som	I am	(my) sme	we are
2 nd (ty) si	you are	(vy) ste	you are
3 rd (on/ona/ono) je	he/she/it is	(oni/ony) sú	they are

Inflected forms of the two equivalents emerged around the same time in unanalysed item-based frames which Ria learnt as wholes. In Slovak Ria was using the constructions *kde+verb* “where+verb” and *tu+verb* “here+verb” as one unit. Four verb forms were used while Ria was not yet inflecting the verb productively:

2sg [ɟɛsi:ʔ] ‘kde si’ (1;7.17)

3pl [ɟɛsʊ:] ‘kde sú’

[tʊsʊ:] ‘tu sú’ (1;8.9)

3sg [tʊjɛ] ‘tu je’ (1;8.9)

[ɟɛjɛ] ‘kde je’ (1;8.21)

1sg [ɟɛsɔmʔ] ‘kde som’ (1;9.4)

[tʊ jɛm!] ‘tu jem (= tu som)’ “here I am!” (1;10.10)

As shown in the last example, instead of using the correct irregular form ‘som’ Ria regularised the irregular 3sg ‘je’ and applied it to 1sg by attaching a regular verb suffix,

producing [jem]. Thus Ria briefly used the verb productively as a regular verb. The 3sg form [jɛ] ‘je’ ‘is’ was in fact the only productive form used in several utterances, indicating that the verb paradigm was not yet firmly established:

[mami je ʃafɪnka] ‘mami je šašinka’ ‘mummy is silly billy’ (1;11.2)

[to je jɪbɪtʃa] ‘tu je rybička’ ‘here is the fish’ (1;11.3)

[tɔtɔ je ʒɪjafa] ‘toto je žirafa’ ‘this is giraffe’ (1;11.6)

[tɔtɔ je vɪxajɛnɛ] ‘toto je vychladené.’ ‘this has cooled down’ (1;11.7)

[tam je pɪgɛt] ‘tam je Piglet’ ‘there is Piglet’ (1;11.18).

Likewise, in English the first forms of the verb paradigm appeared in item-based frames, however, only in the 3sg:

[deə:ʃi:s] ‘there she is’ (1;7.14)

[de:əɪs] ‘there is’ (1;8.21)

[dɪsɪs] ‘this is’ (1;9.12)

[detɪs] ‘that is’ (1;10.6).

One other form appeared in a formulaic unit, which Ria learnt as a whole while talking to the father on the phone:

[hajəʊ dedi. hajəʊ dedi. a: ju: hoʊm?] ‘hallo daddy. hallo daddy, **are you home?**’

Other English forms were not observed productively before 2;0.

7.4.5 English verb morphology

English verb morphology emerged with an apparent time lag of approximately a month after Slovak verb morphology. First English verbs were used in the stem form in descriptions of actions or in the function of imperatives:

[luk. babo. babo.] ‘look. baby. baby. (=baby is looking)’ (1;8.9)

[sɪt] ‘sit!’ (1;8.9).

The first English inflected form was the progressive *-ing*, which appeared at the beginning of 1;9, thus around the same time as Ria was using Slovak 1sg to refer to self and 3sg to refer to others. In English Ria also referred to self in holophrastic descriptions of actions or states:

[kamɪŋ] ‘coming’ (1;9.4)

[ki:nɪŋ] ‘cleaning’ (1;9.12)

[ha:ɪdɪŋ] ‘hiding’ (1;9.19)

[peɪŋ] ‘playing’ (1;9.20);

The progressive form also referred to others in multiple-word combinations:

[a:ɪs, jukɪŋ. jana.] ‘eyes, looking. (at) Riana.’ (1;9.12)

The second inflected form to emerge was the English 3sg suffix *-s* in isolated holophrases:

[kams] ‘comes’ (1;9.4)

[sɪts] ‘sits’ referring to a spider (1;10.6).

Although irregular past tense forms of some verbs also emerged during this stage, Ria used them unanalysed and only in specific contexts:

[gon] ‘gone’ (1;7.7)

[dan] ‘done’ (1;8.9)

[boʊk] ‘broke’ (1;11.23).

English phrasal verbs were also used during this stage as units within pivot schemas. Ria produced them as wholes consisting of the verb as a changing element, while the other element was constant. Such schemas expressed various structures, such as the transitive verb construction, as described in section 7.3.2.

In summary, from 1;8 onwards Ria used context relevant inflected forms which reflected the morphology of the two languages appropriately. She did not ignore the need for varied morphological markers in the Slovak language, nor did she attempt to use morphological markers with English productions where they were not required by English grammar. Moreover, words that were shared by the two languages, such as appellatives, were used with appropriate morphological markers in Slovak language contexts, as modelled in Ria’s input, and without markers in English. Relevant Slovak noun, adjective and pronoun declinations were evident across utterances and used productively. Likewise, in English plural and possessive forms were used when necessary.

Use of inflectional verb morphology was related to situational contexts. Ria used forms required for specific contexts first, and filled the verb paradigm as a later development. Thus the correct use of the verb form, subsuming the grammatical functions of the person, tense, mood and aspect was embedded in the situational context, and reflected verb forms modelled by the parents in the input. Ria gradually built up an understanding of what was

appropriate in an item based manner, and eventually grasped regular patterns and applied them across verb types. This finding is in line with previous research on early verb learning, suggesting that early syntactic marking used by young children is verb-specific and learnt item-by-item (Serratrice, 2001, p. 47; Tomasello, 2003, p. 119).

In verb morphology a lead-lag pattern was observed in the two languages. In the early two-word stage, Ria was using inflected verb forms in Slovak as soon as she was able to produce the whole word. In English, on the other hand, the bare forms were used for several months, and the 3sg marker appeared slightly later. There are several possible explanations for the lead-lag pattern.

One explanation could lie in the fact that while at the time morphology emerged (1;7) Ria's combined total vocabulary was more than 250, her vocabulary in each language differed, with Slovak being the stronger language at this stage. Moreover, Ria spent majority of wake-time in a Slovak context of the home. This explanation might imply developmental delay in verb morphology in English, Ria's less dominant language.

The lead-lag pattern could also be a reflection of the morphological differences between the languages, rather than developmental delay. Inflectional suffixes are more salient in Slovak than in English. Indeed, the pattern mirrors previous research on verb morphology development in bilingual children with English and another morphologically richer language (Serratrice, 2001, p. 69). Thus the finding in this thesis might imply a typical lead-lag developmental pattern in a language combination consisting of English and a Slavic language, a combination that has not been examined from this aspect so far (Serratrice, 2001, p. 43).

However, when the verb types were examined, it was found that Ria did not acquire the whole verb paradigm simultaneously (which would then be applied to all verb types). Rather, she was initially producing verb forms which appeared as most salient in her input, and the specific forms in each verb type reflected how the verbs were used in contexts. Thus the lead-lag pattern was only apparent as a surface structure.

Moreover, Döpke (2001, p. 84) compared bilingual children acquiring English and German, also a morphologically different language, with monolinguals acquiring the respective languages, and found a similar lead-lag pattern in all groups. Thus the pattern in development of finiteness in bilingual children paralleled the typical later realisation of finiteness in English monolinguals in comparison with German monolinguals. These findings indicate that morphologically richer languages show faster realisation of verb

finiteness. More studies on verb finiteness in Slovak-English BFLA, as well as monolingual language acquisition in the respective languages, are needed to confirm the pattern in this language combination.

Overall, grammatical development was taking place in a separate yet side-by-side fashion, providing evidence for grammatical differentiation in the early combinatorial stage.

8 Emerging Bilingualism

In this chapter Ria's developing bilingualism will be discussed. It will consider developments from previous chapters in light of initial bilingual awareness, language differentiation, pragmatic language choice and language mixing as interrelated building blocks of emerging bilingualism. Language mixing and language choice is considered in the one-word and two-word developmental stages, which have not been as well researched as later developmental stages (Nicoladis & Genesee, 1996, p. 441; Quay, 1995, p. 371). This chapter attempts to deepen the understanding of this phenomenon.

Language choice and code-switching (CS) are the results of language interaction. In adult bilinguals language choice, in other words a decision which language is appropriate when and with whom, is determined by different domains of language use, which are constructed by varied factors such as participants, place and topic (Hoffmann, 1991, p. 178). When bilinguals interact together they rely on both of their languages in the same conversation. This has been termed code-switching (CS), and is broadly defined as alternate use of a bilingual's two languages (Hoffmann, 1991, p. 110), although exact definitions of CS and terminology used tend to vary across studies. In adult bilingual speech CS is considered a natural aspect which becomes a permanent feature of a bilingual speech community (Hoffmann, 1991, p. 75). It can be observed in older children as well. Grosjean (1998, p. 137) further distinguishes between borrowing and switching. Switching does not have to be integrated morphologically or phonologically, it is simply a switch in the language and often occurs on the inter-sentential level. In contrast, borrowing is integrated and often occurs on intra-sentential level.

In study of young children all forms of language interaction in the speech of the developing bilinguals are termed mixing, and as Hoffman (1991, p. 75) explains, it seems to be of a more transitory nature. However, bilingual children also need to develop a pragmatic ability to alternate languages when it is appropriate to do so – the ability of language choice. It is difficult to distinguish between the terms language choice and mixing in the research literature, since no clear definitions are provided. It appears that the same phenomenon is being studied from different perspectives. The term mixing focuses on structural aspects of alternate use of a developing bilingual's two languages, while language choice focuses on pragmatic aspects. Language differentiation, on the other hand, describes the process in which a child develops an awareness of two languages in her input and in her productions, and as such it subsumes both mixing and language choice.

In the early literature developing bilinguals were criticized for mixing (Grosjean, 2008, p. 12). It was suggested that mixing was a result of poor development in one or both languages, the development of fused linguistic system and lack of differentiation. While ultimately it may not be possible to attain equal mastery of both languages, mixing can actually show that a child is using pragmatic knowledge and has an awareness of two input languages. Even when words are mixed from the other language, the concepts expressed by the mixed word are correct, and they are used in pragmatically appropriate situations. It is the linguistic form that is in the 'wrong' language. This can be regarded as evidence that bilingual children who mix are proficient users of their two languages, and they are substituting one language for another only on a temporary basis to maintain the continuity of interactions (Cruz-Ferreira, 2006, p. 69). This approach to mixing provides an alternative analysis, especially in small bilingual children. According to Cruz-Ferreira (2006, p. 28), bilingual children learn which words belong to which language through a process in which they attempt different language choices, until they eventually arrive at a pattern consistent with patterns used by experienced speakers in their environment, i.e. the target languages.

While language choice and language mixing are interrelated, in this thesis these two phenomena are discussed separately. Discussion of language mixing in section 8.1 refers to the combining of constituents from Ria's languages-in-acquisition in individual utterances, thus to structural properties of mixing at utterance level. Unit of analysis was the mixed utterance. The amount of mixing occurring in each language context, structural properties of mixing, and reasons for mixing are addressed. Ria's use of mixing is also considered in terms of monolingual and bilingual language processing and Ria's language mode on a continuum ranging from monolingual to bilingual modes (Grosjean, 1998, p. 136).

In this thesis borrowing refers to borrowing at a family level, when particular words were 'borrowed' from one of the languages and adapted by the whole family. For example the father borrowed the Slovak word 'bábo' and used it instead of the English equivalent 'baby' when interacting with Ria, often in plural and possessive forms 'babos'/'babo's'.

Language choice in section 8.2 refers to Ria's developing pragmatic ability to use contextually appropriate language in one-word and two-word utterances. Since language choice assumes a level of pragmatic ability, following Lanza (2004, p. 198), qualitative analysis at discourse level will be discussed, with unit of analysis being a conversational turn at talk.

8.1 Ria's language mixing

To fully assess Ria's mixing the addressee and language context was recorded for each utterance produced by Ria. Utterances were then categorized according to how words from the two languages were used and combined. Based on previous research five utterance categories were established (Deuchar & Quay, 2000, p. 70; Lanza, 2004, p. 123):

- Slovak unilingual
- English unilingual
- Indeterminate - utterances with word(s) that could belong to either language
- Mixed – lexical morpheme(s) from one language combined with bound morpheme from the other language, or lexical morphemes, each from a different language, combined into single utterance
- Bilingual – TEs combined into single utterance used by Ria when addressing both parents simultaneously, repairing language choice or clarifying a new word, these were pragmatic utterances which were not truly multiple-word combinations.

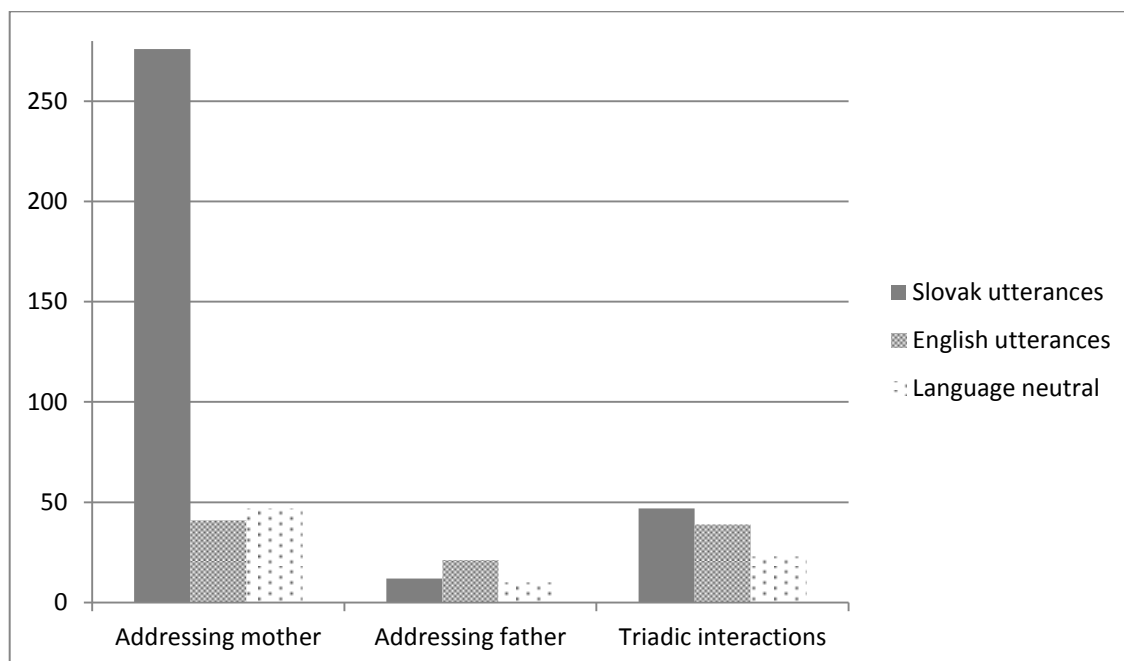
Moreover, the context of each utterance was coded. In bilingual contexts especially, utterances had to be carefully coded according to addressee as well as the type of context, since even in triadic interactions Ria often made her addressee explicit. The following categories were found:

- addressing mother in Slovak context
- addressing father in English context
- addressing mother in bilingual context
- addressing father in bilingual context
- addressing both simultaneously in bilingual contexts - triadic interactions.

Overall, mixing rates were low. During the one-word stage (1;4-1;6) analysis of mixing considered whether Ria differentiated between her parents' preferred languages in her language use. The unit of analysis was a holophrastic utterance consisting of a single word. In total 517 tokens of one-word utterances were recorded. Ria was Slovak dominant, as shown by the overall Slovak utterances used in comparison to English utterances.

However, this was due to uneven distribution of language contexts, as explained in section 4.3.1, rather than lack of differentiation. Ria still used more of the appropriate language with each parent, and used any language when addressing both parents simultaneously in triadic interactions, as shown in Figure 2.

Figure 2 Use of one-word utterances within contexts



In Figure 2 the distribution of utterances addressed to each parent per context was collapsed. However, even in individual address of parents in bilingual contexts Ria differentiated between each parent's preferred language appropriately. When addressing both parents simultaneously, Ria's language use was distributed relatively equally among Slovak and English utterances, thus showing sensitivity to the bilingual context.

Moreover, Ria mixed more in her more dominant language, Slovak, with her bilingual mother than she mixed with her monolingual father. Of the total 517 tokens recorded only 54 tokens were categorized as mixed utterances, since they represented inappropriate language choice within context. They consisted mostly of English items used in interactions with the mother in either Slovak or bilingual contexts, as illustrated in table Table 8.1. Only several tokens were uses of Slovak utterances in addressing the father, which occurred mostly in bilingual contexts with the mother present. One token was an address of a different English speaker with a Slovak word.

Table 8.1 Use of mixed one-word utterances in different language contexts (inappropriate language choice)

Language context	Addressee	
	English to mother	Slovak to father
Slovak	30	-
English	-	4
Bilingual	11	8
Totals	41	12

With the onset of combinatorial speech a unit of analysis became an utterance consisting of two-word or multiple-word combinations. Utterances recorded in the diary and video-recordings were categorized as above. Since combining utterances can potentially increase language mixing, approximate proportions of each type of utterance in Ria's productions were determined for each month, as shown in Table 8.2.

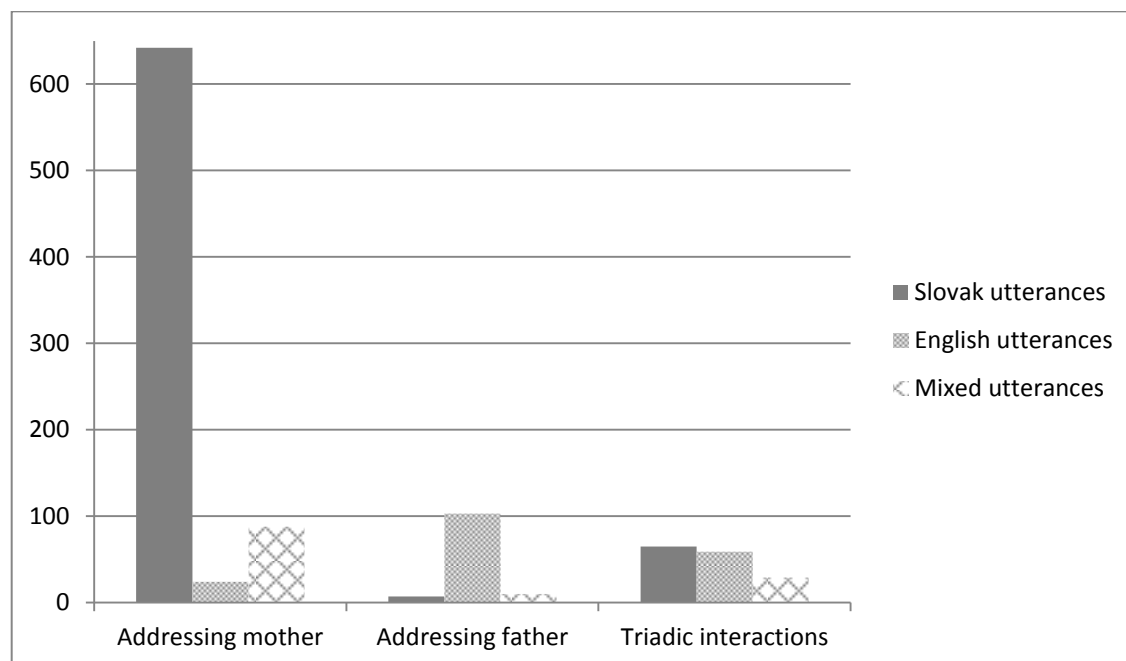
Table 8.2 Use of different types of combined utterances (in proportion to total combined utterances)

Age	Total utterances	Slovak unilingual	English unilingual	Mixed	Indeterminate	Bilingual
1;4	5	2	1	0	2	0
1;5	12	5	3	2	0	2
1;6	39	25	5	6	3	0
1;7	50	28	8	6	5	3
1;8	113	74	20	12	3	4
1;9	98	61	22	12	0	3
1;10	288	215	40	28	4	1
1;11	444	304	87	45	2	6
Totals	1049 100%	714 68.06%	186 17.73%	111 10.58%	19 1.81%	19 1.81%

Number of mixed utterances indeed increased with the total number of utterances, however, mixed two-/multiple-word utterances still accounted only for a small proportion of total production in each month. List of mixed utterances is reported in APPENDIX H and will be discussed below.

Ria's dominance in Slovak as function of the primary sociolinguistic group was evident in combinatorial speech as well. Nevertheless, she used predominantly unilingual Slovak and unilingual English utterances when addressing her parents respectively. Thus she used more of the appropriate language with each parent, as illustrated in Figure 3. In triadic interactions, Ria used either language, showing sensitivity to the bilingual context.

Figure 3 Use of two/multiple-word utterances within contexts



Mixing occurred mainly when addressing the bilingual mother, followed by bilingual contexts in triadic interactions. As shown in Table 8.3, Ria rarely addressed the monolingual father with mixed utterances. The fact that mixing pattern was different with each parent indicates Ria differentiated parental language proficiency (Quay, 2008, p. 20).

Table 8.3 Use of mixed combined utterances in different language contexts

Language context	Addressee			
	Mother	Father	Both	Self
Slovak	51	-	-	
English	-	3	-	1
Bilingual	37	7	29	
Totals	88	10	29	1

Occasionally Ria addressed her parents with a unilingual utterance in a language which the parent did not normally use to address her, as shown in Table 8.4.

Table 8.4 Use of unilingual combined utterances in inappropriate contexts

Language context	Addressee	
	Unilingual Slovak to father	Unilingual English to mother
Slovak	-	21
English	6	-
Bilingual	1	3
Totals	7	24

These utterances were considered mixes, since they were inappropriate language choices. However, such uses were not frequent.

In childhood bilingualism literature several reasons for mixing were identified (Goodz, 1989; Hoffmann, 1991, p. 107; Lanza, 2004; Serratrice, 2005):

- mixing in parental input
- language dominance
- lexical gap in the vocabulary of one of the languages, since BFLA children acquire items in one language at a time
- temporary unavailability of a word (reasons for such unavailability are often not discussed)
- complexity of an item in one of the languages
- language preference.

If mixing in input could provide a possible interpretation for Ria's mixing in her productions, parental mixing pattern would be reflected in her speech. She would be expected to use mainly unilingual utterances, while mixes would be limited to bilingual and occasionally Slovak contexts, but avoided in English contexts. Indeed, the parental mixing pattern discussed in 4.5.3 was reflected in the data. Ria mixed more productively into Slovak with the bilingual mother, while mixing with the monolingual father was limited. However, some differences from the pattern were evident. The parents rarely mixed when addressing Ria directly, and Ria mixed in both languages more than she observed in her input. Moreover, Ria was exposed to overheard bilingual code-mixing in situations when the mother was interacting with her sister's family, who were also bilingual in Slovak and English. Thus it appears Ria learnt the 'rules of mixing' from overheard speech rather than direct parental input. This suggests overheard speech plays an important role in acquisition of pragmatic aspects and can affect production. Thus mixing in parental input did not provide an exhaustive explanation.

Language dominance was another determinant of mixing found in some bilingual studies, where children mixed more in their less proficient language (Genesee, et al., 1995; Nicoladis & Secco, 2000). However, Lanza (2004, p. 136) examined directionality of mixing in different contexts and found that the bilingual children used the grammatical framework of their more dominant language with lexical morphemes from the less dominant language, but not vice versa. Similarly, Quay (2008, p. 22) found that the trilingual child in her study was not mixing more in her least proficient language.

In this thesis mixing also occurred mostly in the dominant language. As shown in 4.3.1 Ria was dominant in Slovak because her relative input was greater in Slovak, and the mother engaged her in child-centred activities during which she followed Ria's lead and fed into her interests. Slovak was the language of the closest emotional bond with the mother, who was the main caregiver. Analysis of utterance types and approximate proportions of each type also indicated dominance in Slovak. Contextual analysis of mixed utterances showed that mixing occurred primarily as English lexical and grammatical morphemes in Slovak grammatical framework, thus in Ria's dominant language. Weaker proficiency therefore cannot explain why most mixing occurred in monolingual Slovak and bilingual contexts.

In bilingual contexts *bilingual language mode* offers an interpretation, since Ria had both languages activated and used the one she recalled faster in a particular instance. In monolingual contexts mixing with the mother can be interpreted by Ria's awareness of the mother's bilingualism, which meant that Ria had the other language, English, slightly less active, but never deactivated completely. Mixing with the father in English or bilingual contexts was rare, suggesting Ria was aware of the father's monolingualism. Moreover, since she used mostly lexical mixing with the father, and was more dominant in Slovak, mixing can be explained by pragmatic reasons such as lexical gaps and temporary unavailability of items, or psycholinguistic reasons such as preference for specific words and learning context.

Lexical gap as a determinant of mixing was most prominent in the early one-word stage. If Ria did not have both equivalents in a TE pair available in expressive vocabulary, since learning of a couplet was tied to a specific context, she chose to use the available context appropriate item from the other language, mixed into the base language, in order to avoid communication breakdown, as shown in the following excerpt:

*RIA [pɪxa:. tɔtɔ.]
 %glo pichá. toto.
 %eng prickles. this.
 *MAM Čo pichá?
 %eng What prickles?
 *RIA [gas]
 %glo grass
 (1;8)

Mixing due to lexical gaps did not cause a breakdown in communication for the bilingual mother. It was a useful strategy to maintain the communication flow also with the monolingual father, since on many occasions the meaning of the borrowed word could be determined from the situational context:

*RIA [pʉʃi:]
 %glo prší
 %eng it's raining
 *DAD It's raining, isn't it?
 *RIA [iznit?]
 %glo Isn't it?
 (1;9.19)

In the two-word stage lexical gaps in English occurred mainly because inflected present and past tense forms of a modal verb were available in Slovak only, for example two inflections of the verb *mat* 'to have':

[ma:] 'má' 'has' (1;7.3)
 [ma:m] 'mám' '(I) have' (1;8.24).

However, since Ria tended to acquire translation equivalents relatively quickly, other reasons were more relevant with increasing vocabulary. Among these temporary unavailability of a previously used item was the most likely reason to mix. The most plausible explanation for a temporary unavailability is that Ria was in a bilingual mode with both languages active, and accessed the lexical item faster in the other language. Failure to retrieve a word resulting in mixing was found in other studies as well (Lanvers, 2001, p. 449; Lanza, 2004, p. 165; Serratrice, 2005, p. 169).

Another major reason for mixing evident in the data was Ria's preference for specific words. In fact more detailed analysis of mixed utterances found that many mixed items were tokens of the same preferred words used in different types of utterances. Occasional short-term preference for a newly acquired item was found, but Ria also formed personal preference for certain words which she maintained long-term, as will be discussed in 8.1.2. Many mixed items were family words borrowed by both parents, thus reinforced as belonging to both languages. Lastly, many mixed two-word utterances were English lexical items negated with the Slovak negator. This usage was a developmental

phenomenon, as discussed in 7.3.3, rather than pure mixing. Complexity of items was not found to be a determinant of Ria's mixing.

Thus lexical mixing was explained by sociolinguistic reasons such as parental and overheard input, lexical gaps or temporary unavailability, as well as by psycholinguistic reasons such as bilingual mode, word preference and word learning contexts.

8.1.1 Intra-sentential mixing

Lanza (2004, p. 215) notes that in childhood bilingualism literature different types of mixing over time are not examined, and suggests an analytical distinction between lexical and grammatical mixing. The children in the study brought lexical morphemes from one language into the base language, and combined them with grammatical morphemes from the base language. Thus lexical mixing could also contain grammatical mixing. However, Lanza (2004, p. 216) also found purely *grammatical mixing*, when grammatical morphemes from one language were combined with otherwise base language lexical items. Lanza (2004, p. 126) also points out the difficulties in categorizing word types as lexical and grammatical when considering child speech from a sociolinguistic perspective, especially in cases of bilingual development where two morphologically different languages are acquired. Instead, Lanza distinguishes between *open class* (free morphemes) and *closed class* (bound morphemes and function words) items. This distinction was used also in this thesis.

In Ria's data lexical mixing with or without grammatical mixing was found as well. From structural point of view, during the one-word stage and the first three months of the two-word stage (until 1;9), before grammatical morphology was established, Ria mixed by bringing lexical or grammatical free morphemes from one language into an otherwise base language utterance without integrating them morphologically. Overall, this type of mixing prevailed until 2;0.

In the one-word stage, holophrastic utterances were considered mixed if they were in the inappropriate language. Analysis in section 8.1 showed that Ria's mixing rate was relatively low. More detailed analysis of mixed utterances found 42 tokens of 30 word types, of which 22 were English words used with the mother and 8 Slovak words used with the father. When the types of words are considered, Ria mixed both open class and closed class morphemes. However, overall more open class than closed class items were mixed, as shown in Table 8.5. Grammatical mixing in the form of free closed class morphemes occurred mainly within Slovak contexts with items drawn from English. None

of the mixed words contained bound grammatical morphemes, thus purely *grammatical mixing* was not found.

Table 8.5 Mixed word types across languages (one-word stage)

	Slovak	English
Open class items	7	19
Closed class items	3	13
Totals	10	32

A list of mixed words from the one-word stage is reported in APPENDIX G. When individual items were considered, Ria appeared to have several preferred words which she used more often, although she had TEs available in comprehension and production. Since availability of TEs was verified from the cumulative vocabulary list, many mixed items could be categorized as isolated instances of momentary lapse or retrieval difficulty while in bilingual language mode. Indeed, four open class items were couplets from TE pairs *teeth-zuby* and *key-kl'úč*, which reinforces interpretation of lexical mixing as result of difficulty of item retrieval. Some items were mixed as novel words for which Ria did not yet have the TEs.

During the 2-word stage, after some morphology in both languages was established (from 1;9), mixing that had the form of adult intra-sentential code-mixing also emerged. This form of grammatical mixing was infrequent, but it was observed in both holophrases as well as mixed utterances. In total 111 tokens of mixed utterances were found in the sample of two/multiple-word utterances. When types of mixing were considered, mostly lexical mixing occurred. Only 27 tokens of 18 word types contained grammatical mixes consisting of lexical morphemes integrated morphologically and phonologically into an otherwise base language utterance. None of these items contained purely *grammatical mixing*. Some lexical items were indeed found as mixes in multiple instances with different inflectional endings, as will be shown below. Morphologically integrated family words (used as borrowings) accounted for 5 of the 27 tokens. Blends were also found and categorized as specific type of grammatical as well as inflectional mixing, as will be discussed in section 8.1.2.

Structural analysis showed the earliest instances of grammatical mixing could not be classified as such on Ria's part, since they were nouns which the parents regularly

borrowed from the other language. In Slovak the following mixed forms were learnt directly from input:

[tʃɪpsɪ] ‘čips-i’ “chips” (1;8.21)

[tʃɪpa] ‘čips-a’ “chip” (1;9.12)

[sosɪtʃe] ‘sausage-e’ “sausages” (1;9.12).

The English borrowing ‘čipsy’ is widely used in the Slovak non-standard language¹⁷, however, it refers to dried chips. The singular form is not used in the Slovak language. The mother often used the nonstandard form to refer to hot chips, thus using a lexical transference when interacting with Ria. The mother also occasionally mixed the English word ‘sausage’¹⁸ into Slovak base language and integrated it morphologically.

Likewise, a Slovak word was used with English plural suffix in a case where the father adopted a Slovak word and used it regularly:

[babos] ‘bábos’ “babies” (1;8.24).

Therefore, while in the above examples borrowing into the base languages occurred, due to the modelling of these words in the input, Ria perceived them as belonging to either language and used them accordingly.

In order to avoid communication breakdown when a word was not readily available Ria used intra-sentential mixing in a productive way that was not observed in the input. Moreover, there was a difference in the type of mixing used in different language contexts, as discussed in the following sections.

8.1.1.1 *Mixing with the mother*

From 1;9 till 2;0 Ria produced several mixed utterances consisting of English lexical morphemes integrated phonologically and morphologically with Slovak bound morphemes into an otherwise Slovak base utterance. This form of mixing occurred with English adjectives, nouns and verbs used in the Slovak context with a Slovak suffix, which marked the relevant grammatical relationships and gender agreement.

English adjectives are usually not integrated morphologically when mixed by adult bilingual speakers, and such mixed structures were not used by any bilinguals in Ria’s input (i.e. mother and her family). The bilingual mother judged them as non-conventional

¹⁷ The standard Slovak word is ‘lupienky’.

¹⁸ The Slovak equivalent ‘klobása’ is conceptually slightly different to the English word ‘sausage’, which refers to various kinds of smallgoods, while in Slovak different types are referred to with specific labels.

types of language-mixing. Therefore, without a model for mixing adjectives into Slovak, these occurrences cannot be explained by mixed input, but were used by Ria productively. Ria formed adjectival mixes by combining English lexical morphemes with Slovak bound grammatical morphemes (Instrumental, Accusative and Nominative suffixes), maintaining Slovak grammatical gender agreement with the modified referent:

- [gi:nou] ‘green-ou’ “with green (marker)” Instrumental feminine (1;9.12)
- [gionu] ‘green-u’ “a green (marker)” Accusative feminine (1;9.12)
- [gma] ‘green-a (farba)’ “green (colour)” Nominative feminine (1;9.19)
- [grunu] ‘green-u (bodku)’ “green (dot)” Accusative feminine (1;9.19)
- [giane:] ‘green-é (jablko)’ “green (apple)” Nominative neuter (1;9.19)
- [giani:. zɛjɛni:] ‘green-aný. zelený’ “green. green” Nominative masculine (1;9.26)
- [biga] ‘big-a (miešачka)’ “big (cement mixer)” Nominative feminine (1;9.19)
- [adujuɲu] ‘other one-u’ “other one” Accusative feminine (1;11.4)
- [mami:. nadujana!] ‘mami, another one-a!’ “mummy, another one!” Nominative feminine (1;11.5)

These instances of mixing cannot be explained through vocabulary gaps either, since Ria produced all TEs previously, for example the Slovak word [ʒɛjɛ] ‘zelená’ “green” (1;6.10), was used as the first TE (produced as [zɛjɛna:] by 1;9.1), while the English equivalent [gi:] appeared at 1;6.25 (produced as [gin] by 1;7.28). Thus temporary preference or unavailability for the English items is a plausible explanation.

Moreover, Štefánik (2000, p. 79) also found that after the age 2;5 the BFLA child in his study, Natália, productively integrated English adjectives with Slovak grammatical morphemes. This finding suggests such mixed structures could be developmental, and needs to be confirmed in further studies with adult and childhood Slovak-English bilinguals.

Conventional types of mixing found in Slovak-English bilingual speech also appeared in Ria’s productions. These were English nouns integrated through Slovak nominal case endings, which reflected the grammatical gender of the Slovak equivalent noun:

- [zabiʃana] ‘(do) rubbish-a’ “into the rubbish” Genitive suffix drawn from masculine noun ‘do koša’ (1;10.7)

[nɛjɛ, tubafɑ] ‘nie je toothbrush-*a*’ ‘isn’t toothbrush’ Nominative suffix drawn from feminine noun ‘kefka’ (1;10.7).

Mixing of nominals was found typical in the speech of adult bilinguals, however, according to Ripka (1992a, p. 348) English nouns ending in a consonant were considered masculine. In contrast, Ria maintained the grammatical gender of the Slovak equivalent by affixing a feminine *-a* suffix. This usage was similar to the mixed productions of Natália in Štefánik (2000, p. 80), who found that the gender of English borrowed nouns and adjectives was determined mainly by the Slovak grammatical gender of the replaced constituents. Štefánik (2000, p. 80) interprets this as the child’s general awareness of the grammatical category of gender. Maintenance of the grammatical gender by both children is also an indication that mixing occurred due to momentary lapse of the Slovak TEs, since both Ria and Natália were aware of the grammatical gender of the missing Slovak constituents.

Unusual form of mixing occurred also with the following English plural nouns:

[bɪkɪsɛ] ‘bikkies-*e*’ ‘bikkies’ (1;9.12),

[ʃɒbsɪ] ‘sobs-*i*’ ‘soursoobs’ (1;10.27)

[mamɪ semsɪ] ‘mami stamps-*i*’ ‘mummy, stamps’ (1;11.1)

[mɛ: sɔksɪ] ‘iné socks-*i*’ ‘different socks’ (1;11.1)

[fɪʃɛ] [fɪʃɪ] ‘fish-*e*’ ‘fish-*i*’ ‘fish’ (1;11.3)

[cɛtɔ pa:ntsɪ] ‘tieto plants-*i*’ ‘these plants’ (1;11.18).

To integrate these nouns into the base Slovak language Ria applied a redundant Slovak plural suffix to an already pluralized English noun. Although this form of mixing did not occur regularly in the input, according to the diary records the mother occasionally used the English words ‘bikkies’ and ‘biscuits’ and even a mixed plural form ‘biscuit-*i*’ (with redundant Slovak plural suffix). Thus Ria was possibly trying to reproduce this form, overextending it to other plural nouns. Moreover, Ripka (1992b, p. 212) found adult speakers of second generation Slovak migrants in USA also used English plural noun forms as singular and attached the redundant Slovak plural suffix *-i*.

The Slovak equivalents of the above nouns were available in Ria’s productive vocabulary, thus the most likely explanation for mixing was temporary unavailability, such as difficulty of retrieval. However, the fact that Ria integrated these words morphologically

into the Slovak base language in a Slovak context suggests that she was aware of borrowing items from English, and of the need to assimilate them into the base language. Ripka (1992a, p. 349) further found English verbs in adult mixed speech were inflected according to the Slovak verb type *kupovať* (to buy), thus formed with the inflectional suffix *-ovať*. Ria also used this suffix, however only in the present tense:

[dɪgɔjɛm] ‘dig-ujem’ “I’m digging” (1;9.19).

More frequent in Ria’s productions were verbs with the inflectional suffix *-núť*, which appeared in the past forms *-ol/-la/-lo*, thus maintaining gender agreement with the grammatical gender of the agent:

[pi:pɔ] ‘beep-lo’ “(car) beeped” neuter (1;10.6)

[fɪnɪʃɔv. dædɪ.] ‘finish-ol. daddy’ “finished. daddy” masculine (1;10.8)

[fɪnɪʃa?] ‘finish-la?’ “finished?” feminine (1;11.1)

[dʒampɔv] ‘jump-ol’ “jumped” masculine (1;11.7).

Štefánik (2000, p. 75) also found that Natália integrated English verbs with inflectional suffixes of several Slovak verb types and did not limit them to *kupovať*.

Thus Ria’s mixing and morphological integration of English lexical morphemes into Slovak was comparable with other bilingual speakers. While nouns and verbs were brought into Slovak language in mixed speech of both children and adult bilinguals (Ripka, 1992a, p. 348), mixing of adjectives was found in other children (Štefánik, 2000, p. 79). Moreover, the mixing phenomena found in Ria’s speech up to the age 2;0 were comparable with Natália’s mixing after 2;5. Some of the differences between adult and childhood mixing could be explained by the fact that Ripka (1992a, 1992b) examined adult speakers of Slovak dialects from a specific migrant speech community in USA, while Ria and Natália provide data from different sociolinguistic backgrounds.

What was further significant about Ria’s mixing was the fact that the particular mixed lexical items were not observed as mixes in her input, thus they were Ria’s productive uses of mixing. Indeed, Serratrice (2005, p. 162) argues young bilinguals use their languages creatively, including mixing, and do not simply imitate input.

8.1.1.2 Mixing with the father

Table 8.3 shows that Ria addressed only a very small number of mixed utterances to the father. Detailed analysis of the utterances revealed that Slovak lexical items in their

context appropriate morphological shape (with Slovak grammatical bound morphemes) were brought into an English utterance, thus were not integrated morphologically into English, as illustrated in the following examples:

[jɔsasa dædi] ‘*lososa* daddy’ “(I’d like) salmon daddy” (1;11.6)

[mo: ɔjɛʃɔk dædi?] ‘more *oriešok* daddy?’ “(would you like) more nut(s) daddy?” (1;11.28).

In these examples Ria used Slovak nouns in the Accusative singular as would be appropriate in the situation for Slovak, but no grammatical suffix was required in English. This mixing pattern into English without morphological integration was prevalent. A rare example of grammatical mixing into English was found, which was categorized as a blend rather than a mix, since Ria combined two lexical items, each from different language into one word:

[dɪsanalav. dæduʃ] ‘*this+one-a+lav(ička)*. daddush¹⁹.’ “this one bench. daddy.” (1;10.5).

In this example Ria blended the English determiner fixed expression *this+one* with the Slovak noun, however, she also regressively integrated the determiner with Slovak grammatical gender morpheme *-a* in agreement with the Slovak noun. Such blending occurred only in this example.

8.1.1.3 Mixing in triadic interactions

Mixing occurred also when Ria was addressing both parents in triadic interactions. However, since in those instances both parents were addressed simultaneously, it is not possible to determine the target language of all utterances according to addressee. Nor is it possible to determine the base/guest language in two-word and all multiple-word utterances on structural grounds (Lanza, 2004, p. 172), as illustrated by this example:

[jubɪʃ dædi. jubɪʃ mami. jubɪʃ babos.] ‘*ľubiš* daddyho. *ľubiš* mami. *ľubiš* babo-s.’ “(you) love daddy. (you) love mummy. (you) love babies.” (1;8.24).

In this utterance the Slovak inflected verb suggests Slovak base language, yet the use of other language neutral items renders it indeterminate, including a borrowing that became a family word, often used with English grammatical morphemes.

In some multiple-word mixed utterances the likely target language could be deduced according to the higher number of words belonging to a language within the utterance.

¹⁹ Diminutive appellative form discussed in section 8.1.2

Both Slovak and English target utterances were found. Analysis of these showed a pattern of mixing where lexical morphemes from each language, shown in italics in the following examples, were combined within a single utterance:

English utterance:

[dædi # ma: ʌndə] ‘daddy # *má* under’ “daddy *has* (chin) under (the beard)” (1;10.6)

Slovak utterance:

[ma:toʊ ja ma:m] ‘(to)*mato* ja mám’ “(to)*mato* I have” (1;11.7).

In both base language utterances the mixed lexical items were found in their appropriate morphological shapes. Thus the mixing pattern in triadic interactions was the same as that found in English contexts with the father - without morphological integration.

In summary, the mixing patterns with both parents were appropriate pragmatic choices. Ria integrated context appropriate English lexical items into the grammatical framework of base Slovak utterances. Mixing into English was lexical, since Ria carried over Slovak lexical items in their appropriate morphological shapes (with respective Slovak grammatical morphemes) and without morphological integration into the base English utterance. The same form of lexical mixing was found in triadic contexts.

Thus overall, from 1;9 Ria’s mixing reflected language specific behaviour appropriate for the language context. The unidirectional form of intra-sentential mixing mirrored Ria’s input. Mixing of English words into Slovak was presented mostly through intra-sentential CS in overheard speech. On the other hand, English was modelled to Ria in monolingual contexts only. Thus when she encountered a lexical gap or temporary unavailability of an English item, she resolved it pragmatically by relying on the Slovak equivalent in its appropriate morphological shape.

Mixing could not be explained by dominance, because Ria mixed more into her dominant language, Slovak. Lanza (2004, p. 136) also found the bilingual children in her study showed unidirectional mixing in their dominant language, since mixed utterances consisted of English lexical morphemes with Norwegian grammatical morphemes but not vice versa. A question arises whether the directionality of mixing was only apparent due to the contrast in the morphological structures of the two languages. When a Slovak lexical item was mixed into English base utterance, one would expect English grammatical morphemes only if they would be appropriate in the particular instance. Since morphology is less salient in English, mostly bare stem forms would occur. Instead, Ria carried over the items

in their complete Slovak morphological shape. Thus mixing did not merely imitate input, but it was used creatively.

8.1.2 Bilingual blends

During the two-word stage Ria used morphology creatively. She was inventing new word forms that were frequently emotionally charged. The most productive were Slovak diminutive suffixes, which were modelled on the mother's frequent use of diminutives.

Ria used standard diminutive forms of the masculine and feminine appellatives in the Slovak language, which were also modelled by the mother:

[dædɪnkɔ] 'daddy-nko' "daddy"

[mamɪtʃa] 'mamička' "mummy"

[janka] 'Rianka' (1;9.26).

However, the mother also applied a playful suffix *-uš* to Ria's name [ɾianɔʃ] 'Rianuš', and thus invented a non-standard diminutive. Occasionally Ria adopted this suffix with appellatives for the parents:

[mamɔʃ] 'mamuš'

[dæduʃ] 'daddush' (1;9.20).

Ria often wished to express affection with inanimate objects, which is regular usage in Slovak. However, if the word she used was English, instead of relying on the English diminutive suffix, she created blends. Hoffmann (1991, p. 59) defines blends as forms made up of two languages, with one phonetic shape used in either language and often dissimilar to the adult forms. Ria blended English nouns with several variants of the Slovak diminutive feminine suffix *-ina* in the following declinations:

Singular		Plural
Nominative	<i>-ina/-uňa</i>	<i>-ini</i>
Accusative	<i>-inu/-unu/-oňu</i>	

Most blends were English nouns that have a Slovak TE in the feminine grammatical category:

[paɪkɪnɔ] 'pikel-inu' "pikelet" (1;9.19) – enjoying pikelets, requesting more

[baʃɪna] 'brush-ina' "brush" (1;9.20) pretending a small cleaning brush was a small hairbrush

- [hætɔnɔ] ‘hat-unu’ “hat” (1;9.26) – requesting own hat
- [bukɪnɔ] ‘book-inu’ “book” (1;10.6) – requesting to read a book
- [gasɪnɔ] ‘grass-inu’ “grass” (1;10.6) – requesting to go on the grass in the garden
- [kimɔnɔ] ‘cream-unu’ “sour cream” (1;10.7) – requesting favourite food
- [sokɪnɪ] ‘sock-ini’ “socks” (1;10.8) – small socks
- [beɪʃɔnɔ] ‘berry-unu’ “berry” (1;10.18) – favourite food
- [boʊɔɲa] ‘ball-ňa’ “ball” (1;11.7) – small ball

Exceptions were the following English nouns, one with a masculine Slovak TE:

- [peɪcɪnɔ] ‘plate-unu’ “plate” (1;11.6) – small plate,

and two with neuter Slovak TEs:

- [pokɪnɔ] ‘pock-inu’ “pocket” (1;10.17) – small pocket
- [sɪdɔɲɔ] ‘seed-uňu’ “seed” (1;9.20) requesting more of favourite seeds
- [si:conɔ] ‘seed-oňu’ “seed” (1;11.22) – requesting favourite seeds.

Similar usage of varied Slovak diminutive suffixes with English nouns was found in Natália’s speech, amongst which suffix *-ina* occurred in one example: ‘camel-ina’ “little camel” (Štefánik, 2000, p. 78). Ria limited her use to one suffix and its variants, except for two other invented suffixes, one similar to the Slovak forms:

- [babɔɲɪ] ‘bub-*uni*’ “bubbie” - Ria’s doll (1;9.19),
- [vedɪʃɔ] ‘ready-*čo*’ “ready-set-go line” invented while racing in the garden (1;10.6).

These invented forms, however, did not appear with any other words.

Some blends, such as [bukɪna] ‘book-ina’ “book”, were used productively, and several forms with varied inflectional endings were found:

- | | |
|---------------------|-------------------------------------|
| Nominative singular | [bukɪna] ‘book-ina’ “book” |
| Accusative | [bukɪnɔ] ‘book-inu’ “a book” |
| Locative | [bukɪnɛ] ‘book-ine’ “(in the) book” |
| Nominative plural | [bukɪnɪ] ‘book-ini’ “books”. |

Thus Ria’s blends were English lexical morphemes with Slovak diminutive suffixes. They were words that carried an emotional charge. It appeared that when Ria wished to refer to

familiar or favourite objects with an emotional charge, but preferred the English equivalent for a concept, or was unable to recall the Slovak equivalent due to momentary lapse, she used the English equivalent. However, since in the English language diminutive can be expressed with limited suffixes, Ria fell back onto the Slovak diminutives instead. This was the case especially with objects which the mother normally referred to with a diminutive in the Slovak language. Since this type of speech was usually related to the mother's CDS, it was found mainly in Ria's utterances used in interactions with the mother.

Some blends, such as [babuŋi] 'bub-uni' "bubbie" and [bukina] 'book-ina' "book", were reproduced and adopted by the parents as family words when addressing Ria, and kept alive for a longer period (Hoffmann, 1991, p. 61). Thus it was the parental usage, the fact that they adopted the words in their speech, which made these items a regular and accepted part of the family's repertoire.

8.2 The developing sense of appropriate language choice

A bilingual child needs to acquire pragmatic ability of appropriate language choice as part of her linguistic development. She needs to learn which language is appropriate in which situation, with which interlocutor, and how the choices are governed. Although some psycholinguistic awareness of language differentiation is present from earliest stages (Genesee, 2007, p. 320), it takes time to develop the functional language choice ability further. Findings of several studies indicate language choice occurs in children younger than 2 years (Deuchar & Quay, 2000; Genesee, et al., 1995; Nicoladis & Genesee, 1996; Nicoladis & Secco, 2000). Some studies suggest the ability to use languages differentially can be observed as early as the one-word and two-word stages of development (Genesee, 2006, p. 62; Paradis, Genesee, & Crago, 2011, p. 72).

Deuchar and Quay (2000, p. 108) examined the process of developing language choice before 2 years, and found that although the bilingual child in their study was not always able to make an appropriate choice, she was developing a sense of what an appropriate choice was. Statistically, it was significant that the child was more likely to use an appropriate source language of a word in a specific context. Moreover, she was more likely to choose appropriately when she had an option to make a choice between two translation equivalents in her lexicon. The authors conclude language choice can be observed only when the child has sufficient lexicon of 100 or more words in her expressive

vocabulary (Deuchar & Quay, 2000, pp. 98-100), and it needs to be followed by sufficient language choice practice, inclusive of errors or inappropriate choices.

In the literature relatively little analysis was undertaken on qualitative aspects of BFLA children's language choice. According to De Houwer (2009a, p. 238) BFLA children can adjust their language choice to their interlocutor between the age of one and two, thus the language of address from birth plays an important role in developing this pragmatic ability. Determinants of language choice in children identified in most studies were (Hoffmann, 1991, pp. 89-93):

- person and location
- lexical gaps/availability
- function or purpose of interaction
- preferred language
- topic (at a later age).

Hoffmann (1991, p. 93) points out that the above determinants are interrelated to varying degrees, and in young children are affected by social and emotional factors.

The gradual process of Ria's *developing sense of appropriate language choice* will be described in line with Deuchar & Quay's (2000, p. 108) findings. Ria's language choice was analysed within specific language contexts. Language context is defined by the language used by the speakers in the situation. It is the base language into which words or phrases from the other language can be brought. The language of the context affects the speakers' ability to activate one or both of their languages, bringing them to a particular language mode on the continuum.

Ria's language choice was observed as soon as she started producing adult words.

Reproduced utterances were direct repetitions of the words heard in input, and as such did not show pragmatic language choice. However, they had the function of reinforcing each parents' preferred language. If Ria had reproduced words in the 'wrong' language, it could mean she did not show sensitivity to the interlocutor's preferred language, or that she used the only language available for a particular referent, regardless of the language of address. This form of language choice was not observed in the data. Thus only spontaneous utterances and responses to address were analysed for language choice.

During the one-word stage (1;3 - 1;7), when lexical gaps occurred Ria preferred to maintain continuity of interaction and used the equivalent which was available. This usage reflects previous research which suggests young BFLA children in the one-word stage go

through a natural phase of mixing which is caused by lexical gaps, as they rely on their other language to supply the missing items (De Houwer, 2009a, p. 240).

If Ria had the choice between two TEs, she used the equivalent that was most readily available in her expressive vocabulary. This does not mean she was not differentiating pragmatically between the two languages, instead, the data point to greater importance of social and emotional factors, since the choice between the TEs appeared more specifically related to contexts of interaction. Qualitative analysis in the early one-word stage found the following factors influencing language choice:

- the language context within which a word was first learnt
- Ria's word preferences
- activity (often suggested to emerge only later in the development).

Detailed analysis of individual words in contexts indicated that social and emotional factors determined which equivalent was available and preferred by Ria. The language for each word was determined by the context with the most salient uses of the word in input. The preferred equivalent was in the language of the parent who introduced the concept, engaged in the interaction through which the word was acquired, and used it most often subsequently. Thus some words in Ria's productive repertoire seemed to be language specific, even though she understood both TEs, and was able to reproduce them. Yet, she seemed to form a preference for production of particular words based on the learning context, as demonstrated in the following diary records:

- Ria chose the English equivalent [ti:] when referring to 'tea' whether she was interacting with the parents separately or simultaneously. She understood the Slovak TE 'čaj', and could produce it as [ca] when elicited by the mother, or in reproductions. However, her preference in spontaneous uses appeared to be the English member of the TE pair.

- Ria used the Slovak TE [ba:bo] for 'baby', even though she understood both equivalents, and produced the TE [bebi] spontaneously only later.

Analysis of learning contexts of the above examples showed that 'tea' was introduced by the father, since he and Ria had a morning routine of making the breakfast tea together. The later example 'bábo' was introduced by the mother and used mainly in a context of a playgroup, where other babies were present and the mother and Ria talked about them.

Thus in the early one-word stage, before Ria acquired sufficient number of words in her repertoire, the learning context was the major determinant of language choice. Learning

context subsumed the person introducing the concept with a novel word, as well as the language in which the person normally addressed her. Ria developed such preference for several words, and used them in the preferred language although she comprehended both TEs and responded to them appropriately. Language preference for a particular word could change overtime as Ria acquired the TE in expressive vocabulary. Reasons for such shift in preference are unclear. By 1;11 Ria mixed only several words for which she maintained preference in a particular language, although she had both members of the TE pair in comprehension, e.g. [ma:tou ja ma:m] '(to)mato ja mám' "(to)mato I have" (1;11.7), [beji:s] 'berries' and [ʊhɔdɔ] 'uhorku' "cucumber". Bilingual child's language preference at a relatively early stage has been shown in other studies (Lanvers, 2001, p. 449).

Thus there was a short adjustment period during the initial one-word stage, until the second half of 1;6. Towards the end of the second year learning context became less important²⁰ and Ria's pragmatic ability to make an appropriate language choice was becoming fine-tuned. The question remains how and when the shift took place from a *learning context* determined language choice to a pragmatic language choice.

According to Nicoladis (1998), presence of TEs during the one word stage is not a sufficient evidence for language differentiation. What matters is whether a child uses TEs in contextually sensitive ways, and her choices are pragmatically appropriate according to interlocutors.

In Ria's productions first evidence of two languages was the presence of TEs as early as the 50 word milestone (1;5). However, signs of emerging pragmatic language choice were not observed until 1;7, when Ria reached approximately 250 words in expressive vocabulary at the beginning of the combinatorial speech. Her pragmatic language choice ability was evident from several strategies:

- Alternating languages according to addressee
- Travelling along the language mode continuum
- Bilingual utterances used in bilingual contexts - supplying words in both languages in triadic interactions, occasionally pointing or looking at the parent to whom each word was addressed
- Self-repair of inappropriate language choice
- Pragmatic use of TEs for clarification, and achieving desired result
- Referring to one of the languages.

²⁰ Although preference for some words was maintained until the third year.

Ria was able to alternate between languages according to the addressee, thus she was able to adjust her language use to the interlocutor's linguistic preferences. Language choice became more explicit in the use of TEs with the appropriate person, as in the following examples:

Father	Mother
[je:] 'yeah'	[anə] 'ano'
[peɪ] 'play'	[hac] 'hrat' (1;8.21).

Ria was also able to differentiate close cognates. She used the correct intonation and pronunciation typical of the respective language, such as:

Slovak	English	Meaning
[dɛəɔɔjant]	[diɔɔɔjen]	deodorant
[lɛmɔc]	[li:mə]	lemur
[jɔɔɔt]	[jɔɔɔc]	yogurt
[sojɪ]	[sowɪ]	sorry ²¹ .

Similar observations of language specific word stress were made by Cruz-Ferreira (2006, p. 64).

Language specific intonation, as well as grammatical differentiation, were also found in close cognates, and shown through inflectional morpheme attached to the Slovak TE, as in the following utterances used within the same bilingual context but each addressed to different parent:

Utterance	Addressee	Grammatical morphemes
[dæɪɪ dɔkɔvi] 'daddy (k) doktorovi'	Mother	-ovi Dative suffix
[dæɪɪ dokə] 'daddy (to the) doctor'	Father	-∅.

By 1;10 Ria mostly made an appropriate language choice depending on her interlocutor. She used Slovak with the mother and English with the father, thus adjusting her language choice according to the interlocutor's preference. The diary records noted that although Ria used words from both languages with both parents, she used mostly Slovak words throughout the day when spending time with the mother alone, and considerably more English words when the father returned from work and the language context changed from

²¹ Although *sorry* is not a Slovak word it is widely used among speakers of Slovak with Slovak pronunciation [sɔɪɪ].

monolingual Slovak to bilingual. Likewise, during weekends when both languages were used in the same setting, but by different people, Ria used more English. Thus she was also travelling along the language mode continuum from a monolingual Slovak mode to a bilingual Slovak-English mode.

Differential use of TEs was evident in language alternation when it was necessary to alternate addressees from the father to the mother, yet activity remained constant. Ria was able to select the appropriate TE for each parent, as demonstrated with the following examples:

- The father and Ria were interacting in an English context while focusing their attention at a spider. Ria then turned to the mother and spontaneously uttered [paʊ:] 'pavúk' in Slovak, using the appropriate Slovak TE without modelling of the word by the mother immediately before (1;7.28);

- Ria was playing outdoors with the mother, interacting in Slovak. When the father joined them Ria acknowledged his presence with a spontaneous holophrase in English describing the action: [peɪŋ] 'playing', thus her language choice of English directly and appropriately engaged the father (1;9.20).

Ria also showed the ability to alternate between languages on demand according to her interlocutor. This was evident in situations when one of the parents requested her to address the other parent with a specific request, however, without an explicit prompt for a particular language. In response, Ria alternated the languages appropriately, as in these examples:

*MAM Chod' sa hrat' s daddym.

%eng Go and play with daddy.

%act RIA walks up to DAD

*RIA [peɪŋ]

%glo play?

*MAM Riana, povedz daddymu, čo doktor povedal a čo ti kontroloval!

%eng Riana, tell daddy what the doctor said and what he was checking!

*act RIA turns to DAD

*RIA [i:əs, maʊf]

%glo ears, mouth

(1;10)

As shown, Ria was capable of situational switching in order to address the father in the appropriate language – English, even though the mother’s request was in Slovak and did not specify the language to be used in addressing the father.

An important aspect of bilingual life in a mixed-lingual family is the use of languages when the whole family is interacting together. If the family’s approach is to continue to separate languages according to a person, these situations can become a complex series of language choices made by all interlocutors. This aspect has not received much interest in the research literature to date (Lanza, 2004, p. 292). Quay (2008, p. 29) addressed these issues in a trilingual environment where the language choices are even more complex.

The audio-video data in this thesis recorded in bilingual contexts provide insights into situations, where the use of both languages separated by person was appropriate, and deemed more important than the use of the monolingual’s language to be all-inclusive. Typically, such recordings comprised of triadic interactions during meal or play times. Simultaneous interactions with both parents demonstrated negotiations of the language of the context. The following language choices were observed in the data:

- Ria alternated her languages according to the parent she was addressing directly - the father in English and the mother in Slovak
- Ria addressed both parents simultaneously in either language
- the mother alternated languages according to interlocutor – the father in English and Ria in Slovak
- the mother addressed Ria and the father simultaneously in English
- the father used English.

The following example demonstrates Ria’s ability to adjust languages as appropriate according to the addressee’s preferred language in a triadic interaction:

*MAM Aj tebe mám pokrátat?

%eng Should I cut up yours, too?

*RIA [ɲɪɛ, dædɪ, pɔkajau]

%glo nie, daddy, pokrátajal

%eng no, daddy, has cut (it) up

%add MAM
 %com RIA used past tense instead of future tense
 *RIA [dædɪ!]
 %glo daddy!
 %add DAD
 *DAD Yeah, making mine (lunch).
 *RIA [ʃɑːnɪnɛ. janas]
 %glo (cut) Rianine. Riana's.
 %eng (cut) Riana's. Riana's.
 %add DAD
 %com self-repair of language choice (the possessive form)
 *RIA [xɔmbabɛ]
 %glo chrumkavé
 %eng crunchy
 %add MAM
 *MAM Chrumkavé by si si prosila?
 %eng Would you like a crunchy one?
 *RIA [mam, paɪ, tɔtɔ. xɔmbabɛ mam.]
 %glo mám, páli, toto. chrumkavé mám
 %eng I have, it's hot, this. I have crunchy one
 (1;11.7)

Ria was learning to interact with both bilingual and monolingual speakers in one context, and how to adjust her language choices according to the interlocutors' language preferences. Triadic interactions often produced utterances with cross-linguistic synonyms through which the parents were addressed individually, as in the following examples:

*RIA [pɪkəʃ]
 %glo pictures
 %add DAD

*RIA [ɔba:sɪ]

%glo obrázky

%eng pictures

%Add MAM

(1;10.8)

*RIA [mami jɛtadɔ]

%glo mami lietadlo

%eng mami aeroplane

%add MAM

%act RIA turns towards the father

*RIA [ejopem dædɪ]

%glo aeroplane daddy

%add DAD

(1;11.28).

Further evidence that TEs were used as synonyms were bilingual utterances containing the TE couplet, used when Ria chose to address both parents simultaneously in triadic interactions, as shown in the examples below:

- the father was cooking while the mother and Ria were watching, Ria made a comment about the actions in Slovak, [vajɪ:] ‘varí’ ‘is cooking’, and immediately after in English [kɔ] ‘cooking’. (1;7.8)

- [mɪ mɪ mɪ mesɔ. mesɔ] ‘meat meat meat mäso. mäso.’ ‘meat (repeated). meat (repeated).’ (1;8.21)

- [wotə. vɔdɔ] ‘water. vodu.’ ‘water. water’ (1;8.21)

In these situations, Ria was either simultaneously addressing both parents in their respective languages, or using the TEs to clarify her utterances to both, thus explicitly showing an awareness of the need to use both languages. Ria’s *bilingual utterances* combined the TEs into a single unit. Their usage reflected how the parents used the

languages in triadic interactions when talking about an object or introducing novel words - they provided the words simultaneously in their respective languages.

Lexical duplication of TEs in bilingual children during combinatorial speech was observed by other authors (Štefánik, 2000, p. 56; Wanner, 1996, p. 83). Wanner (1996, p. 83) examined the language contexts in which the English-Japanese bilingual child (aged 1;9-1;10) used such bilingual constructions and suggested several explanations:

- The child is addressing all interlocutors in one utterance
- The child is addressing a bilingual interlocutor
- The child is exploring the alternatives to determine the appropriate language choice
- The child alternates languages to address all interlocutors in the appropriate language.

Since this child used bilingual utterances only when addressing the bilingual father together with other interlocutors, the author concludes that he demonstrated awareness of the two languages, he used the TE items as synonyms, and associated the bilingual father with both languages.

Although Ria also used the TEs as synonyms, the bilingual utterances occurred only when she needed to address both parents in triadic interactions. This indicates Ria's bilingual awareness was well established by the two-word stage (1;8). Moreover, at a later stage Ria explicitly alternated turning towards the parent she was addressing within the bilingual utterance, as in the following examples:

*DAD You have cold hands.
*RIA [dʒampə]
%glo jumper
%add DAD
%act RIA turns towards MAM
*RIA [setr:k]
%glo svetrík
%eng jumper
%add MAM
(1;10.28)

%act RIA turns to DAD

*RIA [kɪs]

%glo kiss

%act RIA turns to MAM

*RIA [pʊsɔ]

%glo pusu

%eng kiss

(1;11.7).

Similar to the bilingual utterances were other playful uses of language. Ria explicitly practiced certain conceptual and symbolic items she acquired as cross-linguistic synonyms. For example when she was able to count to 2 in both languages, she playfully practiced this skill, as in the following example:

Ria counted to two on her fingers verbalizing the numbers [jɛdɛn # da] ‘jeden # dva’ and after a short pause repeated the same actions with the English TEs [wan # tu] ‘one # two’, smiling at the mother (1;9.12).

Thus she was aware of the two languages available as language tools, aware of her knowledge of the TEs, and aware of the option to select from the TE pair.

8.2.1 Repairing language choice

The developing sense of appropriate language choice was also evident from the end of the one-word stage in Ria’s ability to interpret communication breakdowns and parents’ requests for expansion or clarification of utterances which they did not understand. A cue that a communication breakdown occurred was that the parents either did not respond according to Ria’s expectations, or they explicitly let her know they did not understand. Ria was able to interpret such cues as errors in language choice when indeed an error occurred, and was able to self-repair. This pragmatic ability emerged in both language contexts simultaneously, and included instances of explicit self-repair, as in the following example:

Ria uttered [wɔm] ‘von’ “outside” while she was in the father’s arms (mother also present) as they were looking outside through glass door, but the father did not respond to her request to go outside. Ria self-repaired her language choice uttering a novel TE

[ʃa:] ‘outside’, to which the father responded. She acknowledged his response with a smile (1;6.31).

In this instance the father did not react to Ria’s attempt at communication. She interpreted the breakdown in communication as inappropriate language choice and self-repaired with the English TE. The repair gained the father’s attention, and thus the strategy was reinforced as effective.

Ria was able to self-repair language choice before the parents indicated a ‘wrong’ choice, which sometimes resulted in an utterance with cross-linguistic synonyms, yet different to the bilingual utterances discussed above:

Slovak context

- the mother picked up Ria and asked where she wished to go, to which Ria responded with a pointing gesture indicating the direction and uttering [hi:] ‘here’ and immediately self-repairing to the Slovak TE [sɛm] (1;7.2)
- addressing the mother Ria self-repaired a mix within the same utterance [ɡianr:. zɛjɛnr:] ‘green-any²². zelený’ “green. green” (1;9.26).

English context

- Ria was playing with the father in the garden, while carrying around a doll. She directed the father’s attention to the doll uttering [ba:bɔ] ‘bábo’ “baby” and immediately self-repaired to English TE [beɪbɪ] ‘baby’. (1;7.1)
- addressing the father with a self-repaired utterance [ʊmʊ. wɔʃ.] ‘umʊ. wɔʃ.’ “wash. wash.” (1;8.21)
- [dædɪ. tʃaɪ! tʃaɪ tʃaɪ ti:]. ‘daddy. čaj! čaj čaj tea.’ “daddy. tea! tea tea tea.” (1;9.4).

At a later stage such self-repairs occurred mid-word, suggesting that bilingual language awareness was well established:

Ria addressed the father with utterance [manʃɛ, ma a:mns] ‘mandle, ma(ndle) almonds’ “almonds, al(monds) almonds”, in which she realized error in language choice mid-word, paused and self-repaired to English. (1;10.6).

Ria was also able to repair errors in language choice if one of the parents requested a clarification because her original utterance was in the ‘wrong’ language. Thus Ria

²² A mix discussed in section 8.1.1.1.

understood the breakdown in communication which triggered the request as signifying a pragmatic error in language choice, rather than a linguistic error.

During the period of combinatorial speech many novel words emerged and at times were not immediately recognized by the parents, thus a communication breakdown occurred. In these situations Ria's repair strategies to clarify utterances reflected her pragmatic development. Initially she pointed at the referent, later attempted to repeat the word several times, making it explicit that the repetition was for the benefit of the interlocutors, and lastly intentionally switched into the other language to clarify the meaning:

- **Repetition of the novel word** – sometimes accompanied by a hand gesture with the index finger raised upwards and the hand waving lightly. If the parents understood, Ria smiled and often repeated the word again, or simply affirmed with [ano] 'ano' "yes", e.g. Ria uttered [da:mɛ kabɪtʃɔ] 'dáme kávičku' "we'll have a coffee", but the mother misinterpreted the word as [kabɪtsɔ] 'krabicu' "a box", thus Ria continued repeating until the mother mirrored the correct word (1;10.6).
- **Use of TE** - falling back onto a TE from the other language to explain, aware that this strategy would allow the communication flowing:
e.g. Ria uttered [fatɪc] 'vtáčik' (a new way of pronouncing an otherwise well-established word [fa:]) but since the mother did not understand, Ria used the English TE [bɛdi:] 'birdie' to clarify (1;10.6).
- **Attempt to use associations** – creating the same meaning with different words, e.g. when uttering [pi:pɔ] 'beep-lo'²³ "beeped" and the mother did not understand after several repetitions, Ria turned her gaze to a car and uttered [atɔ] 'auto' "car", which the mother interpreted as 'the car beeped' (1;10.6).

Thus pragmatic language choice was evident also when the parents did not respond to Ria as desired, because they did not recognize a novel word in her production. To communicate her intentions, Ria often opted to borrow the established TE in order to clarify her request. She was able to fall back on an equivalent from the other language, thus used the TEs pragmatically:

Ria uttered the English holophrase [be] 'bread' to request more bread, but since the parents did not respond immediately, she switched to the Slovak [xɛ] 'chlieb' "bread" (1;7.8), an equivalent that was already established, and gained the desired response.

²³ Slovak past tense 3sg suffix attached to English verb

TEs were available also in instances when the parents requested a clarification of a novel word in Ria's production. This occurred especially in the Slovak context. Ria used the English TE to clarify the meanings, as in the following excerpts:

- %sit During bed time Ria was naming familiar people and animals
- *RIA [mami. sɪp. # dædɪ. sɪp.# jana. sɪp.# mɪʃa. sɪp.# ɔmi. sɪp. # na:ʊ. sɪp. # fiavo. sɪp. # haja:.]
- %glo mami. sleep # daddy. sleep. # Riana. sleep. #Miša. sleep. # Romi. sleep. # mňáu. sleep. # havo. sleep. # hajá.
- %eng mummy sleeping. Daddy sleeping. Riana sleeping. Miša sleeping. Romi sleeping. Meow sleeping. Doggie sleeping. sleeping.
- *MAM Čo je hajá?
- %eng What's hajá?
- *RIA [haja:. sɪp.]
- %glo hajá. sleep.
- %eng sleeping.
- (1;7.17)
- *RIA [bɔjɪ:]
- %glo bolí
- %eng it hurts
- *MAM Čo ťa bolí?
- %eng What is hurting you?
- *RIA [ʊcɪca]
- %glo ručička
- %eng hand (diminutive)
- *MAM Čo to je?
- %eng What is it?
- *RIA [hæn]

%glo hand
 (1;8.24)

*MAM Ako sa budeš hrat' s daddym?
 %eng What will you play with daddy?

*RIA [jɔ:pɪ]
 %glo lopty
 %eng balls
 %com MAM does not understand

*MAM Čo to je?
 %eng What's that?

*RIA [boʊs]
 %glo balls
 (1;9.19)

These instances show Ria's awareness of the mother's bilingualism, since she used an English TE to clarify the meaning, expecting the mother to understand. Clarification of a novel word with an already established TE occurred in the other direction as well:

%act MAM is cleaning up after dinner

*RIA [peɪc jəʊn mami]
 %glo plate Rianin mami
 %eng plate Riana's mummy

*MAM Preč Rianin?
 %eng Away Riana's?

%act RIA repeats her utterance several times but MAM does not understand

*RIA [mɪsɔ jəʊnɔ]
 %glo miskú Rianinu
 %eng bowl Riana's

(1;11.28)

Ria's use of a novel English word was not interpreted correctly by the mother and prompted first a repetition of the utterance, then change of language. However to clarify her initial utterance, Ria used an established Slovak word with a slightly different meaning.

Moreover, Ria was able to realize a language choice error in the Slovak context even though the mother did not. In some instances the mother was not aware that Ria used an English utterance and instead judged it as a novel Slovak word requesting a clarification:

*RIA [vaʃim]

%glo washing

*MAM Nerozumiem ti anjelic, čo to hovoríš?

%eng I can't understand you angel, what are you saying?

*RIA [vaʃim vaʃim pac!]

%glo washing washing prat'!

%eng washing washing to do the washing!

(1;8.31)

Such strategies reflected communication patterns used by the mother. The mother attempted to interpret Ria's intended meanings explicitly, mirroring her utterances, so as to show that Ria's attempts at making meaning were not only acknowledged, but her meanings were understood. The mother tried responding with what she perceived to be the same word Ria had used, tried alternate words, or explicitly claimed she did not understand. When Ria was capable of achieving the same goal herself, she used similar strategies to express the intended meaning - repetition, TEs, and associations. Thus if the parents' responses suggested a communication breakdown Ria was trying to help them understand her utterances.

Unless Ria used a novel word, the mother understood English borrowings and her strategies did not require a request for clarification. She did not pretend not to understand, but allowed Ria to perceive her bilingualism, whilst modelling her preferred language with bilingual strategies:

- moving on and continuing in the interaction
- accepting Ria's English utterance and recasting it into Slovak.

These move-on and recasting strategies are shown in the following video excerpts:

%sit RIA and MAM are looking at objects in the kitchen

*RIA [noj]

%glo nôž

%eng knife

*MAM Nôž, ano.

*RIA [dædi]

%glo daddy

*MAM Daddy s ním krája, však?

%gpx RIA points at another knife

*RIA [dis?]

%glo this?

*MAM Aj to je nôž.

%eng That's also a knife.

(1;7.19)

%sit RIA hides behind play tent

*RIA [hajdiŋ]

%glo hiding

*MAM Schováš sa?

%eng Are you going to hide?

*RIA [xoba:bam. xobabam]

%glo schovávam. schovávam.

%eng am hiding. am hiding.

*MAM Schovávaš?

%eng You hiding?

(1;11.18)

The monolingual father's strategies differed slightly. He often made language choice error explicit, since he only understood a limited number of Slovak words. Ria was able to interpret the father's strategies through which he let her know that a breakdown in communication occurred:

- querying the meaning of a specific word,
- probing for what he would say himself, such as 'What does daddy say?' or 'In English!'.

The father's strategies are demonstrated in the following examples:

*RIA [kesɪc]
%glo kreslit'
%eng (I want) to draw
*DAD What's that mean?
*RIA [do:wɪ]
%glo drawing
%gpx RIA turns to the mother
*RIA [kesɪm]
%glo kreslím
%eng I'm drawing
(1;9.19)

*RIA [jabuka:]
%glo jablká
%eng apples
%add DAD
*DAD What are they?
*RIA [epus.]
%glo apples
(1;11.4)

*RIA [ɔtɔɪc]
 %glo otvorit'
 %eng to open
 *DAD What does that mean?
 *RIA [oʊpən]
 %glo open
 (1;11.6)

The following example demonstrates the father's request for a specific language and Ria's subsequent repair:

*DAD What's this?
 *RIA [daki:]
 %glo duckie
 *DAD What colour is it?
 *RIA [ʒɔtɛ:]
 %glo žlté
 %eng yellow
 %com Ria used the correct neuter suffix agreeing with the neuter gender of the Slovak equivalent 'kačiatko'
 *DAD In English?
 *RIA [jejoʊ]
 %glo yellow
 (1;10.17)

One of the father's strategies in dealing with a language he did not speak but which was regularly used in the family environment, was to attempt to infer meanings from the context and respond to Slovak utterances in English. Occasionally his inferences were not correct, which implicitly indicated to Ria that an error in language choice occurred, and reinforced his identity as a monolingual English speaker. Ria was also able to self-repair, as well as to repair the father's interpretation errors, as in the following examples:

*RIA [tʃi:tac]
 %glo čítat'
 %eng (I want to) read
 %add DAD
 *DAD Do you need to do a wee?
 %com DAD misinterpreted the utterance as [tsɪkac] 'cikat' "to wee"
 *RIA [ji:d]
 %glo read
 (1;8.21)

*MAM Idem ti zobrat' ponožky.
 %eng I'm going to bring your socks.
 *DAD Mami's gonna bring your pants.
 %com DAD infers the meaning incorrectly
 *RIA [ʃo:ks]
 %glo socks
 *DAD Shorts?
 *RIA [ʃoks]
 %glo socks
 *DAD Daddy doesn't understand, does he?
 *RIA [noʊ]
 %glo no
 (1;10.8)

There were also instances when a communication breakdown did not occur even though Ria made an inappropriate language choice in interaction with the father, as was the case with some Slovak words in Ria's productions that he became familiar with. Since there was no need to request a clarification, the father used the 'move on' strategy, as in the following example:

%sit RIA and DAD are reading books

*DAD You read daddy that book.

*RIA [dædɪ]

%glo daddy

*DAD Yep, tell me.

*RIA [ʃi. ba:brʔ]

%glo see. barbie (BBQ).

*DAD What's there?

*RIA [ba:brɪ!]

%glo barbie.

*DAD You looking for the barbie, yeah?

*RIA [dædɪ! dædɪ!]

%glo daddy! daddy!

*DAD Where is it?

*RIA [ba:brɪ. ɲɛɲɪ. hm.]

%glo barbie. **nie je.** hm.

%eng barbie. **isn't.** hm.

*DAD Yes it is. You just have to turn the page slowly. Slow. That, that's too many. Better. Any barbies?

%com Ria used a mixed utterance containing Slovak word to which the father responded in English

*RIA [na]

%glo nah

*DAD What about here, no barbie? Nah. Nah.

(1;8.9)

The father also adopted and regularly used several Slovak words which Ria preferred, thus making them family words, as in the following excerpt:

%sit DAD

*RIA [ʃi. ababo. ʃi.]

%glo see. a bábo. see.

%eng see. a baby. see.

*DAD Uhm.

%act RIA picks up the doll and puts it in her lap, looking in its face

*RIA [luk. babo. babo]

%glo look. bábo. bábo.

%eng look. baby. baby.

*DAD **Bábo's** looking at you.

%eng Baby's looking at you.

%com DAD repeats the Slovak word in his response

*RIA [je]

%glo yeah

*DAD Hello mami Riana!

%com DAD uses a high pitched voice, impersonating the doll

(1;8.9)

Thus by accepting and using some Slovak words the father allowed Ria to perceive his acceptance and support for Slovak. However, by clearly marking instances of language choice error that caused a communication breakdown, the father emphasized his monolingual identity.

The discourse strategies used by Ria reflected the use of the two languages in the family. In using these strategies Ria was behaving like a bilingual in the same way she observed the mother to model bilingual behaviour. She was providing translations into English for the monolingual father when inappropriate language choice occurred. Since the mother accepted utterances in both languages, and requested an explanation only for novel words, Ria did not need to use translations to clarify meanings. However, even in these situations she fell back onto a known and established TE in English to provide explanation to the mother, acknowledging the mother's bilingualism. More importantly, Ria differentiated between these strategies, and understood the parental request as either miscommunication due to inappropriate language or miscommunication due to a novel word.

In summary, the above analysis indicates that the bilingual skill of pragmatic language choice gradually emerged from an internal awareness of two input languages. Ria was sensitive to her interlocutors' preferred languages early on, yet in the one-word stage language choice was influenced by Ria's linguistic abilities and preferences. The pragmatic ability of appropriate language choice became evident at the beginning of the two-word stage (1;7), approximately 5 months before 2;0. TEs were not used as isolated items, but Ria showed understanding of their synonymy, and made mostly appropriate language choice with individual interlocutors. Holophrases and word combinations were becoming differentiated according to the interlocutor's preferred language. Use of unilingual utterances was established. Thus Ria's awareness of the choice between two languages was evident on contextual basis. When errors in language choice occurred, she used cues of what constituted appropriate language choice from parental discourse strategies. Therefore parental implicit or explicit feedback on Ria's choices gradually shaped her pragmatic ability to make an appropriate language choice.

8.3 The developing sense of bilingualism

The question of language differentiation, the child's ability to separate the two languages-in-acquisition, has been fundamental in the childhood bilingualism literature. Much of the discussion has centred on the issue of *unitary language development hypothesis* versus the *separate development hypothesis*. Latest research found empirical evidence in favour of early language differentiation in BFLA children, whose languages develop as two separate linguistic systems. As Hoffmann (1991, p. 79) argues, if we assume this view of bilingual development as a starting point, the concepts of separation and differentiation become irrelevant, since a BFLA child operates with two separate systems from birth. However, one aspect remains unexplained – pragmatic differentiation (Nicoladis, 1998, p. 114). Nicoladis (1998) points out we need to gain understanding on how children develop sensitivity to two input languages before second birthday, an approximate age when language differentiation emerges and bilingual children start using their two languages in monolingual fashion. Pragmatic differentiation is defined as social rather than neurological ability to differentiate the two languages-in-acquisition (Nicoladis & Genesee, 1996, p. 440).

Data in this thesis suggested that language differentiation is not a point in development, but rather a developmental process which starts at birth. A bilingual child first develops awareness of two input languages. Advancements in neurolinguistics, which provide an understanding of newborns' and young infants' perception skills, demonstrated that

linguistic development starts in-utero, and human babies are born equipped with the skills necessary not only to recognize their native tongue, but to distinguish it from other languages (de Boysson-Bardies, 2001, pp. 22-26). These skills have also been shown in bilingual newborns, suggesting that BFLA infants possess representation of two input languages as early as birth (Petitto, et al., 2001, p. 491). Other studies indicate that bilingual infants are able to distinguish the presence of two input languages as early as 4 months (Bosch & Sebastián-Gallés, 2001, p. 45). Taken together, these findings show that awareness of bilingual input starts developing at birth, and infants have the capacity to differentiate languages perceptually. Words and speech have different inherent sound characteristics in each language, which allow infants to distinguish between them on the basis of prosody from early stages. What infants need to learn is how to use the languages differentially in production. Thus the question should not be whether a BFLA child is able to differentiate her languages, but how does perceptual differentiation on the basis of prosody lead to an eventual differentiation in the child's speech.

A child learns how languages are used from the linguistic models. Regular parental use of both input languages plays an important role in establishing bilingual awareness during the first 9 months. During this period, prelinguistic infants can already show signs of sensitivity to two input languages. For example Cruz-Ferreira (2006, p. 62) attributed strange behaviour of 4 month old infants when their mother spoke a different language than the language of usual address to early signs of bilingual awareness. Similar observations were made in this thesis. Around 0;4-0;5 Ria responded with fussiness when the mother was addressing other interlocutors in English, suggesting that the mother's switch of languages triggered strange behaviour, as Ria was aware that the mother's attention was focused on others.

Further in development, when Ria progressed into intention reading communication (0;9 – 1;1), her comprehension of translation equivalents was observed in appropriate responses to verbal address by each parent. Direct contextual evidence of learning of couplets in a TE pair was also found. Use of TEs was also extended into production in the early one-word stage (1;4) and indicated the developing sense of bilingual awareness.

Bilingual awareness emerged explicitly during combinatorial speech when Ria used mostly unilingual utterances in the two languages. Further evidence in production was the differential use of language specific morphology with words from the two languages. Ria rarely used Slovak morphology with English words and vice versa, except for specific examples belonging to distinct categories of mixing: learning context, lexical gaps, word

preference, temporary unavailability of items and creative uses of the languages in the family. Thus mixing was not seen as a sign of lack of differentiation. On the contrary, it was a reflection of Ria's pragmatic competence. Mixing mirrored language use in the input and was used productively. If Ria faced a situation in which mixing was not normally modelled, she mixed creatively to avoid communication breakdowns.

Bilingual awareness was evident also in development of pragmatic language choice. In the second half of the second year Ria was able to appropriately adjust language choice, as well as spontaneously choose the appropriate language when interacting with speakers of the two languages. She was able to repair language choice errors both spontaneously, as well as following parental cues that an error occurred. Thus the course to pragmatic differentiation for Ria hinged on grasping the principle that the family functioned with two languages, and becoming attuned to the language preferences of her interlocutors.

Language differentiation therefore cannot be separated from linguistic environment. The amount and type of exposure to the two input languages provided not only the models of the two linguistic systems, but also models of how the two languages interacted. Such models were family specific and provided Ria with the building blocks for appropriate use. Ria based her productions in the two languages on observations of bilingualism in the input. Thus the way the parents used the languages, and how they modelled what was perceived appropriate, was important.

Several studies suggested that bilingual infants, when exposed to regular input in both languages, come to associate them with the people who normally address them in those languages, and that it is this association that makes bilingualism possible (Barron-Hauwaert, 2004, pp. 5-7). However, the data in this thesis indicate a reversed language association pattern for the process in which bilingual awareness and differentiation came to Ria. She appeared to have sensitivity to the existence of two input languages early on and became accustomed to different communication styles with each parent, much like she became accustomed to the parents' different parenting styles. From this early sensitivity she developed a more specific awareness that the difference came from parental preference to different input languages.

Signs of emerging language differentiation can be assessed also on the basis of phonetic development. Cruz-Ferreira (2006, p. 63) observed clear signs of emerging language differentiation in her subjects in the prelinguistic period (aged from 0;9 to 1;1). The children appeared to use 'language-specific-connected-speech routines', which replicated

phonetic, rhythmical and intonational patterns of Swedish and Portuguese, and which were used in their babbling directed to a particular speaker.

In Ria's case, phonetic differentiation was not evident in early vocal development (cooing and canonical babbling), nor did protolanguage show any specific features of either of the languages. Language specific babbling was observed only when Ria became linguistically productive. Along with first words she continued to use babbling which resembled intonational patterns of the languages. This variance from Cruz-Ferreira's (2006, p. 63) findings suggests that whether a BFLA child shows early signs of phonetic differentiation is idiosyncratic, and possibly dependent on the differences in the prosody of the two languages.

Overt signs of the developing phonetic differentiation were observed during the one word stage (from 1;4) in the form of language specific word stress and intonation patterns. Words such as [dædɪ] 'daddy' and [ku:l] 'cool' were pronounced with English intonation, and [mami] 'mami' "mummy" with Slovak intonation (1;4.28). Such patterns were observed both in spontaneous productions and reproduced words which Ria attempted to pronounce, e.g. Ria reproduced English word 'cards' after the father as [ka:] with a rising intonation, while moments later she reproduced the Slovak word 'kabátik' "coat" as [ka] after the mother with an even intonation typical of the Slovak language (1;4.29). Thus although structurally the forms [ka:] and [ka] appear rather similar, it was not only the difference in the vowel length, but mainly the intonational patterns that set them apart. This difference in the pronunciation of words showed Ria's awareness of the need to differentiate between the two languages on phonetic level, as well as semantically.

Language differentiation was also observed in metalinguistic behaviour from approximately 1;10. It was evident through differential use of TEs, use of bilingual utterances and various strategies in making choices, such as self-repair of inappropriate language choices, appropriate interpretation of errors of language choice and repair. Another sign was the emerging ability to respond to language labels appropriately and to explicitly talk about the two languages in her input, such as labelling or commenting on them. This discourse was learnt from the father, who labelled the languages when making his lack of understanding explicit, requesting a clarification, and in contexts when Ria requested to read Slovak books. The father often responded by explaining he did not understand Slovak, referring to the language with its name, which Ria mirrored in her speech:

%act RIA passes a Slovak book to DAD, requesting him to read

*DAD Daddy can't read this book.

*RIA [ʃɔbɛk]

%glo Slovak

(1;10.23).

Thus it was the father's discourse which triggered expression of metalinguistic awareness before 2;0. Clyne (1987, p. 103) also found that metalinguistic awareness emerged in a bilingual child around second birthday.

In summary, the above signs of emerging bilingualism suggest that having received consistent input in two languages from birth, Ria was attuned to the preferred use of the two languages in her environment. She developed sensitivity to bilingual input and sensitivity to bilingual language choice early on, before the age of 2;0. The course of differentiation was not considered a milestone or target that Ria had to achieve in order to become a proficient speaker of the two languages. Instead, language differentiation was a part of a package of linguistic abilities that were necessary during the course of linguistic development. Throughout this course linguistic environment in the family provided the model of appropriate language use. Language differentiation thus developed from Ria's early bilingual awareness and instinctive perception of two input languages. Ria was able to make the transition from perceptive differentiation to explicit differentiation in production, emerging in all areas of linguistic development, such as lexical, grammatical, phonetic, pragmatic and metalinguistic by 1;7.

9 Conclusion

This case study portrayed a child's emerging bilingualism from birth to two years in a mixed-lingual family, taking into account the major linguistic developments from a sociolinguistic perspective. Bilingual first language acquisition of two morphologically different languages, Slovak and English, was examined through systematic analyses of cumulative vocabulary, combinatorial speech, early morpho-syntax, mixing and developing pragmatic skills of language choice, as well as an assessment of the overall language learning environment and parental discourse strategies.

The child in this study, Ria, received regular consistent exposure to Slovak and English from birth. The two languages were presented in the one parent-one language (1P/1L) approach. The maternal Slovak language was the minority language, however, for Ria it was the language of the primary sociolinguistic group – the language of the closest emotional bond and most frequent exposure. The paternal majority English language was spoken by the wider community. The father was a monolingual English speaker, while the mother was a bilingual Slovak-English speaker. To date this language combination in BFLA was relatively unexplored with only one other study on simultaneous bilingualism carried out in a Slovak majority environment, where English was the minority language (Štefánik, 2000).

The following research questions were examined:

1. How did the language learning environment influence Ria's bilingual linguistic development?
2. What was the course of bilingual linguistic development?
3. What was Ria's lexical and morpho-syntactic development in the two languages?
4. When and how did Ria start using her languages in contextually appropriate ways?

In response to the first question, the data provide evidence that early establishment of the linguistic bond, and thus the 'default language mode', was crucial in maintaining consistency of separate language input and language choice in interactions. As a result of the person-language bond, Ria came to expect a particular language from a particular person (Slovak from the mother, English from the father). This was especially relevant for the minority mother, since regular monolingual exposure to the minority language was limited mainly to her. The monolingual majority father, on the other hand, could afford to allow both languages in interactions with Ria, since there were multiple sources of monolingual exposure to his language.

Although Ria was growing up as a bilingual in an English majority society, the minority Slovak language, the language of the closest emotional bond, and thus the language of the primary sociolinguistic group, became the dominant language in the first two years of life. These findings indicate that establishment of bilingualism on family level was the result of a combination of several factors, including the person-language bond, parental language attitudes and impact belief, discourse strategies which negotiated use of preferred parental language in a manner which encouraged maintenance of verbal interaction, and child-centered conversational strategies of the minority parent.

In answer to the second question, Ria's developmental patterns in the two languages were appearing on the same trajectory as is typical for monolingual children speaking the respective languages. Word comprehension preceded production. In the one-word stage, the 10, 30 and 50 word milestone progressions were evident. Ria comprehended and produced lexical items from both languages and used translation equivalents. Once she reached approximately 200 words in the combined total expressive vocabulary, two-word and multiple-word combinations as well as morpho-syntax appeared. Thus no delays or differences in developmental stages were found.

The third question sought to examine the course of lexical and morpho-syntactic developments. In the assessment of bilingual vocabulary a redevelopment of Pearson's (1998, p. 358) measurement was suggested. All productions across both languages were considered, and homonyms and appellatives were not excluded, thus Ria's competence was not downplayed and possible phonological differentiation of otherwise similar items was not neglected.

This thesis also provided insights into the learning and use of TEs in early BFLA. To date, little evidence is available on comprehension and production of early TEs in the literature. Analysis of lexical development described how Ria learnt TEs in comprehension and production and several mechanisms were identified:

- Learning each equivalent separately in different contexts
- Learning TEs in association with a known equivalent
- Learning TEs simultaneously in a bilingual context.

These mechanisms explained why some items appeared in the vocabulary as TE couplets, and how lexical gaps were filled. Initial vocabulary development was context based and depended on the type of situations each parent engaged in with Ria. If the parents noticed that Ria had used a new word in one of the languages, they introduced the equivalent. Thus

Ria was able to learn the TEs with only short time lags, and often had both TEs in comprehension. However, she also formed a short term preference for some words in production which was determined by the initial learning context.

As soon as Ria was able to produce full words in the early two-word stage, she used morphological markers appropriately. Words in Slovak, the morphologically richer language, showed the necessary markers (verb inflections, noun, pronoun and adjective declinations, subject-verb agreement). English morphological markers also appeared according to patterns found in English monolingual children, with plural and possessive nominal markers first, followed by verb inflections. More importantly, Ria used words with markers appropriate for the contexts.

In verb morphology items appeared first in the form which was used by the parents most often, while other forms were filled in later. This pattern was found in verb tense, mood and aspect equally. Thus learning of verb morphology was item-based, and Ria was slowly filling in the verb paradigm according to usage in the input. Slovak verbs were used productively in the singular towards the end of the stage, with subject-verb agreement in the inflected forms. Several tokens of plural forms were also used but tied to specific contexts. In English, continuous *-ing* form was used when appropriate, and subject-verb agreement in 3sg was emerging as well. Verb constructions were first learnt as wholes and produced as a single unit.

The last question addressed the issue of developing bilingualism. Sensitivity to two input languages was observed during infancy from Ria's emotional reactions when overhearing the mother using the 'wrong' language, as well as through the calming effect of the familiar rhythms and prosody of the language. The data showed lexical differentiation in comprehension and production through presence of TEs. Ria understood and used TEs differentially as cross-linguistic synonyms, she did not reject them, and the Principle of Contrast was not supported. Thus previous findings that bilingual children accept cross-linguistic synonyms in receptive vocabulary (De Houwer, et al., 2006, p. 344), as well as in expressive vocabulary (Deuchar & Quay, 2000, p. 57) were reflected in the data. Grammatical language differentiation was also evident towards the end of the one-word stage through differential use of morphological markers necessary in the two languages, which was taken as evidence for separate development of the grammars.

While the two languages were developing autonomously, Ria was not developing as two monolinguals in one. Language contact in bilingual interactions produced language mixing, which was occasionally observed in the mother's speech, flagged in the father's

speech, and transferred into Ria's productions as well. Initial mixing in the one-word stage was lexical and it was explained by specific psycholinguistic and social factors. Ria developed preference for certain words in one language and used that equivalent despite the availability of both TEs in her repertoire. Her preference for certain words was determined by the learning context. Other explanations for mixing were in line with previous research, such as pragmatic strategy to fill lexical gaps to avoid communication breakdowns, and momentary lapse.

However, as soon as combinatorial speech emerged, instances of intra-sentential mixing were also observed in Ria's productions. Mixing in the two languages appeared to be differentiated, showing Ria's sensitivity to the grammar of the base language. The grammar was not violated. Ria did not mix Slovak lexical morphemes with English bound morphemes, but mixed English lexical morphemes with Slovak bound morphemes in a way that reflected adult code-mixing, integrating them morphologically and phonetically into the base language. Intrasentential mixing was productive, much like code-mixing typical of older children and adult bilinguals. Ria was able to produce mixed word structures creatively in ways not observed in her input. She created bilingual blends which she used productively. Moreover, mixing was used in contextually appropriate ways, with more mixing found in Slovak and bilingual contexts when interacting with the bilingual mother, and rare uses of mixing in English context with the monolingual father.

Emerging pragmatic differentiation was demonstrated through the emerging skill of appropriate language choice towards the end of the one-word stage, since Ria addressed each parent mostly in their preferred language. Thus Ria's early pragmatic language choice skills were identified in line with previous research as following:

- use the two languages in contextually appropriate ways - Slovak with the mother and English with the father
- use mixing in triadic interactions with both parents and in interactions with the bilingual mother, but rarely with the monolingual father
- use mixing as a pragmatic strategy to fill in a word unavailable due to lexical gaps, temporary lapse, preference, or to clarify a novel word
- use mixing creatively.

Overall, Ria used more of the appropriate language with each parent. She took clues on appropriate language use from her input. Although the general input pattern was based on the 1P/1L approach, careful examination of sociolinguistic aspects found ample language

contact in the bilingual family. Ria observed the mother as a bilingual who needed to use two languages in everyday interactions, and the father as a monolingual needing one language. Thus the parents were modelling bilingual and monolingual behaviour respectively. This was evident especially in situations when the entire family was interacting together. Parental language choices in triadic interactions were providing Ria with the model of appropriate language use as expected in the family.

The family's expectations were communicated to Ria through a continuum of parental discourse strategies. Each parent developed her/his own strategies. The mother modelled monolingual uses of Slovak, which was aimed at providing as much monolingual input to Ria as possible. However, she modelled bilingual linguistic behaviour through language strategies that accepted English items, and through language alternation when interacting with the father and Ria in triadic interactions. The monolingual father's strategies were not by default monolingual. He was willing to accept bilingual mixing in his interactions with Ria, however, his language proficiency modelled monolingual uses of English. Ria interpreted parental cues for inappropriate language choice appropriately and self-repaired. Likewise, when communication breakdowns occurred due to a novel word, Ria inferred the cause of the breakdown appropriately and provided a clarification, sometimes pragmatically falling back onto a known equivalent in the other language.

The findings in this thesis on parental discourse strategies are parallel with previous research, namely that strategies that negotiated preferred language played an important role in teaching appropriate language choice. Lanza (2001a, p. 225) concludes parental discourse strategies are one of the contributing factors in a child's language separation according to interlocutor. In this thesis, I showed that such strategies indeed enforced the preferred language of communication within each parent-child dyad. However, the success of the strategies was based on the nature of the existent linguistic bond, which set the normal language mode for each dyad.

This study contributed to the understanding of BFLA, as well-as to the area of cross-linguistic developmental research by comparing two morphologically different languages. It described specific bilingual phenomena that resulted from the language combination and bilingual language socialization in the family:

- signs of sensitivity to different input languages appeared in infancy

- canonical babbling showed no language specificity, however, at the same time as first words were emerging, babbling changed and showed prosody characteristic of the two input languages, used freely and not tied to a specific context
- translation equivalents were used as soon as the 10 word milestone was reached, and their number increased with growing expressive vocabulary
- learning of new word types was embedded in the situational contexts engaged in with each parent, providing an explanation for differences in vocabulary in the two languages and for lexical gaps
- in verb morphology an initial lead-lag pattern emerged whereby the proportion of inflected verb forms in Slovak contrasted with the bare verb forms in English, demonstrating separate developmental patterns in the two morphologically different languages
- language dominance appeared as a result of the different proportions of exposure to each language, and it was most evident in the vocabulary size and utterance length in each language
- the child's two languages were developing separately, yet in a side-by-side fashion, while mutual interaction of the languages was present throughout all stages of early development
- consistent, regular exposure to the languages-in-acquisition was crucial for the development of both languages
- language differentiation was a process that started early in development, it took place as lexical, grammatical, phonetic as well as pragmatic differentiation, and was evident as early as the end of the one-word stage (1;7).

These findings are comparable with previous BFLA research referenced in the literature review.

In summary, *interpersonal first principle* was at the heart of BFLA, embedded in the establishment of person-language bond between the child and each parent, and in the interpersonal exchanges they engaged in. It manifested itself in various aspects of linguistic production. It was apparent in differential grammatical development of the two languages through item-based productions of salient linguistic structures. Ria first learnt lexical items salient in the contexts of the two languages. Since the contexts were relatively limited, significant overlaps across the two languages were found. These overlaps allowed for translation equivalents in Ria's productions. However, the order in which Ria learnt TEs was determined by routines and situations in which each parent

typically engaged. The contextual specificity of early language acquisition was observed in the learning of grammatical structures as well. The most salient structures in the input were the first to appear in Ria's productions, initially as whole items relevant to specific situations. As Ria's vocabulary increased and more patterns were discovered, she applied the structures as regular patterns to more word types. Meanwhile, she was able to differentiate which grammatical patterns were needed for which language. In pragmatic development, the interpersonal first principle was observed through the developing sense of appropriate language choice and pragmatic uses of mixing, which mirrored preferred parental language use.

9.1 Study Limitations and future research

The diary records and video-recordings collected for this thesis provided rich data on simultaneous bilingual development. For the purpose of this thesis general analysis of development in the first two years was carried out, assessing previous research findings on lexical, morpho-syntactic and pragmatic language choice development, and determining their validity with the present data. More detailed analyses of phonetic and phonological development in the bilingual child, early language comprehension in the bilingual environment and individual structural linguistic phenomena in development of each language were outside the scope of this thesis. However, the available data captured such aspects, and their analysis would provide further insights into BFLA.

The study design of this thesis in itself posed certain limitations. Being a longitudinal case study, no generalizations that would be applicable to larger populations could be drawn (e.g. groups of children of Slovak immigrants living in Australia). Similarly, since this was a qualitative study with minimal statistical evidence relevant to one subject, no conclusions could be drawn about general trends in bilingual language development. It was also difficult to make appropriate comparisons with norms for initial linguistic development. Monolingual norms are not adequate for bilingual children, and as Pearson (1998, p. 364) argues, they should not be applied to bilinguals. Moreover, developmental norms for bilingual children are not available.

The sociolinguistic analysis of the language learning environment in the initial stages of BFLA in this study laid a foundation for a long term study in bilingual development. The child continues on her journey through life as a simultaneous bilingual. However, the specific language dominance and language use patterns that were established in the early years may change over time with changes in the child's social experiences. Furthermore, a

follow up study as the child enters school age would allow exploration of later linguistic and literacy developments as well as bilingual language maintenance.

To improve general understanding of BFLA it is necessary to examine and describe different kinds of data involving various language combinations with varied exposure patterns. Future research may consider differences in BFLA development within a bigger group of bilingual infants in different family types growing up with Slovak and English in Australia, and across different families with bilingual siblings. Outcomes in early bilingual development are dependent on individual differences in socialising environments. A comparison of several case studies would allow conclusions on what types of socializing environments result in bilingualism for life. Further research would also examine changes in language use and dominance in bilingual children on a long-term scale, and possible changes in the type of language mixing over time, following through into adulthood, thus allowing continuity from studies on childhood to adult bilingualism.

Another aspect of BFLA that would be of interest to future research is a bilingual child's private speech and language choice, which has not yet been examined in detail. For example Saunders (1984, p. 65) found that children's choice of language in such situations was sometimes determined by a topic or activities, since the child would tend to use the language that was usually associated with it, such as a game most often played with one parent or activity usually engaged in with another parent. Lastly, future research may examine language choice and mixing in bilingual children in interactions with bilingual peers, especially bilingual siblings, in early childhood when the family environment plays a crucial role in bilingual socialization, thus bridging the gap in BFLA research.

APPENDIX A Transcription conventions

Phonetic transcription of Slovak sounds in IPA and their equivalents in Slovak orthography:

IPA symbol	Slovak orthography
a	a
a:	á
æ	ä
ɛ	e
ɛ:	é
ɪ	i
ɪ:	í
ɔ	o
ɔ:	ó
ʊ	u
ʊ:	ú
ia	ia
ie	ie
iu	iu
oɔ	ô
p	p
b	b
t	t
d	d
c	ť
ɟ	dʰ
k	k
g	g
m	m
n	n
ɲ	ň
ʎ	ľ
f	f
v	v
s	s
z	z
ʃ	š
ʒ	ž
x	ch
ɦ	h
j	j
r	r
r:	ř
l	l
l:	ĺ
ts	c
dz	dz
tʃ	č

IPA symbol	Slovak orthography
dʒ	dž

Summary of speech lines, non-speech lines and abbreviations used in the transcriptions:

Main tiers

Speech lines indicated by asterisk and a three letter code identifying each speaker:

*RIA	Riana
*MAM	Mother (bilingual)
*DAD	Father
*NEL	Nela, Slovak aunt (bilingual)
*MIS	Miša, cousin (bilingual)
*ROM	Romi, cousin (bilingual)
*BAB	Babka, Slovak grandmother
*DED	Dedko, Slovak grandfather
*ROB	Robi, Slovak aunt
*VAN	Vanda, English aunt

Dependent tiers

Non-speech lines preceded by the symbol % (shown in order of use):

%sit	Situation of the recording
%glo	Target language gloss of nonstandard child forms
%eng	Translation into English
%add	Addressee (whom the speaker is addressing)
%act	Activities or actions in which speakers are engaged
%gpx	Facial gesture, body language, proxemic information
%com	Comments and explanations

Utterance markers from the CHAT manual used in the transcriptions:

xxx	unintelligible speech, not treated as a word
xx	unintelligible speech, treated as a word
yyy	unintelligible speech transcribed on %pho line, not treated as a word
yy	unintelligible speech transcribed on %pho line, treated as a word
www	untranscribed material
0	actions without speech
&	phonological fragment
[?]	best guess
text(text)text	noncompletion of a word

Utterance terminators from the CHAT manual used in the transcriptions:

.	period
?	question
!	exclamation

Other symbols from the CHAT manual used in the transcriptions:

text^text	pause between syllable
:	lengthened syllable
#	pause between words
##	long pause between words
###	extra long pause between words.

Transcribed audio-video data:

Rec. no.	Filename	Date of recording	Ria's age	Language context	Situational context
1	MOV003	13/11/2007 8:19am	0;4.12	Bilingual	Family is relaxing
2	MOV02E	25/12/2007 1:03pm	0;5.24	Bilingual	Christmas with extended family
3	MOV030	26/12/2007 11:02am	0;5.25	Bilingual	Christmas with extended family
4	MOV037	14/01/2008 3:48pm	0;6.13	Slovak	Tummy time and changing
5	MOV03D	17/01/2008 8:07am	0;6.16	Bilingual	Family is waking up
6	MOV046	2/02/2008 9:39am	0;7.1	Bilingual	Snack and free play
7	MOV047	3/02/2008 3:49pm	0;7.2	Bilingual	Playing with toys
8	MOV04E	23/02/2008 8:51am	0;7.22	Bilingual	Free play
9	MOV054	5/03/2008 4:40pm	0;8.4	Slovak	Free play and social games
10	MOV055	12/03/2008 9:45am	0;8.11	Slovak	Free play and reading
11	MOV05D	2/04/2008 2:15pm	0;9.1	Slovak	Playing in Ria's new room
12	MOV062	19/04/2008 10:57am	0;9.18	English	Free play in Ria's room
13	MOV068	25/04/2008 8:06pm	0;9.24	Bilingual	Bath time
14	MOV06C	11/05/2008 10:14am	0;10.10	Bilingual	Breakfast time
15	MOV06D	11/05/2008 10:22am	0;10.10	Bilingual	Free play
16	MOV06E	15/05/2008 10:37am	0;10.14	Slovak	Play with toys
17	MOV06F	15/5/2008 1:50pm	0;10.14	Slovak	Play with objects
18	MOV076	1/06/2008 8:11pm	0;10.31	English	Play with toys
19	MOV078	6/06/2008 12:57pm	0;11.5	Slovak (ROM used some English)	Play time with cousin
20	MOV07C	16/06/2008 7:36pm	0;11.15	Slovak (DAD used English in background)	Play with toys
21	MOV07E	16/06/2008 8:11pm	0;11.15	English	Free play with objects
22	MOV086	26/06/2008 11:54pm	0;11.25	Slovak	Play with extended family

Rec. no.	Filename	Date of recording	Ria's age	Language context	Situational context
23	MOV097	13/07/2008 5:46pm	1;0.12	Slovak	Play with extended family
24	MOV098	14/07/2008 7:20am	1;0.13	Bilingual	Play with extended family
25	MOV0A2	20/07/2008 3:21am	1;0.19	Slovak	Outdoor play with extended family
26	MOV0A3	20/07/2008 3:22am	1;0.19	Slovak	Outdoor play with extended family
27	MOV0AF	30/07/2008 6:47pm	1;0.29	Slovak	Looking at objects
28	MOV0B1	7/08/2008 8:31pm	1;1.6	Bilingual to Slovak	Play with toys and learning to walk
29	MOV0B5	13/08/2008 4:20pm	1;1.12	Slovak	Reading books
30	MOV0BA	21/08/2008 2:39pm	1;1.20	Slovak	Hanging the washing
31	MOV0C7	18/9/2008 3:01pm	1;2.17	Slovak	Reading and playing
32	MOV0C8	21/9/2008 8:24am	1;2.20	Bilingual	Helping in the kitchen
33	MOV0C9	22/9/2008 2:08pm	1;2.21	Slovak	Playing with toys
34	MOV0CE	6/10/2008 6:00pm	1;3.5	Bilingual	Learning to stand on a stool
35	MOV0D0	11/10/2008 5:40pm	1;3.10	Bilingual	Play with extended family
36	MOV0D2	17/10/2008 3:24pm	1;3.16	Bilingual	Playing and parents talking
37	MOV0D8	22/10/2008 5:27pm	1;3.21	Slovak	Reading and playing
38	MOV0DA	29/10/2008 1:43pm	1;3.28	Slovak	Play with toys
39	MOV0DF	12/11/2008 1:57pm	1;4.11	Slovak	Play with puppets and social games
40	MOV0E0	20/11/2008 1:49pm	1;4.19	Slovak	Playing and reading books
41	MOV0E5	3/12/2008 2:43pm	1;5.2	Slovak	Playing and reading books
42	MOV0E8	6/12/2008 7:08am	1;5.5	Bilingual	Looking at St Nicholas surprise
43	MOV0E9	6/12/2008 7:45am	1;5.5	Bilingual	Breakfast time
44	MOV0EB	11/12/2008 5:07pm	1;5.10	Bilingual	Play with blocks and talking
45	MOV0ED	21/12/2008 8:43am	1;5.20	Slovak	Getting dressed
46	MOV0EE	24/12/2008 5:01pm	1;5.23	Bilingual	Christmas Eve dinner
47	MOV0F1	25/12/2008 7:59am	1;5.24	Bilingual	Opening Christmas presents

Rec. no.	Filename	Date of recording	Ria's age	Language context	Situational context
48	MOV0F2	5/1/2009 9:31am	1;6.4	Slovak	Play with trains
49	MOV0F8	13/01/2009 4:37pm	1;6.12	Slovak	Reading a book
50	MOV0F9	20/01/2009 3:24pm	1;6.19	Slovak	Reading a book
51	MOV0FA	24/01/2009 1:42pm	1;6.23	Slovak	Ria reading
52	MOV0FB	24/01/2009 2:49pm	1;6.23	Bilingual	Reading a book
53	MOV0FC	30/01/2009 3:36pm	1;6.29	Slovak	Reading, dancing, drawing
54	MOV0FF	10/2/2009 1:42pm	1;7.9	Slovak (Ria used some English)	Doing the washing
55	MOV100	20/2/2009 1:50pm	1;7.19	Slovak (Ria used some English)	Looking at objects in the kitchen
56	MOV103	10/3/2009 1:00pm	1;8.9	English (Ria used some Slovak)	Reading books
57	MOV104	10/3/2009 1:18pm	1;8.9	Bilingual to English (Ria used some Slovak)	Reading books
58	MOV10A	24/3/2009 4:01pm	1;8.23	Slovak (Ria used some English)	Reading books
59	MOV10B	24/3/2009 7:01pm	1;8.23	Bilingual to Slovak (Ria used some English)	Talking and pretending to be on the phone
60	MOV10C	15/4/2009 8:00pm	1;9.14	Bilingual	Doing puzzles
61	MOV10E	17/4/2009 6:29pm	1;9.16	Bilingual	Social games and rhymes
62	MOV114	28/4/2009 9:49am	1;9.27	Slovak	Reading books
63	MOV116	6/5/2009 11:52am	1;10.5	English to bilingual	Working in the garden
64	MOV117	6/5/2009 12:27pm	1;10.5	Bilingual	Working in the garden
65	MOV11B	30/5/2009 3:18pm	1;10.29	Bilingual	Reading a book
66	MOV11D	8/6/2009 9:47am	1;11.7	Slovak	Getting dressed
67	MOV120	19/6/2009 3:57pm	1;11.18	Slovak (Ria used some English)	Playing with toys

APPENDIX B Universal proto-word

Functions of Ria's 'universal' proto-word:

Age	Variation	Function	Examples in context / Comments
0;9.21	[hm:]	Instrumental -a request for desired objects, especially when out of reach and needing an adult to manipulate them to pass them to her	e.g. the mother put the child on the floor when it appeared she finished eating, but the child crawled back up to the mother and requested more while vocalizing [hm: hm:]
	[hm:]	Instrumental -a request to be involved in an activity, or to be picked up	e.g. the father was cooking and as the child crawled in, wishing to see, at first she stayed next to him, looking up, asking to be picked up by vocalizing [hm: hm:], but since the father was not responding by picking her up, only addressing her, the child knelt and stretched her arms up
0;10	[hm hm]	Interactional- -requesting to be engaged in the mother's activity	e.g. whilst the mother was on the telephone, the child was climbing on furniture next to the mother, fussing and vocalizing, then climbing onto the mother, wishing to use the telephone handset
0;10.13	[hm hm]	Interactional/ Instrumental -request for attention and a person's verbal address	e.g. the mother and the child were interacting with a group of people, everyone directing their attention at the child; as a new person walked in and addressed others, not paying attention to the child, she started vocalizing in a frustrated tone, wiggling and pushing objects off the table, she calmed down when the person directed their attention to her
0;11.2	[mmm:] a forceful sound	Personal- -expressing frustration after objects did not behave in a desired manner	e.g. a small container not opening, a door not opening when she was in the way, unable to pick up a towel on which she was sitting
0;11.15	[ə:] a vowel produced with an open mouth	Instrumental/ Interactional -expressing discontent with the parents' actions	Other way to express discontent was a specific angry form of cry

Age	Variation	Function	Examples in context / Comments
1;0.4	[e:] + pointing	Instrumental -requesting objects or services	- used especially if the parents did not respond immediately
1;0.4	[ə:]	Instrumental/Interactional - expressing discontent with location or activity	- often expressing discontent with the parents' everyday household activities
1;0.13	[e:] + pointing in a direction	Instrumental -requesting location + service (to be carried to a location)	e.g. the child requested to go to a playground when the family was walking past; while there she requested to move around individual structures, pointing and vocalizing each time she wished to change from monkey bars to slides or swings, etc., when not wanting to go to a particular place, she tensed up her body to express unwillingness
1;0.26	[e:] + pointing	Instrumental -requesting objects, both familiar and new objects she wished to explore	
1;0.26	[e:] + pointing	Instrumental -requesting food	

APPENDIX C Onomatopoeia

Conventionalised and family onomatopoeiae used as first words:

Sound (age of first production)		‘Standard onomatopoeia’ “Meaning”	Referent /source	Language (if language specific)
Initial form	Approximated/ alternate form			
[ə:h] (1;0.28)	[a:ɔ] (1;1.4)	‘mňáu!’ OR “meow!”	cat	Either
[mu] or [u] (1;1.4)	[m m m m] (1;1.15)	‘mú!’ OR ‘moo!’	cow	Either
[dadada] (1;1.9)	[dadadat] (1;2.7)	‘kač kač kač’ “quack quack quack”	duck	Slovak
[h h h] (1;1.12)		‘hav hav hav’ “woof woof woof”	dog	Slovak
[s s] (1;2.1)		‘tsss’	snake	Slovak
click sound (1;2.1)			rabbit	English (imitated after father)
[x x] (1;2.3)		‘kroch kroch’ & snorting	pig	Slovak
[ha ha ha] (1;2.11)	[hu hu hu] (1;2.25)		monkey	English
[bɛ: bɛ: bɛ:] (1;2.21)		‘bé bé bé’ “baa baa baa”	sheep	Slovak
[hu: hu: hu:] (1;2.25)		‘hú hú hú’	owl	Slovak
[pi pi] (1;2.30)		‘pi pi’	chicken	Slovak
[kakaka] (1;3.21)		‘kvak kvak kvak’ “ribbit”	frog	Slovak
[kokoko] (1;3.25)		‘kotkodák’	chickens	Slovak
[ssss] (1;2.17)	[[fff]] (1;2.25) [tʃ tʃ tʃ] (1;2.30)	‘čč čč’ “choo choo”	train	Slovak
[tutu:] (1;3.8)	[tu] (1;3.15)	‘tutút’ “toot”	car horn	Slovak

APPENDIX D First 50 words

Cumulative vocabulary in the one-word stage:

	Age when first used	Phonetic form and variations	Target word “meaning”	Source Language
1	0;11	[hama] [ham] [hamɪ]	hami “boobie”	Slovak (family word)
2	1;0	[mama:] [mamɪ]	mami “mummy”	Slovak
3	1;0	[ano] [ano]	ano “yes”	Slovak
4	1;1	[jana]	Riana	Either
5	1;1.25	[am] [ta:]	tam “there”	Slovak
6	1;2	[dada]	daddy	English
7	1;2	[nɛnɛ:]	nie je or neni “isn’t”	Slovak
8	1;3.20	[ɹɪs] [dɪs]	this	English
9	1;3.20	[je]	yeah	English
10	1;3	[ba:]	bác “up-a-day” (baby word)	Slovak
11	1;4	[kaka] [kakkak]	kvák kvák “ribbit ribbit”	Slovak
12	1;4	[kaka] [ka:] [kaka:] [gaga]	kačkač “quack quack” OR gaga “goose sound”	Slovak
13	1;4	[kokkok]	kotkodák “hen sound”	Slovak
14	1;4	[ɲamɪ ɲamɪ ɲamɪ] [mɪɲa mɪɲa]	malilinké “tiny”	Slovak
15	1;4	[momo]	moja “mine”	Slovak
16	1;4	[baba:]	bim bam “ding dong”	Slovak
17	1;4	[xx]	croch croch “oink oink”	Slovak
18	1;4	[mm] [mu] [mu:]	mú “moo”	Either
19	1;4	[hh]	hav hav “woof woof”	Slovak
20	1;4	[na:] [na:na:] [mɲa:ʊ]	mňáu “meow”	Either
21	1;4	[habw]	havo “doggie”	Slovak
22	1;4	[huhú]	hu-hú “toowit-towoo”	Slovak
23	1;4	[mamajama:]	mama moja “my mummy”	Slovak
24	1;4	[ba:ba]	bábo “baby”	Slovak
25	1;4	[huhu]	huhuhuhu “monkey sound”	Either
26	1;4	[s] [ʃ]	ts (held longer) “snake hiss”	Slovak
27	1;4	[ww ww]	woof woof	Slovak
28	1;4	[kuku kuku]	kukikuk “peep-o”	Slovak
29	1;4	[pa:li]	páli “hot, burning”	Slovak
30	1;4	[koneno]	koleno “knee”	Slovak
31	1;4	[ku:]	cool	English
32	1;4	[ɹɛjɛ]	kde je? “where is?”	Slovak
33	1;4	[ɔke]	ok	Either
34	1;4	[anjɛ] [anjɪ]	anjel “angel”	Slovak
35	1;4	[maɲa maɲa]	malína “raspberry”	Slovak
36	1;4	[ti:]	tea	English
37	1;4	[kaga]	kakala “did a poo”	Slovak
38	1;4	[go:]	gone	English
39	1;5	[babɪ]	bábika “doll”	Slovak

	Age when first used	Phonetic form and variations	Target word “meaning”	Source Language
40	1;5	[ɲam]	mňam “yum”	Slovak
41	1;5	[b+vibration b+vib b+vib b+vib]	brum brum “bear sound (meaning bear)”	Slovak
42	1;5	[ba:] (creaky)	bé bé “ba ba”	Either
43	1;5	[ku:ku:]	kikirikí “cock-a-doodle-doo meaning rooster”	Slovak
44	1;5	[ʃʃʃ]	šš šš “train sound”	Slovak
45	1;5	[caba]	table	English
46	1;5	[ci:]	deti “children”	Slovak
47	1;5	[kɛwə]	kvietok “flower”	Slovak
48	1;5	[cətə?] [cəjɛ?] [cəjɛtə?]	čo je to? “what is it?”	Slovak
49	1;5	[pu:]	poo	English
50	1;5	[pi:]	please	English

APPENDIX E Fixed pivot schemas and item-based frames

Fixed expressions produced as a single unit, with one fixed and one alternating constituent:

Age	Schema Language, addressee(s)	'Target form' 'Meaning'
1;7.14	[deəʃi:s] English, Father	'there she is!'
1;7.17	[ʃɛsi:ʔ] Slovak, Mother	'kde si?' 'where are you?'
1;8.9	[tʃɛsu:] English, Father	'chase you!' 'chase you (=me)!'
1;8.9	[ʃɛsu:] Slovak, either	'kde sú?' 'where are they?'
1;8.9	[tusɔ:] Slovak, either	'tu sú!' 'here they are!'
1;8.9	[tuje]	'tu je!' 'here it is!'
1;8.9	[ʃoʊmi:] English, both parents	'show me!'
1;8.9	[baɪtʃu:] English, Father	'bite you'
1;8.11	[zapɪm] Slovak, either	'za ním' '(go) to him.'
1;8.21	[ʃodomaʃ] Slovak, Mother	'čo to máš?' 'what have you got?'
1;8.21	[ʃɛje]	'kde je?' 'where is?'
1;8.21	[kɔmame]	'ku mame' 'to mummy'
1;8.21	[ʃɔdɔ]	'čo to je?' 'what's that'
1;8.21	[de:əɪs] English, both parents	'there (he) is'
1;8.31	[dɪsəm] English, Father	'this one'
1;8.31	[jɛdam] English, Father	'red one'
1;8.31	[kɔjɔne]	'ku Riane' '(come) to Ria.'
1;9.4	[ʃɛsɔmʔ] Slovak, Mother	'kde som?' 'where am I?'
1;9.4	[toje]	'tu je!' 'Here it is!'
1;9.4	[tusɔ:] Slovak Mother	'tu sú' 'here they are'
1;9.4	[bɪgəm] English, Father	'big one'
1;9.8	[zapou] Slovak, Mother	'za ňou' '(go) to it (=the ball).'
1;9.12	[kouʃɪt]	'close it'

Age	Schema Language, addressee(s)	'Target form' "Meaning"
	English, Father	
1;9.12	[i:tit] English, Father	'eat it'
1;9.12	[jaikət] English, Father	'like it'
1;9.12	[bu:wən] English, Father	'blue one'
1;9.12	[jejowan] English, Father	'yellow one'
1;9.12	[bekən] English, Father	'black one'
1;9.12	[dɪsəm] [dɪʃən] English, Father	'this one'
1;9.12	[gudəm] English, Father	'good one'
1;9.12	[dɪsəms] English, Father	'these ones'
1;9.12	[ʃokən] English, Father	'sock on'
1;9.12	[jaɪtson] English, Father	'lights on'
1;9.12	[kɔnəm] Slovak, Mother	'ku nám' "towards us"
1;9.12	[dɔkɔpɛɛ] Slovak, Mother	'do kúpel'ne' "to the bathroom"
1;9.12	[vaʊce] Slovak, Mother	'v aute' "in the car"
1;9.12	[dɪsɪs] English, Father	'this is'
1;9.19	[naɪtəm] English, Father	'night time'
1;9.19	[basəm] English, Father	'bath time'
1;9.19	[keɪɪt] English, Father	'carry it'
1;9.19	[kætʃɪm] English, Father	'catch him'
1;9.19	[lɪtʃu:ən] English, Father	'little one'
1;9.19	[dɔʃɔjɪ] Slovak, Mother	'do školy' "to school"
1;9.19	[dɔkɔʃa] Slovak, Mother	'do koša' "in the bin"
1;9.19	[hepsəm] English, Father	'have some'
1;9.20	[ɔʊgən] English, Mother	'all gone'
1;9.26	[pɔdɔjɔm] [pɔdsɔjɔm] Slovak, Mother	'pod stolom' "under the table"

Age	Schema Language, addressee(s)	'Target form' "Meaning"
1;9.26	[voʃɪt] English, Father	'wash it'
1;9.26	[bekɪn] English, both parents	'back in (foot under the table)'
1;9.26	[dɔɪt] English, Father	'do it'
1;9.26	[wendeəʔ] English, Father	'went there?'
1;9.26	[pɪtsəm] English, Father	'pick some'
1;9.26	[nju:əns] English, Mother	'new ones'
1;9.26	[nasɛm] Slovak, Mother	'na zem' "on the floor"
1;10.4	[dɔʃɔʊkɪ] Slovak, Mother	'do škôlky' "to childcare"
1;10.6	[ʃu:ʃɒn] English, Father	'shoes on'
1;10.6	[hætson] English, Father	'hats on'
1;10.6	[nadujan] English, Father	'another one'
1;10.6	detɪs English, Mother	'that is'
1;10.7	[tɔtɔjɛ] Slovak, Mother	'čo to je?' "what's that?"
1;10.7	[dɔsakada] Slovak, Mother	'do záchoda' "in the toilet"
1;10.7	[nasanɔ] Slovak, Mother	'na stranu' "on the side"
1;10.10	[jɪtɔjəns] English, Mother	'little ones'
1;10.10	[tɔjɛm!] Slovak, Mother	'tu som!' "here I am!"
1;10.14	[bɪnəp] English, Mother	'blind up'
1;10.19	[mɪsu:] English, Father	'miss you'
1;10.22	[hɔʊdɪs] English, Father	'hold this'
1;10.23	[adujan] English, Father	'other one'
1;10.26	[gejəp!] English, Father	'get up!'
1;10.27	[pɪpɔtətʃɪ] Slovak, Mother	'pri počítači' "by the computer"
1;10.27	[weəʃɪs?] English, Father	'where she's?'
1;10.27	[tɔsɪ:!] English, Father	'tu si!' (referring to self)

Age	Schema Language, addressee(s)	'Target form' "Meaning"
	Slovak, Mother	"here you are!"
1;11.3	[o:udesd]	'all dressed'
1;11.4	[teisi] English, Father	'taste it'
1;11.4	[adujunɔ] Mixed, Father	'other one-u' (Slovak feminine suffix)
1;11.4	[bigap] English, Father	'big one'
1;11.4	[wontsa?] English, Father	'want some?'
1;11.6	[oʊpeɲɪc] English, Father	'open it'
1;11.6	[woodɪt] English, both parents	'rolled it'
1;11.7	[heɪtɪt] English, both parents	'have it'
1;11.7	[hesam] English, both parents	'has some'
1;11.11	[haɪtɪt] English, both parents	'have it'
1;11.12	[pekʌp] English, both parents	'pack up'
1;11.14	[jaɪksəm] English, both parents	'like some'
1;11.18	[fɪksɪt] English, both parents	'fix it'
1;11.19	[geɪp] English, both parents	'get up'
1;11.21	[geɪtɪt] English, Father	'get it'
1;11.23	[dɪdec] English, Father	'did it'
1;11.27	[li:bɪc] English, both parents	'leave it'

APPENDIX F Early word combinations

Language choice indicates one of five utterance types: unilingual Slovak or English utterance, bilingual utterance, mixed utterance, or *indeterminate* if the language could not be clearly determined and the utterance could belong to either language. The utterance addressee is indicated first, followed by other interlocutors that were present.

Age	Language choice Addressee (others present)	'Target form' "meaning"	Utterance length	Function
1;4.8	[mama dada gaga] Indeterminate Mother	'mami, daddy, kačiatka' "mummy, daddy, ducklings"	3-word	Multiple subject - Expressing presence of objects
1;4.9	[mama momo] Slovak Mother	'mama moja' "my mummy"	2-word	Social expression of feelings
1;4.19	[mamı dædı jana] Indeterminate Both parents	'mami, daddy, Ria' "Mami, daddy, Ria, (we're all here)."	3-word	Multiple subject - Expressing presence of people
1;4.19	[mamı jana] Indeterminate Mother	'mami, Riana' "mami and Riana (are here)."	2-word	Expressing presence of people
1;4.29	[dædı en mamı] English Both parents	'daddy and mami' "daddy and mami (are here)."	3-word	Expressing presence of people
1;5.5	[det. de to mama.] Mixed Both	'that. that <i>to</i> mama.' (<i>to</i> is the Slovak TE of <i>that</i>) "that. that that mummy."	2-word telegraphic	Expressing recipient
1;5.5	[nana: jε] Slovak Both	(pointing at herself) 'Riana je' "Riana is"	2-word	Specifying
1;5.5	[tʃa ti] Bilingual Both	'čaj tea' "tea tea"	2-word	Providing clarification
1;5.6	[mu: # mɪɲa mɪɲa] Slovak Both	'moo # malilinká' "tiny cow"	2-word	Property of an object
1;5.13	[mamı. ## dædı ɲε.] Slovak Mother	'mami. daddy nie.' "mami (is changing my nappy). daddy not."	2-word	Action description
1;5.14	[bebrı. # babo] Bilingual	'baby. bábo.' "baby. baby."	2-word	Providing clarification

Age	Language choice Addressee (others present)	'Target form' "meaning"	Utterance length	Function
	Father			
1;5.14	[dʌm pi:] Mixed Father (Mother)	'dám please' "give (me water) please."	2-word	Request
1;5.15	[dædi. ti:. go.] English Both parents	'daddy. tea. go.' "daddy (will drink) tea (and) go."	3-word telegraphic	Action description
1;5.15	[tɪ dædi] English Father	'teeth daddy' "daddy (is brushing his) teeth."	2-word	Person acting on object
1;5.23	[pejanɔ. mami!] Slovak Father (Both parents)	'pre Rianu. mami!' "for Riana. mami!" (mami gave a spoon for Ria to DAD)	2-word telegraphic	Indicating recipient
1;5.24	[teɪn. jʌnə.] English Both parents	'train. Riana.' "train. Riana('s)"	2-word telegraphic	Possession
1;5.26	[po. dædi.] Slovak Mother	'pošta. (pre daddy(ho).' "mail. (for) daddy."	2-word telegraphic	Possession

APPENDIX G Ria's Mixed Utterances

One-word English utterances mixed in interactions with the mother:

Word 'target word'	Tokens	Type of morpheme/word class
[ta:] 'ta' (thanks)	2	Function word/closed class
[hi] 'here'	2	Function word/closed class
[dɪs] 'this'	2	Function word/closed class
[mo] 'more'	2	Function word/closed class
[ap] 'up'	1	Function word/closed class
[on] '(put) on'	1	Function word/closed class
[pi:] 'please'	2	Social word/closed class
[wɒs] 'what's that' (fixed expression)	1	Function word/closed class
[go:] 'gone'	5	Lexical/open class
[ku:] 'cool'	3	Lexical/open class
[go] 'go'	4	Lexical/open class
[ho] 'hot'	2	Lexical/open class
[caba] 'table'	1	Lexical/open class
[ti:] 'tea'	1	Lexical/open class
[pu:] 'poo'	1	Lexical/open class
[ki:] 'key-(ring)'	1	Lexical/open class
[bi] 'bib'	1	Lexical/open class
[bo] 'ball'	1	Lexical/open class
[ti:] 'teeth'	1	Lexical/open class
[be:] 'bear'	1	Lexical/open class
[fo:] 'fork'	1	Lexical/open class
[pi] 'pretty'	1	Lexical/open class
[fi:] 'see'	1	Lexical/open class
[ni] 'knee'	1	Lexical/open class
[pu] 'poo'	1	Lexical/open class
[bi] 'big'	1	Lexical/open class

One-word Slovak utterances mixed in interactions with the father:

Word ‘target word’ “meaning”	Tokens	Type of morpheme/word class
[ano] ‘ano’ “yes”	3	Function word/closed class
[du] ‘druhú’ “the other one”	1	Function word/closed class
[moj] ‘mój’ “my (daddy)”	1	Function word/closed class
[ma] ‘mravec’ “ant”	3	Lexical/open class
[pa:] ‘pavúk’ “spider”	1	Lexical/open class
[ta:wa] ‘tráva’ “grass”	1	Lexical/open class
[ʒu] ‘zuby’ “teeth”	1	Lexical/open class
[ku:] ‘klúče’ “keys”	1	Lexical/open class
[b+vibration] ‘brum brum’ (onomatopoeia for bear sound)	1	Lexical/open class

Mixed two-word and multiple-word utterances

Language of utterance indicates the base language which was determined by the addressee (*Slovak or English*), and into which a mix was introduced. If the language could not be clearly determined and the utterance could belong to either language, as in some two-word utterances or in bilingual contexts, the utterance was marked as *Indeterminate*.

Mixing type refers to lexical or grammatical mixing, blends or borrowing. Lexical mixing was categorized as mixing where an item from the other language was used in an unchanged form in an otherwise base language utterance. If the item was integrated morphologically into the base language, using grammatical morphemes from the base language, mixing was categorized as grammatical. Borrowing refers to items that were used on family level or introduced by parents, and thus not identified as true mixing. Blends were words consisting of items from both languages, which could also be considered grammatical mix if containing grammatical morphemes.

The mixed items are shown in italics in the ‘Target form’ column. The determinant of mixing refers to this item. Where two items were mixed in one utterance, two mixing types and two determinants are shown, respectively.

The following abbreviations are used in notation of grammatical mixing:

ENI – **E**nglish **N**oun **I**nflexion

SNI – **S**lovak **N**oun **I**nflexion

SVI – **S**lovak **V**erb **I**nflexion

SG – **S**lovak **G**ender morpheme

Mixed two/multiple-word utterances addressed to the mother:

Age	Utterance	Language of utterance (Others present)	'Target form' "Meaning"	Mixing type	Reasons for mixing
1;6.18	[du:. da. jana. hi:.]	Slovak	'druhý. dá. Riana. here.' "Riana will put another (peg) here."	Lexical	Word preference
1;6.19	[mami. go. go. go. ka. dædi.]	Slovak	'mami. go. go. go. kam? (za) daddym.' „Mami let's go. Where? To daddy."	Lexical	Lexical gap
1;6.19	[pu:. ja:. ja:. ja:.]	Slovak	'poo. vtáčik(ove).' "Birdie's poo."	Lexical	Word preference
1;6.19	[ɲɛɲi. ɲɛɲi. hi. hi. ɲɛɲi]	Slovak	'nie je. here. nie je.' "There isn't any (food). Here isn't."	Lexical	Word preference / negator
1;6.22	[det. det. det. sɛʃ. jana.]	Slovak	'that. want. Riana.' "Riana wants that."	Lexical	Word preference
1;7.10	[pa:i.dɪs.]	Slovak	páli. this. "This is hot."	Lexical	Lexical gap
1;7.14	[sɛm. ki. ta: mami.]	Slovak	'sem. knižku. ta (for) mami.' "Put the book here. Ta for mami."	Lexical	Lexical gap – learning context
1;8.31	[wək. ɲɛ.]	Slovak	'work. nie.' "No work (for daddy)."	Lexical	Lexical gap - learning context Negator
1;8.31	[ɲije badə]	Slovak	'nie butter' "I don't want butter."	Lexical	Lexical gap/ Negator
1;9.19	[mesɔ] (M: Čo mäso?) [jana, jitu]	Slovak (Father)	'mäso.' (M: Čo mäso?) 'Riana, little.' "meat." (M: What meat?)	Lexical	Lexical gap

Age	Utterance	Language of utterance (Others present)	'Target form' "Meaning"	Mixing type	Reasons for mixing
			"Riana, little."		
1;9.26	[hami. baɪbaɪ. pʊsʊ ## tɛjɛsɔ:n. atɔ. bɔ:ʊ]	Slovak	'hami. <i>bye-bye</i> . pusu ## telefón. auto. <i>ball</i> .' "We'll have boobie. Say bye-bye. Give kiss ## Play with telephone, car, ball."	Borrowing Lexical	Borrowing introduced by mother / Word preference
1;9.26	[gaja:j. goʊ.]	Slovak	'garáž. <i>go</i> .' "garage. Go."	Lexical	Lexical gap
1;9.26	[atɔ, gm. najɛmɛ.]	Slovak	'auto, <i>green</i> . nájdeme.' "Car, green. We will find."	Lexical	Word preference
1;9.26	[nu:ans. kʊ:pɪʊ.]	Slovak	' <i>new ones</i> . kúpil.' "New ones. He bought."	Lexical	Lexical gap
1;9.26	[oʊʊ] (M: Čo sa stalo?) [tɔtɔ. nasem. pazʊs.]	Slovak	'oh-oh.' (M: Čo sa stalo?) 'toto. na zem. <i>puzzles</i> .' "oh-oh." (M: What happened?) "This. On the floor. Puzzles."	Borrowing	Borrowing introduced by mother
1;10.6	[dɛtɪs. dædʊʃ ʊka:zaʊ]	Slovak	' <i>that is</i> . dadd-ush ukáزال.' "that is. (what) daddy showed"	Lexical	Word preference
1;10.7	[ɲɛjɛ, tubaʃa]	Slovak	'nie je <i>toothbrush-a</i> ' "isn't toothbrush"	Grammatical: toothbrush+SNI	Lexical gap - learning context
1;10.7	[ɲɛjɛ mami? tubaʃa]	Slovak	'kde je mami? <i>toothbrush-a</i> ' "where's mami? toothbrush"	Grammatical: toothbrush+SNI	Lexical gap -learning context
1;10.8	[suʃɪ mami. sada, jana.]	Slovak	' <i>excuse me</i> mami. sadká (si) Riana' "excuse me mummy. will sit Riana"	Lexical	Lexical gap
1;10.8	[zʊbɪ, mami. basum.]	Slovak	'zuby mami. <i>bathroom</i> '	Lexical	Lexical gap

Age	Utterance	Language of utterance (Others present)	'Target form' "Meaning"	Mixing type	Reasons for mixing
			"teeth mummy. bathroom"		
1;10.8	[bam bɔjɪ.]	Slovak	' <i>bum bolí</i> ' "bum hurts"	Lexical	Momentary lapse
1;10.8	[fɪnɪʃɔ. dædɪ.]	Slovak	' <i>finish-ol. daddy.</i> ' "finished. Daddy"	Grammatical: finish+SVI	Lexical gap/word preference
1;10.10	[gacɪ, jana, poda:m. # jɪtɔjans]	Slovak	' <i>gaťky, Riana, podám. # little ones</i> ' "undies, Riana, I will pass. # little ones"	Lexical	Momentary lapse
1;10.11	[tɛnkɔ: mamɪ]	Indeterminate	' <i>thank you mami</i> '	Lexical	Word preference
1;10.13	[hot. kɪtac ɲɛ.]	Slovak	' <i>hot. chytat' nie.</i> ' "hot. touching not"	Lexical	Momentary lapse
1;10.24	[ɔjɔbr:mɛ dædɪ kemomaɔ]	Slovak (Father)	' <i>urobíme daddy cammomile</i> ' "we'll make daddy camomile (tea)"	Lexical	Lexical gap - learning context
1;10.29	[bædi: sadɔɔ dɔ vɔdɪ]	Slovak	' <i>birdie spadol do vody</i> ' "birdie fell in the water"	Lexical	Momentary lapse - newly acquired word
1;10.29	[tɔ gus. gus. gus.]	Slovak (Father)	' <i>to. goose. goose. goose.</i> ' "that. Goose. Goose. Goose."	Lexical	Previous context/topic was in English
1;10.29	[adɔ jɛ sinu pɪgs. gɪnɪ gɪnɪ pɪgs]	Slovak (Father)	' <i>a to je guinny pigs. guinny guinny pigs.</i> ' "and that is guinny pigs"	Lexical	New word - learning context
1;10.29	[banɪ. anɔ.]	Slovak (Father)	' <i>bunny. ano.</i> ' "bunny. Yes"	Lexical	Bilingual context, previous context/topic was in English
1;10.29	[tɔtɔ. tʃɪkən]	Slovak (Father)	' <i>toto. chicken.</i> ' "This. Chicken"	Lexical	Bilingual context, previous context/topic was in English
1;10.29	[bædi. ʒɔtɪ. tɔtɔjɛ?]	Slovak	' <i>birdie. žltý. čo to je?</i> '	Lexical	Momentary lapse -

Age	Utterance	Language of utterance (Others present)	'Target form' "Meaning"	Mixing type	Reasons for mixing
		(Father)	"birdie. Yellow. What's that?"		newly acquired word
1;10.29	[ɛʃɛ dɪswan kab]	Slovak (Father)	'ešte <i>this one</i> krab' "also this one crab"	Lexical	Word preference
1;10.29	[dɪsaŋ. kɔbak.]	Slovak (Father)	' <i>this one</i> chrobák' "this one beetle"	Lexical	Word preference
1;10.29	[tɔkanʃ. bukɪnɛ]	Slovak/ Mother (Father)	' <i>toucans. book-ine</i> ' "toucans. (in) book-ina"	Lexical / Blend – grammatical: book+SNI	Previous context was in English / Family word (used by the mother with Slovak inflections)
1;10.31	[tɔtɔ seʒena:. pa:tʃɪ seʒena:. cenku:]	Slovak	'toto zelená. páči zelená. <i>thank you</i> ' "this green like green. Thank you."	Lexical	Lexical gap
1;11.1	[mamɪ semsɪ]	Slovak	'mami <i>stamps-y</i> ' "mummy stamps"	Grammatical: stamps+SNI	Lexical gap – morphologically integrated into Slovak
1;11.1	[ɪnɛ: sɔksɪ]	Slovak	'iné <i>socks-y</i> ' "other socks"	Grammatical: socks+SNI	Momentary lapse – morphologically integrated into Slovak
1;11.11	[nɔ:ʊ mamɪ. kɔpɪtsa makɔm ɲɪɛ.]	Slovak	' <i>no</i> mami. krupica s makom nie.' "no mummy. goodness me no."	Lexical	Momentary lapse
1;11.3	[havinkɔ:. damp. ʃakɔʊ.]	Slovak	'havinko. <i>jump. skákal.</i> ' "doggie. Jump. He was jumping."	Lexical	Momentary lapse – self-repair
1;11.3	[sabam, pɔsɪ. juk.] (M: čo robíš?) [pɔsabɪ:m]	Slovak	'vstávam, pozri. <i>look.</i> ' (M: čo robíš?) 'postavím (sa).' "I'm getting up, look. look.' (M: What are you doing?)	Lexical	Emphasis

Age	Utterance	Language of utterance (Others present)	'Target form' "Meaning"	Mixing type	Reasons for mixing
			"I will get up"		
1;11.3	[sa:kac! dzamp!]	Slovak	'skákať! <i>jump!</i> ' "to jump! Jump!"	Lexical	Emphasis
1;11.3	[mami, ci:bou] (M: čo sme tam robili?) [bɛbitʃi:no # arsi:m]	Slovak	'mami, Cibo' (M: čo sme tam robili?) ' <i>babycino # icecream</i> ' "mummy, Cibo" (M: What did we do there?) "babycino # icecream"	Lexical	TE not available Lexical gap
1;11.3	[ɛʃɛ ma:toʊ]	Slovak (other family)	'ešte (<i>to</i>) <i>mato</i> ' "more tomato"	Lexical	Word preference
1;11.3	[ma:cin, dau, pesent]	Slovak	'Martin, dal, <i>present</i> ' "Martin, gave, present"	Lexical	Learning context -new word
1;11.3	[ʃɛnka:. beɪbɪ ʃɪnka:]	Slovak	'srnka. <i>baby</i> spinká' "doe. Baby is sleeping."	Lexical	Lexical gap (Slovak TE 'mlád'a')
1;11.4	[kɪʃa kɔʊd]	Slovak	'knižka <i>cold</i> ' "book cold"	Lexical	Word preference
1;11.4	[kɔʊt, bukɪnɪ]	Slovak	' <i>cold, book-iny</i> ' "cold, book."	Lexical / Blend-grammatical: book+SNI	Word preference/ Family word (used with Slovak inflections by mother)
1;11.4	[pentsu. pentsu zɔbam]	Slovak (Father)	' <i>pencil. pencil</i> zoberiem' "pencil. Pencil I will take."	Lexical	Word preference
1;11.5	[bukɪnɔ ma:m]	Slovak (Father)	' <i>book-inu</i> mám' "book I have"	Blend-grammatical: book+SNI	Family word (used with Slovak inflections by the mother)
1;11.5	[pa:tʃi, bukɪna]	Slovak	'páči, <i>book-ina</i> '	Blend-	Family word (used with

Age	Utterance	Language of utterance (Others present)	'Target form' "Meaning"	Mixing type	Reasons for mixing
		(Father)	"there you go, book"	grammatical: book+SNI	Slovak inflections by the mother)
1;11.5	[ja ma:m fok]	Slovak (Father)	'ja mám <i>fork</i> ' "I have fork"	Lexical	Momentary lapse – bilingual context
1;11.5	[ɲema:m fok]	Slovak (Father)	'nemám <i>fork</i> ' "I don't have a fork"	Lexical	Momentary lapse – bilingual context
1;11.5	[mamɪ:, nadujana!]	Slovak	'mami, <i>another one-a</i> ' "mummy, another one!"	Grammatical: another one+SG	Word preference, integrated morphologically
1;11.6	[vɛɪkɪ: tu: matʃ]	Slovak	'veľký <i>too much</i> ' "big too much"	Lexical	Lexical gap
1;11.6	[mamɪ, pɪ:ʃ faɪfɛn!]	Slovak (Father)	'mami, píš <i>frying pan!</i> ' "mummy, write frying pan!"	Lexical	Reported speech
1;11.13	[ja mam toʊs, mamɪ]	Slovak (Father)	'ja mám <i>toast</i> , mami' "I have toast, mummy"	Lexical	Lexical gap – learning context
1;11.13	[tətɔjɛ? tebec]	Slovak	'čo to je? <i>tablet.</i> ' "what is it? tablet"	Lexical	Lexical gap – learning context
1;11.16	[ɛnadujan kamejɔc]	Slovak	' <i>another one kamienok</i> ' "another one rock"	Lexical	Word preference
1;11.18	[cɛtɔ pa:ntsɪ]	Slovak	'tieto <i>plants-y</i> ' "these plants"	Grammatical: plants+SNI	Momentary lapse – new word preference, morphologically integrated
1;11.18	[ɛʃɛ ʃɪnamɔn]	Slovak	'ešte <i>cinnamon</i> ' "more cinnamon"	Lexical	Lexical gap – learning context
1;11.27	[ʃɪɲɪʃ. tʃɛvɛnɛ: ʃɪɲɪʃ, mamɪ]	Slovak (Father)	' <i>spinach</i> . červené <i>spinach</i> , mami.' "spinach. Red spinach, mummy"	Lexical	Lexical gap – learning context

Age	Utterance	Language of utterance (Others present)	'Target form' "Meaning"	Mixing type	Reasons for mixing
1;11.28	[dædi # zɑnɪm # fə:s jana]	Slovak	'daddy # zɑnɪm # first Riana' "daddy # after him # first Riana"	Lexical	Lexical gap
1;11.28	[tenk ju: babka]	Slovak	'thank you babka' "thank you grandma"	Lexical	Word preference
1;11.28	[peɪc jɑnɪn mɑmɪ]	Slovak	'plate Rianin mami' "Plate Riana's mummy"	Lexical	Lexical gap
1;11.30	[tʃɪpsɔʊ nɪɛ. tʃɪps nɛmɑ:m.]	Slovak (Father)	'čipsou nie. chips nemám.' "with chip not. chips I don't have."	Borrowing: chips+SNI	Borrowing introduced by mother

Mixed two/multiple-word utterances addressed to the father:

Age	Utterance	Language of utterance (Others present)	'Target form' "Meaning"	Mixing type	Reasons for mixing
1;5.14	[dam pi:]	English (Mother)	' <i>dám</i> please.' "Give (me water) please."	Lexical	Lexical gap
1;7.14	[ʃo:ts. dou.]	English	'shorts. <i>dolu</i> .' "Take the shorts off."	Lexical	Lexical gap
1;10.5	[dɪsanalav. dæduʃ]	English (Mother)	'this one- <i>a lav(ička)</i> . daddush.' "this one bench. Daddy."	Blend: this one + SG+lav(ička)	Lexical gap – gender agreement with mixed Slovak noun
1;11.3	[pu: en vɪtsɪkaja # juk!]	English (Mother)	'poo and <i>vycikala</i> # look' "poo(d) and peed # look"	Lexical	Momentary lapse
1;11.6	[ʃɔsasa dædɪ]	Indeterminate (Mother)	' <i>lososa</i> daddy' "salmon daddy"	Lexical	Momentary lapse – bilingual context
1;11.7	[ɛʃɛ pɔmajantʃ. ɛʃɛ dædɪ.] (F: more orange?) [ɔjɪntʃ.]	Slovak (Mother)	' <i>ešte pomaranč</i> . <i>ešte</i> daddy.' (F: More orange?) 'orange.' "more orange. more daddy." (F: More orange?) "orange."	Lexical	Momentary lapse New word – lexical gap
1;11.12	[dædɪ ma: kɔs]	English	'daddy <i>má</i> cross' "daddy has cross"	Lexical	Lexical gap
1;11.18	[ʃabʊkɔ, ɛʃɛ, dædɪ. kɔ:s!]	Slovak & English Addressed to self (Father)	' <i>jablko ešte</i> daddy. of course! "apple more daddy. of course!"	Lexical	Reported speech of Ria's and father's utterances (Ria's original utterance: Momentary lapse /Momentary lapse)
1;11.28	[tu: ɔjɛʃɔk?]	English	'too <i>oriešok</i> '	Lexical	Lexical gap – learning

Age	Utterance	Language of utterance (Others present)	'Target form' "Meaning"	Mixing type	Reasons for mixing
		(Mother)	"too, (would you like) nut?"		context
1;11.28	[mo: əjɛʃək dædɪ?]	English (Mother)	'more <i>oriešok</i> daddy?' "more nut daddy?"	Lexical	Lexical gap – learning context

Mixed two/multiple-word utterances addressed to both parents in triadic interactions:

Age	Utterance	Language of utterance (Others present)	'Target form' "Meaning"	Mixing type	Reasons for mixing
1;5.5	[det. deto mama.]	Indeterminate	' <i>that. That+to mama.</i> ' "That. That that mummy."	Lexical	Word preference followed by self-repair
1;6.23	[ʃatətwɔ pu]	Indeterminate	' <i>vtáčikove poo</i> ' "Birdie's poo"	Lexical	Word preference
1;7.15	[bi. dædi. jana. i. fam.]	Indeterminate	'(on) bikes. daddy. Riana. <i>ihrisko. fun.</i> ' "We're going on bikes, daddy with Riana, to the playground, it will be fun."	Lexical	Lexical gaps
1;7.28	[lono. sɛm.]	Indeterminate	' <i>lawn-mower. sem.</i> ' "Put the lawnmower here."	Lexical	Word preference – newly acquired word
1;8.9	[njɛjɛ. pa:sl.]	Indeterminate	' <i>nie je. parsley.</i> ' "I don't want parsley on my cucumber."	Lexical	Lexical gap - negator
1;8.9	[wɔm. dædi. jana. mami. # tʃɛ:əs. jana.]	Indeterminate	' <i>von. daddy. Riana. mami. chairs. Riana.</i> ' "Let's go outside, Daddy, Riana, mami, let's put the chairs out, Riana's too."	Lexical	Bilingual context – difficulty retrieving, since both items (<i>von</i> "outside" and <i>chairs</i> "stoličky") were available in productive vocabulary
1;8.21	[vɛ:ji. kat.]	Indeterminate	' <i>velký. cut.</i> ' "Cut this big piece." OR "This is a big piece. Cut it."	Lexical	Word preference Lexical gap
1;8.21	[gi:n. ʃɛ.]	Indeterminate	' <i>green. svetielko.</i> ' "The light is green."	Lexical	Word preference/ Lexical gap
1;8,21	[mi mi mi mi. bojo.]	Indeterminate	' <i>meat meat meat meat. bolo.</i> ' "There was some meat."	Lexical	Lexical gap – learning context

Age	Utterance	Language of utterance (Others present)	'Target form' "Meaning"	Mixing type	Reasons for mixing
1;8.21	[vajr: dædɪ mɪ mɪ mɪ]	Indeterminate	'varí daddy <i>meat</i> .' "Daddy is cooking meat."	Lexical	Lexical gap – learning context
1;8.24	[jubɪʃ dædɪ. jubɪʃ mamɪ. jubɪʃ babos.]	Indeterminate	'Ťúbiš daddyho. Ťúbiš mami. Ťúbiš <i>babos</i> .' "You love daddy. You love mami. You love babos."	Borrowing - Grammatical babo+ENI	Family word (adopted by father and used with English grammatical morphemes)
1;8.31	[tɔjɛ ba:bi:]	Indeterminate	'tu je <i>barbie</i> ' "Here's the barbie! (BBQ)"	Lexical	No equivalent available
1;9.1	[kat. kat. # nɔʃɪkɔm. mamɪnɪ.]	Slovak	' <i>cut</i> . nožíkom. maminym.' "Cut it with mami's knife."	Lexical	Word preference
1;9.12	[dɪsɪm, ɡɪn. ɡɪn ɡɪn ɡɪn ɡɪn ɛ ʒɔtɛ:]	English	'this one, green. green and <i>žlté</i> .' "This one, the green one and yellow one." (pointing at several different objects)	Lexical	Momentary lapse/difficulty retrieving
1;9.19	[dædɪs, janas ɡɔn. vɪdɔ, vɪdɔ!]	English	'daddy's, Riana's gone. <i>vidličku</i> , <i>vidličku</i> ! "Daddy's, Riana's gone. Fork, fork!"	Lexical	Momentary lapse
1;9.20	[kat. nɔʃɪ:kɔm! dædɪxɔ!]	Slovak	' <i>cut</i> . nožíkom! daddyho! "cut. With a knife! Daddy's (knife)!"	Lexical	Word preference
1;10.6	[dædɪ, ma: ʌndə]	Indeterminate	'daddy, <i>má</i> under' "daddy, has (chin) under (beard)"	Lexical	Lexical gap
1;10.6	[mamɪ pɪxɑ:. fo:fet]	Indeterminate	'mami pichá. <i>forhead</i> ' "mummy prickles. (on the) forhead"	Lexical	Word preference –newly acquired word
1;10.7	[pa:ʃɪ, hɪbɪk. maʃɔm. pa:ʃɪ]	Indeterminate	'páli hribik. mushroom <i>páli</i> .' "hot mushroom. mushroom hot."	Lexical	Momentary lapse - Clarification for father
1;10.7	[tɔtɔ. ma:tɔʊ]	Indeterminate	'toto. (<i>to</i>) <i>mato</i> '	Lexical	Word preference

Age	Utterance	Language of utterance (Others present)	'Target form' "Meaning"	Mixing type	Reasons for mixing
			"this. tomato"		
1;10.18	[ɲemame tawə]	Indeterminate	'nemáme towel' "we don't have towel"	Lexical	Lexical gap Previous context/topic was in English
1;10.24	[mama ma: tʃi:ks]	Indeterminate	'mama má cheaks' "mummy has cheaks"	Lexical	Bilingual context
1;11.4	[ɪsɪjə, peɪ]	Indeterminate	'ihrisko, play' "playground, play"	Lexical	Bilingual context
1;11.4	[vɪpabam. # gon]	Indeterminate	'vypapám. # gone' "I will eat up. # gone"	Lexical	Word preference
1;11.7	[ma:toʊ, pa:ɪ]	Indeterminate	'(to)mato, páli' "tomato is hot"	Lexical	Word preference
1;11.7	[ma:toʊ ja ma:m]	Slovak	'(to)mato ja mám' "tomato I have"	Lexical	Word preference
1;11.13	[ɟɪtʊjan tʃajɪ:k]	Indeterminate	'little one čajik' "little one tea"	Lexical	Word preference
1;11.14	[ja mam ti:]	Slovak	'ja mám tea' "I have tea"	Lexical	Word preference
1;11.23	[medɪsɪn ɲɛ]	Indeterminate	'medicine nie' "medicine no"	Lexical	Bilingual context
1;11.27	[dædɪ ma: tʃɪn]	Indeterminate	'daddy má chin' "daddy has chin"	Lexical	Bilingual context
1;11.27	[van əjɛxə. əjɛxɪ. van əjɛx.]	English	'one orech-o. orechy. one orech' "one nut. nuts. one nut"	Lexical	Lexical gap - self-repair of grammatical morpheme, searching for the Nominative singular form

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