

**CODE MIXING AND CODE SWITCHING IN 8-10 YEARS OLD
MALAYALAM-ENGLISH SUCCESSIVE BILINGUAL
CHILDREN**



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Certificate

This is to certify that this dissertation entitled “**Code Mixing and Code Switching in 8-10 years old Malayalam English Successive Bilingual Children**” is a bonafide work in part fulfillment for the Degree of Master of Science (Speech-Language Pathology) of the student (Registration No.14SLP022). This has been carried out under the guidance of a faculty of this institute and has not been submitted earlier to any other University for the award of any other Diploma or Degree.

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Declaration

This dissertation entitled “**Code Mixing and Code Switching in 8-10 years old Malayalam-English Successive Bilingual Children**” is the result of my own study under the guidance of Dr. Jayashree C. Shanbal, Reader in Language Pathology, Department of Speech-Language Pathology, All India Institute of Speech and Hearing, Mysore, and has not been submitted earlier in any other University for the award of any Diploma or Degree.

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CHAPTER 1: Introduction

Bilingualism is a phenomenon that exists in every country, in all classes of the society and even in all age groups (Grosjean, 1982). Approximately half of the world's population is bilingual or multilingual. According to the Census of India (2011), more than two lakh of the population can speak more than one language in India. Bilingualism is commonly defined as the use of at least two languages by an individual (ASHA, 2004). Grosjean (2010) proposes a definition of bilingualism that places emphasis on the regular usage of languages rather than the fluency: "bilinguals are those who use two or more languages (or dialects) in their everyday life." Though it is challenging to define and describe bilingualism, abundant numbers of researches have attempted to explore bilingualism in both written and spoken mode of communication. Bilinguals have been classified based on the age of acquisition of the languages. Several authors have given different views on classifying bilinguals as simultaneous and successive or sequential bilinguals. Individuals who are exposed to La/L1 and Lb /L2 before 2 years of age are referred to as "simultaneous" bilinguals and the others are classified as "successive" bilinguals (De Houwer, 1997).

Researches reveal that there is a tendency for bilinguals to shift the languages during the written or spoken mode of communication. The linguistic behavior of switching from one language to another exhibited by bilinguals or multilinguals are referred to as code switching or code mixing. Code switching and code mixing is used as a tool by bilinguals to achieve personal goals in daily communicative situations. Muysken (2000) defines code mixing as a prompt or a swift succession of

various languages within a single speech event and it is the appearance of grammatical and lexical items from both the languages in a single sentence. Annamalai (1989) stated that code switching occurs in full sentences with the use of other language, whereas code mixing does not involve sentence level changes.

There have been various attempts to study the phenomenon and type and pattern of code mixing and code switching. There have been studies in several languages like Spanish-English, French-English, and Korean-English. Since English is considered as a global language several of the researchers have studied the phenomenon of code switching and code mixing with respect to English as the second language. According to Paradis, Nicoladis and Genesee (2000), the syntactic and semantic constraints of code mixing and code switching would differ for different languages. The structural framework of Indian languages and English has many differences. Most of the children learn English as their second language either simultaneously or sequentially during the early school years in India. Hence, there is a need to carry out extensive researches on bilingual phenomenon such as code mixing and code switching in India. Few studies carried out in India are by Aparna (2015), Hellows (2013), Harini and Chengappa (2008), Mathews (2012), Mahalakshmi and Prema (2011) and so on.

Syntactic constraints across different languages can be studied with respect to word order effects. English follows Subject-Verb-Object (SOV) order whereas most of the Indian languages follow Subject-Object-Verb (SVO) order. Mohanan (1982) states that Malayalam, which is a Dravidian language, follows a free order phenomenon. So Malayalam has two permissible word orders (SOV and SVO) in the

formation of sentences. Aparna (2015) have studied the type, extent and the level of code mixing and code switching in Malayalam-English bilingual children of 6-8 years. The results revealed that code switching and code mixing were observed more in the 6-7 years group than 7-8 years. Findings of the study revealed a developmental trend in the pattern of acquisition of bilingualism. It has been found by many researchers that generally at an earlier stage CM is used to compensate for the lexical gap rather than for specific functions such as emphasis, focus, elaboration etc (Gumperz, 1972; McClure, 1998). From this view it could be inferred that children in the lower age group exhibited more number of CM due to difficulty in finding an existing word or missing word in first language. As the age increases vocabulary improves and there is an improvement in the proficiency of the language in use. Hellows (2013) found that code mixing behaviors reduced with increase in proficiency in the learned languages in Hindi-English bilingual children of 6-8 years.

It would be interesting to study the influence of English on Malayalam language and to study the pattern of acquisition of bilingualism in older children who are expected to have achieved some level of proficiency with language use over a period of time in school. With age, children may exhibit a varied pattern of code mixing and code switching as their proficiency of the learned languages improves over a period of time. Hence, the aim of the current study is to understand the code mixing and code switching mechanism and study the pattern of acquisition in Malayalam-English successive bilingual children of the 8-10 years and to compare the type, extent and level of code mixing (CM) and code switching (CS) in these children.

Need for the Study

Most of the studies in the field of bilingualism revealed a developmental pattern of acquisition. Even in the Indian scenario, most schools follow the trilingual policy. So the children are exposed to at least three languages apart from knowing their own native language. English is another language which is in growing popularity in the country which is also the medium of instruction in most schools. English being a global and popular language, it has now become the preferred language of use for most parents of school going children, not barring the effects that it could have on their native languages. This state is not too different in the state of Kerala with Malayalam as the native language. Mohanan (1982) reported that Malayalam is one among the Dravidian Languages that has a relative flexibility in word order while, English follows a strict word order form. This could be one reason for an explorative research to study the influence of one language over the other with a different principle of sentence structure. In one of the studies reported by Aparna (2015) in 6-8 year old Malayalam-English bilingual children, it was found that greater code mixing was exhibited by younger 6-7 year old children in the process of successive acquisition of languages. It was also reported that, the frequency of code mixing reduced from 6 years to 8 years of age. Studying a continuum in terms of exploring the developmental pattern of code mixing and code switching in older range of bilingual children with greater experience in any particular language, would provide evidences towards acquisition of bilingualism in children. Hence, the current study attempted to understand the code mixing and code switching and the pattern of acquisition in Malayalam-English (M-E) successive bilingual (older) children of 8-10

years of age. Marar (1971) reported that the frequent use of English can influence spoken and written forms of Malayalam as well. Findings also revealed that agglutinative feature of Malayalam would allow an easy morphological mixing when compared to other languages, and hence can get easily influenced by other languages. An insight into the type, level and extent of code switching and code mixing in Malayalam-English (M-E) successive bilingual older children would provide information on the pattern of various attributes during bilingual acquisition in children.

Aim and objectives of the study

The primary aim of the current research was to study code mixing and code switching in 8-10 years old Malayalam-English successive bilingual children.

Objectives of the study

The objectives of the study include,

- To study the developmental pattern of code mixing and code switching in 8-10 year old Malayalam-English (M-E) successive bilingual children.
- To compare the type, extent and level of code mixing (CM) and code switching (CS) of 8-10 years old Malayalam-English (M-E) successive bilingual children.

Hypotheses

The following null hypotheses was put forth,

- There is no significant developmental trend in the occurrence of code mixing and code switching in 8-10 year old Malayalam-English bilingual children.

- There is no significant difference in the type, extent and level of code mixing and code switching in 8-10 year old Malayalam-English successive bilingual children.

CHAPTER 2: Review of literature

Bilingualism is considered as a widely prevalent and a multifaceted phenomenon. It is considered to be a linguistically, psychologically and socially complex phenomenon. Thus, defining bilingualism by covering all its aspects is indeed very difficult. The investigation of bilingualism is a complex and a broad field that includes the study of nature of the bilinguals' knowledge as well as the cultural and social consequences of the use of more than one language in a society.

2.1 Definitions of Bilingualism

Though there have been various attempts to define bilingualism, a single agreed-upon definition is not available. It is however regarded as a continuum wherein authors place monolingual speaker at one end and at the other end, is placed the individual who has acquired the languages at an early age in naturalistic contexts (Beardsmore, 1986).

According to ASHA (2004) the term bilingualism refers to the use of at least two languages by any individual. It refers to a fluctuating phenomenon exhibited by both children and adults wherein usage as well as proficiency or mastery in two languages may change based on the context or situation or opportunity to use the languages and also exposure to other users of the languages. An extensive definition of bilingualism was given by Macnamara (1967) wherein bilingual person was described as anybody who has a minimum

level of proficiency in any one of the four linguistic skills (i.e., comprehension, reading, writing and speaking) in a language that is not their native language.

Bilingualism in the earlier times have been defined as the perfect mastery in two languages, however this concept has changed over the recent past. According to Bloomfield (1933), it is the native-like control over two languages by the speaker. People may become bilingual in different ways. For example, few individuals become bilinguals by acquiring two languages simultaneously during childhood whereas few individuals become bilinguals by learning the second language sometime after acquiring their native language. Many bilingual children grow up by speaking two or more languages. According to Bhatia and Ritchie (2006), children become bilinguals by learning language from their communication partners including parents, grandparents, playmates, formal schooling etc. The children may use one language to communicate with their parents and another language with grandparents or school mates. Thus, they may become more fluent in one language than another one.

Fabbro (2001) defined bilingualism based on the linguistic, psycholinguistic and neurolinguistic approaches. He addressed all individuals who use two or more languages or dialect in their everyday life as bilinguals. Few authors like Bialystok (2009) suggested that bilingualism is associated with improved cognitive functioning. Grosjean (2010) referred to bilinguals as those who use two languages or dialects on a regular base than referring to the fluency.

Over the decades, there were many attempts made to classify the types of bilingualism. These classification systems are based on various dimensions such as developmental, cognitive, social and linguistic domains.

2.2 Types of Bilingualism

Various authors have attempted to classify bilingualism by considering factors such as degree of fluency and competency in both the languages, age of acquisition of the languages, context in which language is acquired and others such as the hypothesized language processing mechanisms. Moradi (2014) conducted a study to understand different types of bilinguals and bilingualism. Few of these classifications include early and late bilinguals, compound and coordinate bilinguals, folk and elite bilinguals, additive and subtractive bilinguals and balanced and dominant bilinguals.

Early and Late Bilinguals: Based on the age of acquisition of languages, bilinguals are classified as early and late. According to Beardsmore (1986), early bilinguals are individuals who acquire the two languages before the pre-adolescence period and late bilinguals are those who acquire language after eight years of age. Early bilinguals are further classified as simultaneous and successive bilinguals. De Houwer (1997) has described “simultaneous” bilinguals as those who are exposed to La/L1 and Lb /L2 before 2 years of age, and the others are classified as “successive” bilinguals.

Meisel (1990) proposed the term “Bilingual First Language Acquisition (BFLA)” to be used instead of simultaneous bilingualism. According to him, BFLA refers to those situations in which a child is first exposed to L2 no later than a week after he or she is exposed to L1, and the child’s exposure to L1 and L2 is fairly similar which means that both the languages are spoken to the child almost every day.

Literature indicated that L2 acquisition refers to the acquisition of the second language without formal instruction in a natural environment. The formal learning situations reported included feedback, error correction and rule learning. Most individuals who are bilinguals experience these situations by acquiring language through the direct contact with a native speaker and also learning language through formal instructions.

Compound, Coordinate and Subordinate Bilinguals: Weinreich (1953) distinguished between compound, coordinate and subordinate bilinguals based on how the linguistic units are organized and stored by these individuals. On one hand, in compound bilinguals, a single meaning unit is present where linguistic codes of both L1 and L2 are stored. On the other hand, coordinate bilinguals have two separate meaning units wherein the linguistic codes of both the languages are stored and organized and interpret the linguistic codes of L2.

Balanced and Dominant Bilinguals: Peal and Lambert (1962) defined ‘balanced’ and ‘dominant’ bilinguals based on fluency and proficiency of the languages

which they acquire. Dominant bilinguals are those individuals who are more proficient and competent in one of the languages. On the contrary balanced bilingual is a person who has nearly equal competence and proficiency in both languages.

Folk and Elite Bilinguals: Fishman (1977) defined that bilinguals can be classified as ‘folk’ and ‘elite’ depending on the social status of language. Elite bilinguals are those individuals who can speak a dominant language in a community and an additional language which provides them added value and benefit within the society. Whereas folk bilinguals are those minority community whose native language does not have a high social value in the society they dwell.

Additive and Subtractive Bilinguals: Bilinguals are further divided as ‘additive bilinguals’ and ‘subtractive bilinguals’ depending on how the L2 of the individual influences the retention of their first language (Lambert, 1974). Bilinguals who are capable to improve the fluency of their L2 without losing proficiency in L1 are called as additive bilinguals. On the contrary, subtractive bilinguals are those who acquire L2 at the cost of losing their skills in L1.

Researches revealed that there is a tendency for bilinguals to shift the languages during the written or spoken mode of communication. Also, during the language acquisition period, when a child is exposed to more than one language, there is a possibility of interference between the two languages which are explained by various authors through various dimensions. One such dimension that was reported in literature is code mixing and code switching. When two

bilinguals come in contact, communication between them is carried through either of the languages or a third language which is formed as a result of mixing of constituents from both the languages.

2.3 Code Switching and Code Mixing in Bilinguals

Constituents of two languages can be found together in a number of linguistic phenomena such as transferring, lexical borrowing, code switching/mixing, interference, and so on (Annamalai, 1989). Bilingual speakers have a tendency to code switch when interacting in an environment where both languages are used. Code mixing and code switching are two phenomenon widely researched in the field of bilingualism. When two bilingual individuals having similar language background engage in communication, they tend to shift components of language from one to the other. This interchangeable phenomenon was referred to as code or language switching/ mixing by Langdon (2008). In general terms, switching refers to the alternation between languages, whereas mixing refers to the interchangeable use of linguistic units between the languages.

Code switching and code mixing is considered as a tool used by bilinguals to gain personal goals in daily communicative situations. Annamalai (1989) defined code switching as a phenomenon that occurs at sentence level, whereas code mixing does not involve sentence level changes. The earlier definitions of code switching explained bilinguals as those who switch or change from one language to the other depending on the context (Naseh, 1997). Bentahila and Davies (1983) suggested that code mixing is considered as mixing of constituents

from two languages and code switching is considered as a product of switching which in turn results in a third code. Muysken (2000) stated that code mixing is a swift change of constituents from various languages within a single utterance. It is considered as the mixing of lexical items from two or more languages in a single speech event.

Literature regarding code switching and code mixing revealed that bilinguals use code-switching for various purposes such as to fill lexical gaps and more complex discourse-level functions. Several investigators suggested that code mixing is a compensatory strategy used by young bilingual children as they are not competent enough in both the languages. Investigations that were carried out to understand the causes of code mixing have attributed to various factors like sociolinguistic and psycholinguistic factors. One of the reasons attributed is that, bilingualism may lead to lexical borrowing and thus a new vernacular expression or a mixture of language (Cheng & Butler, 1989). Some other reasons stated are status, integrity, self-pride, comfortability and prestige (Akere, 1977).

Thirumalai and Chengappa (1986) attributed the possible cause of code switching and code mixing as inadequate mastery of the two languages by children. Trends in the development of CM and CS have also been widely studied with respect to the frequency of CM and CS. Genesee, Nicoladis, and Paradis (1995) reported that frequency of CM reduced in older children since they learn to use vocabulary from their first language. Another possible reason could be the

loss of inhibition of L2 or improper activation of L1 which resulted in code mixing (Myers-Scotton, 1993; Backus, 2003).

Attempts have also been made by several authors to describe the types and characteristics of code switching and code mixing. Situational and metaphorical code switching are the two categories defined by Bloom and Gumperz (1972). Situational code switching is where depending on the situation, the narrator switches the code. Metaphorical code switching is where a person code switches to achieve a communicative result. Code switching is categorized into three types by Poplack (1980) as 'tag switching', 'inter-sentential code switching' and 'intra-sentential code switching'.

Tag switching refers to the insertion of tags such as 'actually', 'I mean', 'okay', 'You know' and so on into an entirely differently language. These are generally used by individuals for several purposes such as clarification, attention or topic shift. Inter-sentential switching refers to the change from one language to the other between sentences or more than a sentence level. Intra-sentential switching on the other hand refers to the switching that occurs within sentence level that is within the same sentence.

Several authors attempted to discriminate between code switching (CS) and code mixing (CM). CS refers to the use of linguistic units including words, phrases, clauses or sentences from two interfering grammatical systems across the sentence boundaries. It is also defined that CS is driven by social and psychological factors (Marasigan, 1983). On the contrary, CM is referred to the

mixing of constituents from different languages which include morphemes, words, modifiers, and phrases etc. from the two participating grammatical systems within a sentence. In simpler terms, they are referred to as inter sentential and intra sentential switching.

However, it has also been reported by few authors that distinction of CM and CS in such a way is not acceptable. Hatch and Wagner-Gough (1976) proposed that there is no sharp distinction between CM and CS. Pfaff (1979) preferred the term 'mixing' as a neutral terminology that include both CM and borrowing. Ritchie and Bhatia (1996) advocated using general terminologies such as language mixing/ switching rather than CM and CS.

Over the decades, several studies have been carried out in the area of CS and CM to understand the pattern of language acquisition in bilinguals. There are various methods used to analyze the code mixing and code switching in bilingual children. Few of these methods include Matrix Language Frame (MLF) Model (Myers-Scotton, 1993; Myers –Scotton& Jake 1995), Systematic Analysis of Language Transcripts (SALT) software (Miller & Chapman, 1981) and Perecman's level of code mixing and code switching (Perecman, 1984).

2.3.1 Matrix Language Frame (MLF) Model

The Matrix Language Frame model is a production based model proposed by Myers-Scotton (1993), Myers-Scotton (1995), Myers-Scotton and Jake (2000). This model is an abstract theoretical model to explain intra sentential and inter sentential code switching. Two central components of the model which was

explained are the distinction between Matrix language (ML) versus embedded language (EL) and content versus system morphemes. The constituents of the model were classified based on the relationship between ML and the EL. ML, considered as the base language or the major language of the conversation sets the grammatical structure of the utterance by contributing most of the system morphemes. This grammatical structure in turn referred to the morphosyntactic structure. However, content morphemes could be accessed in both ML and EL. EL, thus was considered as the less active language and was inserted into the structure established by the matrix language.

To identify the ML, one has to distinguish between system and content morphemes. Content morphemes are used to express pragmatic and semantic aspects and assign or receive thematic roles. These include verbs, nouns, and few prepositions and adjectives. The system morphemes include inflections and function words and they express the relationship with the content morphemes. However, they neither assigned nor received thematic roles. System Morpheme Principle and Morpheme Order Principle (Myers-Scotton, 1993) was used to distinguish the content and system morphemes.

The Morpheme-Order Principle: ML+EL constituents included any number of morphemes from Matrix Language and a single lexeme from Embedded Language. The surface morpheme order was considered to be similar to that of ML.

The System Morpheme Principle: In ML+EL constituents, all the system morphemes which were grammatically related to their main constituent belonged to Matrix Language.

The model proposed a total of seven categories in MLF of which four have their basis in the hierarchical relationship between ML and EL. The three other categories proposed by Munoz, Marquardt and Copeland (1998) included borrowed forms, EL insertions and revisions.

ML Islands: These are well-formed constituents which consist of ML morphemes demonstrating syntactic structure.

ML Shifts: These refer to changes in ML in successive utterances or clausal framework.

EL Islands: Constituents that consists of at least two EL morphemes showing syntactic structure inserted into ML.

ML+EL constituents: A single EL constituent which is not a borrowed form is inserted into the syntactic structure of Matrix Language morphemes.

Borrowed form: A lexeme which is borrowed from a non-native language and is incorporated into syntactic framework of other language. It is considered to be widely used by the native monolingual speakers of that language.

EL insertion: These refer to multiple EL constituents that demonstrate no syntactic structure which is inserted into the morphosyntactic framework of a number of EL morphemes.

Revisions: These are insertions that do not contribute to the meaning of an utterance. These could include errors such as speech errors, circumlocutions, restatements and indicators of word-finding problems.

Along with the system morpheme principle and morpheme order principle, three additional hypotheses were proposed by the authors (Myers-Scotton, 1993; Myers –Scotton& Jake 1995). These hypotheses are designed to strengthen the System morpheme principle and also to account for the occurrence of EL islands.

The blocking hypothesis: According to this hypothesis, any Embedded Language content morpheme which is not congruent with the Matrix Language will be blocked by a filter.

The EL Island trigger hypothesis: According to this hypothesis, whenever EL constituents appear on any utterances which are not allowed under the Matrix Language hypothesis or the blocking hypothesis, then the constituent containing it must be an Embedded Language island.

EL implicational hierarchy hypothesis: According to this, optional EL islands occur, usually, they are only those elements that are either idiomatic or formulaic or peripheral to the core grammatical arguments of the sentence.

MLF model was revised and extended as “4-M Model” (Myers-Scotton & Jake, 2000, 2001). In the 4M model system morphemes are further classified into Early, Late Bridge, Late outsider system morphemes. This revision was able to explain the way in which system morphemes participated in intra sentential code switching. According to the model, in bilingual contexts system morphemes were

contributed by ML, whereas ML and EL both provided the content morphemes. ML Islands, EL islands and ML+EL constituents were the three different basic elements according to this model. The ML islands and ML+ EL constituents consists of morpheme order of ML. When there is no agreement with the principles it was suggested that bilinguals use compromised strategies. Thus, MLF model is a powerful analysis tool which is used to examine complex bilingual phenomena such as code switching in children where language contact phenomena are influenced by number of developmental factors.

2.3.2 Systematic Analysis of Language Transcripts (SALT)

The Systematic Analysis of Language Transcripts software (Miller & Chapman, 1981) was developed to elicit, transcribe and analyze language samples. The types of speech samples that can be analyzed include conversation, narration and exposition. The transcribed samples can be analyzed for various parameters depending on the objectives. The software has been widely used worldwide in the studies of language acquisition in children. SALT software has been used in the Indian context to study code mixing and code switching by various authors such as Mahalakshmi and Prema (2011), Hellows (2013) and Aparna (2015). Various parameters considered by these authors to investigate code switching and code mixing include total number of utterances (TU), total completed words (TWC), mean length of utterance (MLU) in words, number of different words (NDW), type token ratio (TTR), and total number of code switches (TCS).

2.3.3 *Perecman's Level of Code Mixing and Switching*

Perecman (1984) proposed levels of code mixing and code switching to analyze the level of transfer in the bilingual data. Subject's utterances were transcribed and classified into levels such as lexical- semantic (words and phrase level), syntactic, morphological and phonological levels. Research revealed that bilingual speakers show all these types of transfer in their utterances.

The following section is a review of studies carried out in the context of CM and CS in bilingual children in different language contexts.

2.4 Research studies on code mixing and code switching

Several researchers have attempted to study the pattern of acquisition of languages in bilingual children with respect to presence or absence of CM and CS. These studies have been carried out in different types of bilingual children in various contexts. Many researches have been carried out to study the influence of one language over the other. Hakuta and Cancino (1977) gave a special emphasis to the influence of first-language-acquisition on the acquisition of second-language. Milon (1974) studied the acquisition of English negation in a seven year old Japanese-English bilingual child. The study attempted to study the various trends in second language acquisition. The results of the study indicated that acquisition of languages in a bilingual child followed a similar developmental trend as the monolingual children.

Attempts have been made to examine the properties of code mixing and code switching by various researchers. McClure (1977) studied code mixing and

switching in the discourse samples of young bilingual Mexican-American children. He studied the formal and functional properties of code switching and differentiated the types of code switching. The results concluded that there are two types of code switching based on functional aspects- stylistic code switching and situational code switching. The stylistic code switching is used to mark emphasis, elaboration, focus, addressee shift, topic shift, attention, clarification, attraction and so on.

Extensive studies have been carried out to understand the functions of code switching on several aspects. The pragmatic functions of code switching were studied by Munhoa (1997) in Basque- Spanish bilinguals. Findings revealed that these bilinguals use code-switching for various purposes such as the need to fill gaps in their lexicon and also more complex functions at the discourse level. On similar grounds, Hegde, Alwa, Oommen and Bhat (2010) attempted to study the discourse functions of code switching in Indian context. The study included six Kannada-English and six Malayalam-English bilingual adults. Samples from these subjects were collected, transcribed and then analyzed for inter-sentential and intra-sentential code switching, borrowing and tag switching. The results revealed that both Kannada-English and Malayalam-English exhibited greater number of intra-sentential code switching. The authors concluded that these types of code switching occur probably due to linguistic motivation, educational background, lack of technical terms in native languages and also the fact that English might express the message better. The sequential analysis of code switching done by Shin and Milroy (2000) in Korean-English school going

children suggested that code switching was used by children as an additional resource to achieve certain conversational goals while communicating with other bilingual partners.

Researchers have attempted to study various factors related to code switching and code mixing. In 1996, L1 conducted experiments with Chinese-English children to investigate the recognition of code-switched words in speech by them. The results from these experiments revealed that the successful recognition of any code-switched word mostly depend on interaction among various factors such as phonological, structural, and contextual information in the recognition process. It was also found from the study that Chinese-English bilinguals were able to identify the code-switched words with the same amount of information as would be required by monolingual English listeners.

The pattern of code mixing and code switching was one area which was extensively studied. Several studies in this area have been conducted in various contexts and population such as Mexican-English, Chinese-English, French-English, Korean-English, and Japanese-English and also in few Indian languages such as Telugu-English, Kannada-English, Hindi-English and Malayalam-English. A longitudinal study was conducted by Brice and Anderson (1999) in a young bilingual child to study the pattern of code mixing. The study aimed at investigating the most frequently mixed syntactic elements in a conversational discourse. Spontaneous speech samples of a Spanish-English bilingual child of 6-8 year old were collected for period 17 months. The results indicated that the most

altered syntactical elements by these children were nouns, which occurred both in the subject and object positions. This pattern was followed by usage of verbs, verb phrases, adverbs, adverbial phrases, prepositional phrases, articles, and adjectives. The findings suggested a high use of code mixed elements at the word level. The authors suggested that use of code mixing by children should be considered as a bridge between the two languages that a child is learning. They also concluded that since it is a commonly used strategy by most bilingual children, it should not be used to misdiagnose a child as deficient in his language skills.

Arias and Lakshmanan (2005) addressed the issue of bilingualism by focusing on sequential acquisition of two languages. They conducted a longitudinal case study of a child who was exposed to English and Spanish languages. The findings of the study revealed that language used by participants' involved in speech interaction is one of the major determinant of the choice of language by the bilingual child. Another finding was that children were successful in choosing language according to the context. It was also found that that MLU was greater when the child used mixed utterances suggesting that bilingual children use code mixing as a resource to longer and complex utterances.

Studies have been conducted to investigate the similarities in pattern of code mixing and code switching across children and adults. Paradis, Nicoladis and Genesee (2000) attempted to investigate if young bilingual children obey the same structural constraints while code mixing. Subjects included were fifteen French-English bilingual children of 2; 0 to 3; 6 whose interaction with parents were

recorded at six month interval and the recorded samples were analyzed using Matrix Language Frame Model (Myers-Scotton, 1993, 1997). The findings of study did not support a developmental shift hypothesis. It was evidenced that children had more number of violation for System Morpheme Principle and also an increased agreement to System Morpheme Principle was revealed.

It was speculated from literature that with development, there is an increase in the vocabulary growth in children. Saffo (2010) investigated the language use of Spanish-English bilingual children of 3-4 years in their natural environment. He recorded their samples in a natural; environment during parent-child interaction. The findings revealed that children preferred to use L1 (Spanish) than L2 (English) in home environment, however in school it they preferred to use L2 more than L1.

An overview of the literature suggested that code mixing and code switching vary according to the type of bilingualism as evidenced by studies done in successive and simultaneous bilinguals. A study done by Shrojen (2002) on two 5 year old bilingual children whose conversational samples were analyzed for code switching and code mixing revealed that the simultaneous bilinguals exhibited more number of code switches whereas the successive bilinguals exhibited greater number of code mixing instances. Similar study was investigated in Indian context by Harini and Chengappa (2002). They included twenty Kannada-English successive and simultaneous bilingual children of 4-8 years. The transcribed samples collected through picture description task were analyzed

using MLF and International Second Language Proficiency Rating (ISLPR) rating scale. The results indicated that code mixing and code switching instances were greater in successive bilingual children than simultaneous bilinguals. One major reason the author attributed was the difference in proficiency of languages by the two groups.

Various studies have been done in Indian context to understand the pattern of code switching and code mixing. Some of the studies done in Indian context were by Harini and Chengappa (2008) in 4-8 year old Kannada-English bilinguals, Mahalakshmi and Prema (2011) in Kannada-English 6-8 year old children, Mathew (2012) in Kannada-English 14-16 year old bilinguals, Hellows (2013) in Hindi-English bilinguals of 6-8 year old bilinguals and Aparna (2015) in 6-8 year old Malayalam-English bilingual children. Mahalakshmi and Prema (2011) investigated the code switching in the lexical corpora of children. They collected spoken language sample of picture description and narration from 6-8 year old children attending Kannada medium school. The results indicated that children code switched or borrowed words from other languages for certain categories such as nouns referring fruits or vegetables, verb categories and colors. However, the base language used by children was Kannada with highest number of morphemes occurring in the base language. Even though the included participants had a limited exposure to English, they used code switched words from the other language. The authors concluded that children at a very early age have the ability to use linguistic codes from different language as an equivalent of native language code based on the context.

Pattern of code switching under different language conditions was also investigated by various researchers. On similar lines, Mathew (2012) conducted a study on 14-16 year old Kannada-English bilingual children. Picture description task was carried out in both the languages separately. The results revealed that all children exhibited code switching with individual variations. Also greater instances of code switching were exhibited by females than males, indicating that females are better in their mastery and multiple use of languages.

The extent, type and pattern of code switching in Hindi-English bilingual children were studied by Hellows (2013). They included forty Hindi-English successive and simultaneous bilingual children of 6-8 years old. Picture description samples were collected from these children which was then transcribed and analyzed using SALT software (Version 2012) (Miller & Chapman, 1981), MLF model (Myers -Scotton, 1993; Myers –Scotton and Jake (1995) and Perecman's level of code mixing (Perecman, 1984). The results indicated that the younger age group exhibited greater instances of code mixing than the higher age group. This was attributed to fact that CM reduced with an increase in the proficiency of languages. The results of the study also indicated that successive bilinguals had greater frequency of code mixing than the simultaneous bilinguals. Also, these children had more number of CM than CS and CM occurred more at the lexical level.

There is a scarcity of research in the area of code switching and code mixing in Dravidian languages other than Kannada. One study in Malayalam-

English bilingual context was done by Aparna (2015) who studied the type, pattern and extent of code mixing and code switching in 6-8 years old Malayalam-English successive bilingual children. The study included 60 typically developing children and a picture description speech sample from these children were collected and transcribed. The transcribed samples were analyzed using SALT software (Version 2012) (Miller & Chapman, 1981), Matrix Language Model (Myers -Scotton, 1993; Myers –Scotton and Jake, 1995). The results revealed that frequency of code switching was greater in the younger age group indicating a developmental trend. Also, the study indicated that children used code switching or code mixing as a means to compensate for lexical gap rather than for emphasis, focus or elaboration. Further, in yet another study the influence of English on Malayalam was studied by Girish (2005). The study explained the impact of English on Malayalam from the earlier period and he suggested that this effect extends not just on language aspects, but also on culture, administration, use of suffixation and so on. The study also reported that influence is not just due to the exposure to language, but was also linked to the prestige attitude of the speakers to use a global language like Malayalam.

However, there are limited numbers of studies in this area to support this view and thus, there is a wide scope for research in the area of bilingualism with respect to code switching and code mixing. Hence, present study was taken up to investigate code mixing and code switching in 8-10 years old Malayalam-English successive bilingual children.

CHAPTER 3: Method

A cross sectional normative research design was employed for the present study in order to compare the code mixing and code switching phenomenon in 8-10 years old Malayalam-English (M-E) successive bilingual children.

3.1 Participants

The participants included 65 Malayalam-English (M-E) bilingual children in the age range 8-10 years whose native language is Malayalam and who have learned English as their second language. The children were further subdivided into two groups ($8.0 \leq A \leq 9.0$ and $9.0 \leq A \leq 10.0$). The participants were selected on the basis of the following criteria:

- De Houwer's criterion (1997) was considered for selecting successive bilinguals. According to De Houwer (1997), "simultaneous" bilinguals are those who are exposed to La/L1 and Lb/L2 before 2 years of age, and others are classified as "successive" bilinguals.
- All the children were screened and ruled out for any language and sensory impairment using ICF CY checklist (WHO Work group version, 2004)
- All children were selected from mid/high socio economic status using Socio Economic Status Scale (Venkatesan, 2011).
- The Language Use Questionnaire (Shanbal & Prema, 2007) was administered to parents to check the language use in children in two languages.
- All the participants were selected from Indian school setting only.

3.2 Test Material

The test material used is a picture stimulus depicting a park. The picture suggested by Hellows (2013) was used as the stimuli.

3.3 Test Environment

The children were seated comfortably in a quiet room and the picture stimulus was presented. Audio and visual samples were recorded.

3.4 Procedure

The study was carried out in two phases. In the initial phase, socio demographic details were collected and children were screened for any language and sensory impairment using ICF CY checklist (WHO Work group version, 2004). Participants were selected on the basis of language exposure and language preference using the questionnaire developed by Shanbal and Prema (2007).

In the second phase of the study, picture stimulus was presented to the children. The children were familiarized before actual description of the task with no verbal practice. Once children were familiarized with the picture, actual description task was carried out and the verbal responses elicited from the children were recorded using a digital recorder. The children were instructed to give descriptions in their native language Malayalam and were also instructed that they can use the second language English, whenever they find difficulty to get words in the native language. Instruction given was “I will show you a picture. See the picture. Then you have to talk about what you see in the picture.”

3.5 Scoring, Coding and Analysis

The audio recorded verbal responses of each child were transcribed and marked as per the protocols of Systematic Analysis of Language Transcripts (SALT) software (Version 2012) (Miller & Chapman, 1981). The utterances were analyzed according to the SALT software (Miller & Chapman, 1981) and also using the Matrix Language Frame (MLF) Model (Myers-Scotton, 1993; Myers –Scotton & Jake 1995).

The parameters analyzed using SALT were total number of utterances (TU), total completed words (TWC), mean length of utterance (MLU) in words, number of different words (NDW), type token ratio (TTR), total number of code switches (TCS).

The utterances were classified into lexical-semantic, syntactic, morphological and phonological levels using Perelman's level of code mixing and code switching (Perelman, 1984). Matrix Language Frame (MLF) Model was also used to analyze the sample on the following parameters such as matrix language islands (ML islands), matrix language shifts (ML shifts), embedded language islands (EL islands), matrix language + embedded language constituents (ML+EL), borrowed Forms, embedded language insertions (EL insertions), revisions.

The number of code mixing and code switching were calculated for each of the participants. The total number of code mixing and code switching exhibited by the two age groups were calculated and compared. The obtained data was analyzed using the Statistical Package for the Social Sciences (SPSS) software package (Version 20.0) to understand the pattern of bilingual acquisition in the two age groups. Parametric and

nonparametric statistics were used to compare the performance of M-E bilingual children on different parameters for CM and CS between the 8-9 and 9-10 years of age.

CHAPTER 4: Results of the study

The aim of the current research was to study code mixing and code switching in 8-10 years old Malayalam-English successive bilingual children and to study the developmental trend of code mixing and code switching in these children. The study also compared the type, extent and level of code mixing (CM) and code switching (CS) of 8-10 years old Malayalam-English (M-E) successive bilingual children by analyses of various parameters using Systematic Analysis of Language Transcripts (SALT) software (Miller & Chapman, 1981), Matrix Language Frame model (Myers-Scotton, 1993; Myers-Scotton & Jake 1995) and Perecman's Level of code mixing and code switching (Perecman, 1984).

The parameters analyzed using SALT were total number of utterances (TU), total completed words (TWC), mean length of utterance (MLU) in words, number of different words (NDW), type token ratio (TTR), and total number of code switches (TCS). Other parameters analyzed included matrix language islands (ML islands), matrix language shifts (ML shifts), embedded language islands (EL islands), matrix language +embedded language constituents (ML+EL), borrowed forms, embedded language insertions (EL insertions), and revisions using Matrix Language Frame Model. Perecman's level of code mixing and code switching was used to classify utterances into lexical-semantic, syntactic, morphological and phonological levels.

Quantitative and qualitative analysis were carried out. Descriptive statistics were done and the mean, median and standard deviation were calculated. Test of normality was carried out. Normality was achieved for parameters such as ML islands, total number

of utterances (TU), total completed words (TWC), mean length of utterance (MLU), number of different words (NDW), type token ratio (TTR) and lexical level of code mixing and hence parametric Two-way MANOVA was carried out for these mentioned parameters. Non parametric Mann Whitney U test was carried out for ML+EL, EL insertions, borrowed forms, and morphological level of code mixing. Other parameters namely ML shifts, EL islands, revisions and syntactic and phonological levels of code mixing and code switching were not exhibited by any groups and hence only qualitative analysis was carried out.

The results of the study are explained under four sections:

- 4.1 Frequency of code mixing (CM) and code switching (CS) in 8-10 years old M-E successive bilingual children on SALT
- 4.2 Comparison of performance across age groups on Systematic analysis of Language Transcripts (SALT)
- 4.3 Comparison of performance of M-E bilingual children on Perecman's level of Code mixing and Code switching
- 4.4 Comparison of performance of M-E bilingual children on Matrix Language Frame Model

4.1 Frequency of code mixing (CM) and code switching (CS) in 8-10 years old M-E successive bilingual children on SALT

Descriptive statistics was carried out and mean, median and standard deviation (SD) were calculated to compare the frequency of CM and CS between the two age groups i.e., 8-9 years and 9-10 years. Table 4.1 shows the mean, median and SD values of children for the frequency of CM and CS in 8-9 years and 9-10 years old children.

Table 4.1

Mean median and SD values for CM and CS between the two age groups

Age Group	Parameter	Mean	Median	SD
8-9	CM	7.16	7.00	2.82
	CS	0.00	0.00	0.00
9-10	CM	6.36	7.00	2.04
	CS	0.00	0.00	0.00

Note: CM=Code Mixing, CS=Code Switching

Analysis of results as shown in table 4.1 indicated that children exhibited greater number of CM instances than CS in both the age groups. Results showed that in the 8-9 years old group, children exhibited greater CM (Mean=7.16, SD=2.81) than CS (Mean=0, SD=0). Similar results were obtained for 9-10 years old age group with greater CM instances (Mean=6.75, SD=0) as shown in Figure 4.1. It was also observed that among the 65 successive bilingual M-E children none used code switching instances.

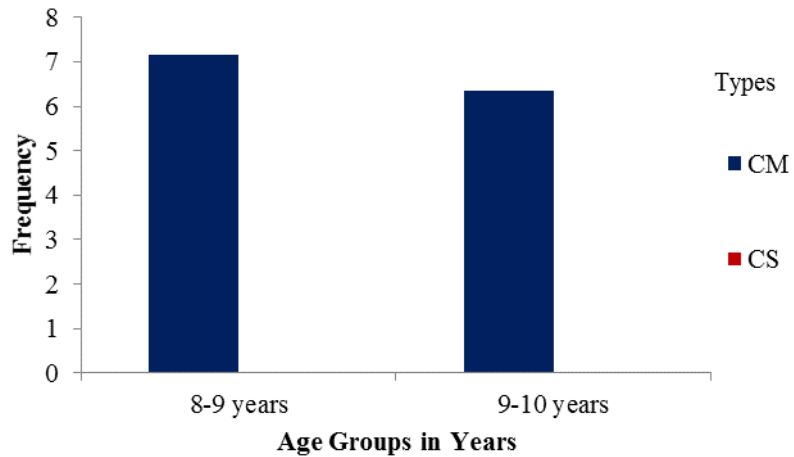


Figure 4.1 Comparison of performance of children for frequency of CM and CS between 8-9 and 9-10 years

Overall, the results showed that frequency of code switching instances were greater in the younger age group children than in the older age i.e., 9-10 years olds. Non-parametric Mann Whitney U test was used to compare the performance of children across age groups. The results revealed that that there was no significant difference between the age groups ($|Z|=1.106$, $p>0.05$).

Further, a qualitative analysis of the transcribed data was carried out. Qualitative analysis of the data indicated that children in the 8-9 years age group exhibited greater number of CM than children in the 9-10 years age group. It was observed that the usage of borrowed forms were greater in the older age group. Though corresponding Malayalam words existed, children in the younger age group used greater number of code mixing instances such as /kʌtira/ for ‘horse’, /kasera/ for ‘chair’, /naja/ for dog, ‘oonjal’

for 'swing' and so on. No intra-sentential code switching was observed in both the age groups. The transcribed data of few samples have been included in Appendix 1.

For example, the analysis of the one of the samples (*Sample A*) showed that there was an increased frequency of code mixed usages such as horse, climbing, sand, birds, dogs and so on even though corresponding words were available in Malayalam and it is frequently used. The analysis of another (*Sample B*) revealed that there was more usage of borrowed forms such as slide, seesaw, cycle, scooter where for such terms alternate words are not available in Malayalam. It was also observed from both samples that there were greater lexical or morphological levels of mixing. Findings from both the samples revealed that lower age group had a higher level of code mixing. Also grammatical constraints of both languages were not violated.

The data was further analyzed to identify gender differences, if any. Analysis of results showed that the frequency of CM in 8-9 years old group were greater in females (Mean=7.94, SD=3.08) than males (Mean=6.14, SD=2.21). Similarly in the 9-10 years old group the females showed a greater frequency of CM (Mean=6.47, SD=2.32) than males (Mean=6.21, SD=1.67). Overall analysis of the results indicated that the frequency of code mixing instances were greater in females in both the age groups. Non parametric Mann Whitney U test was carried out and it indicated that there was no significant gender differences in both the age groups ($|Z|=1.879$ for 8-9 years; $|Z|=0.626$ for 9-10 years; $p>0.05$). CS instances were not indicated and hence only qualitative analysis was done.

Qualitative analysis was also carried out to compare the frequency and extent of CM and CS across the gender within each age group. Qualitative analysis revealed that

both females and males had use of borrowed forms. There were code mixing instances even when alternate Malayalam words were present. For example, children used words such as ‘horse’, ‘sand’, ‘swing’ and so on though corresponding Malayalam word were available. Overall analysis revealed that females have higher frequency of code mixing instances than males. Instances of code switching were not observed in both males and females.

4.2 Comparison of performance across age groups on Systematic analysis of Language Transcripts (SALT)

Comparison of performance between two groups was done using Systematic Analysis of Language Transcripts, Version 2012 (Miller & Chapman, 1981). The parameters included for analysis were total number of utterances (TU), total completed words (TWC), mean length of utterance (MLU) in words, number of different words (NDW), type token ratio (TTR), and total number of code switches (TCS). Descriptive statistics were done to calculate the mean, median and standard deviation.

The table 4.2 shows results of analysis are given in the below. The data is tabulated for different parameters across age groups. The figure 4.2 shows the performance of children on parameters of salt between age groups.

Table 4.2

Mean, median and SD values for parameters of SALT between age groups

Age Group	Parameters	Mean	Median	SD
8-9 years	TU	11.31	12.00	2.13
	TWC	43.94	42.50	13.36
	MLU	3.89	3.92	0.78
	NDW	28.47	29.00	8.79
	TTR	0.65	0.67	0.10
	TCS	7.16	7.00	2.81
9-10 years	TU	11.06	11.00	1.54
	TWC	41.97	46.00	11.26
	MLU	3.78	3.92	0.89
	NDW	25.09	25.00	6.23
	TTR	0.59	0.61	0.12
	TCS	6.36	7.00	2.04

Note: TU- Total number of utterances, TWC-Total completed words, MLU-W Mean Length of Utterance (MLU) in words, NDW- Number of different words, TTR- Type Token Ratio, TCS-Total number of code switches

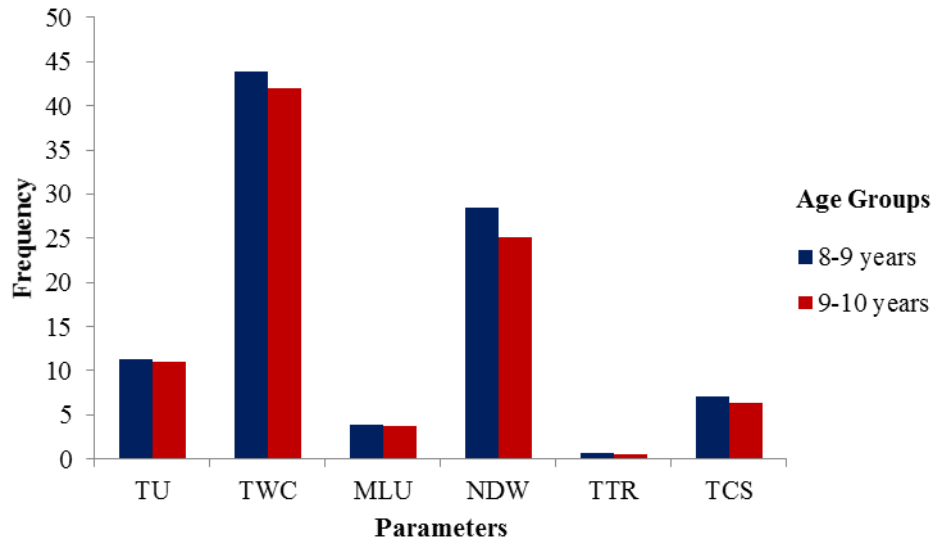


Figure 4.2 Comparison of performance of children on parameters of SALT between 8-9 and 9-10 years

Total Number of Utterances (TU)

The analysis of results revealed that the total number of utterances in both the age group were similar. The younger age group showed a mean of 11.31 (SD=2.13) and the older age group showed a mean of 11.06 with SD=1.54. Parametric two way MANOVA was performed to analyze the significant difference between the two groups and the results revealed that there was no significant difference in the total number of utterances (TU) across the age groups [F (1,61)=0.643; $p>0.05$]. Two way MANOVA was also performed to analyze the significant difference across gender; results revealed that there was no significant gender differences in the TU [F (1,61)=0.717; $p>0.05$]. Also the results of parametric tests revealed that there was no interaction effect of age and gender across the groups.

Total Words Completed (TWC)

Analysis of results based on SALT revealed that the total completed words (TWC) is higher in 8-9 years old group (Mean=43.94, SD=13.36) than the 9-10 years old group (Mean=41.97, SD=11.26). However, analysis of results on parametric two-way MANOVA revealed that there was no significant difference in the performance of both the age groups [F(1,61)=0.63; $p>0.05$]. Similarly it was also revealed from the parametric tests that there was no overall gender effect within the age groups [F(1,61)=0.737; $p>0.05$]. Also there was no significant interaction effect of age and gender [F(1,61)=0.304; $p>0.05$].

Mean Length of Utterance (MLU) In Words

Analysis of results reveal that the MLU in words were similar for the 8-9 years old (Mean=3.89, SD=0.78) and 9-10 years old children (Mean=3.78, SD=0.89). Parametric two way MANOVA was performed and the results of the analysis reveal that there was no significant difference in the MLU for the 8-9 years old and 9-10 years old group [F(1,61)=0.76; p>0.05]. Parametric tests were also carried out to test if any significant gender differences were present. Results revealed that there is no significant difference in the performance of both males and females [F(1,61)=0.89; p>0.05].

Number of Different Words (NDW)

The analysis of the results revealed that the number of different word (NDW) used were higher in the 8-9 years old group (Mean=28.47, SD=8.79) than the 9-10 years old age group (Mean=25.09, SD=6.23). Qualitative analysis of the results showed that the younger age group showed an increased usage of different word than the older age group. Parametric two-way MANOVA revealed that there was no significant difference between the age groups [F(1,61)=0.102; p>0.05] and also across the gender [F(1,61)=0.293; p>0.05].

Type Token Ratio (TTR)

The analysis of results of the type token ratio reveals that the younger age group had greater ratio than the older age group. The children in the 8-9 years old age group have a greater TTR (Mean=0.65; SD=0.1) than the older age group 9-10 years (Mean=0.59; SD=0.12). Parametric two way MANOVA was carried out to compare the two age groups statistically and the results showed a significant difference between the

groups ($F(1,61)=0.036$; $p<0.05$) for the type token ratio. However there was no significant difference across the gender within both the age groups [$F(1,61)=0.085$; $p>0.05$].

Total Number of Code Switches (TCS)

Descriptive statistics were used to calculate the mean, median and standard deviation across the age groups and gender. The analysis of the results revealed that the total number of CS used were higher in the younger age group. Only intra-sentential CS were observed. The younger age group showed mean code switches of 7.16 ($SD=2.81$) and the older age group showed a mean of 6.36 ($SD=2.04$). Non-parametric Mann Whitney U test was used to compare the groups statistically. The results of the non-parametric test revealed that there was no significant difference across the two age groups ($|Z|=1.106$, $p>0.05$). Similarly there was no significant gender differences within 8-10 years old M-E bilingual children ($|Z|=1.879$ for 8-9 years; $|Z|=0.626$ for 9-10 years; $p>0.05$).

Overall analysis of results based on SALT software revealed that there was an increased frequency of total completed words (TWC), number of different words (NDW), type token ratio (TTR) and total number of code switches (TCS) though a significant difference was not present across the age groups. The frequency of total number of utterances (TU) and mean length of utterance (MLU) in words were similar across both the age groups. Based on inferential statistics there was significantly higher ratio of TTR in the 8-9 years old M-E bilinguals than the 9-10 years old children.

4.3 Comparison of performance of M-E bilingual children on Perecman's level of Code mixing and Code switching

Perecman's level of code mixing and code switching (Perecman, 1984) was used to classify the utterances into lexical, morphological, syntactic and phonologic levels of CM and CS. The results revealed that syntactic and phonologic levels of code mixing and code switching were not exhibited by the children participated in the current study. Hence these parameters were not considered for statistical analysis. Descriptive statistics were used to calculate mean, median and standard deviation for lexical and morphological levels of code mixing. Table 4.3 depicts the mean, median and standard deviation values for lexical and morphological levels of code mixing for 8-10 years old M-E bilingual children.

Table 4.3

Mean, median and SD values for parameters of Perecman's level of CM and CS between age groups

Age Group	Parameters	Mean	Median	SD
8-9 years	Lexical	4.31	4	1.47
	Morphological	3.91	4	1.76
9-10 years	Lexical	4.11	4	1.62
	Morphological	2.75	3	1.98

Table 4.3 shows that children in 8-9 years old group exhibited greater number of lexical and morphological levels of CM and CS. The younger age group had a greater

frequency of lexical level of code mixing (Mean=4.31, SD=1.47) than the older age group (Mean=4.11, SD=2.75). Similarly, the frequency of morphological level of code mixing was higher in the 8-9 years old group (Mean=3.9, SD=1.76) than 9-10 years old group (Mean=2.75, SD=1.98). Also, the children in 8-10 years old group used more of morphological code switches than lexical level of code switching. A developmental trend could be observed in the frequency and type of CM and CS between the age groups (Figure 4.3).

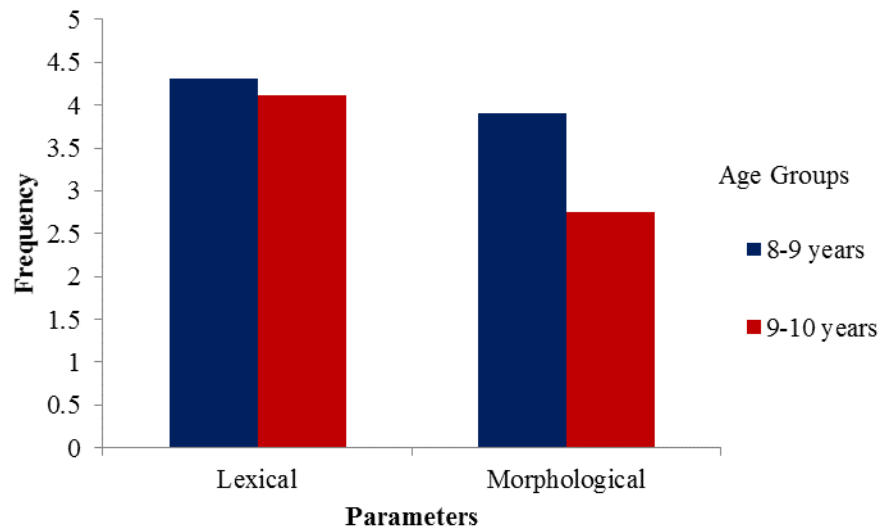


Figure 4.3 Comparison of performance of children on parameters of Perelman's level of CM and CS between 8-9 years and 9-10 years

The data was then analyzed to check if any gender differences were present. The females in both the age groups showed a higher frequency of lexical level of code mixing than males. Both males and females had an equal number of morphological level of code switches. However, a significant difference could not be observed.

Parametric two-way MANOVA was performed to compare the lexical level of code mixing between the age groups. The findings revealed that there was no significant difference between the age groups [$F(1,61)=0.36$; $p>0.05$]. However there was a significant difference across the gender within the age groups [$F(1,61)=0.11$; $p<0.05$].

4.4 Comparison of performance of M-E bilingual children on Matrix Language Frame Model

MLF model was used to explain the intra sentential code switching and the following parameters were calculated based on the model:

- Matrix Language Islands (ML Islands)
- Matrix Language Shifts (ML Shifts)
- Embedded Language Islands (EL Islands)
- Matrix Language +Embedded Language constituents (ML+EL)
- Borrowed Forms
- Embedded Language Insertions (EL Insertions)
- Revisions

Both descriptive and inferential statistics were done to compare the groups statistically. Parameters such as ML Shifts, EL Islands and revisions were not exhibited by the children who participated in the current study. Hence, statistical analyses for these parameters were not done. The table 4.4 depicts the mean, median and standard deviation across the age groups.

Table 4.4

Mean, median and SD values for parameters of MLF model between age groups

Age Group	Parameter	Mean	Median	SD
8-9 years	ML Islands	4.69	4.5	2.2
	ML+EL	2.59	2	1.64
	EL Insertions	0.38	0	0.07
	BF	3.66	3.5	1.38
9-10 years	ML Islands	4.94	5	2.1
	ML+EL	2.3	2	1.48
	EL Insertions	0.27	0	0.517
	BF	3.45	3	1.09

Note: ML= Matrix Language, EL =Embedded language, BF= Borrowed forms

The figure 4.4 depicts the performance of children for different parameters on Matrix Language Frame Model. The figure shows the performance of children across two age groups i.e., 8-9 years and 9-10 years.

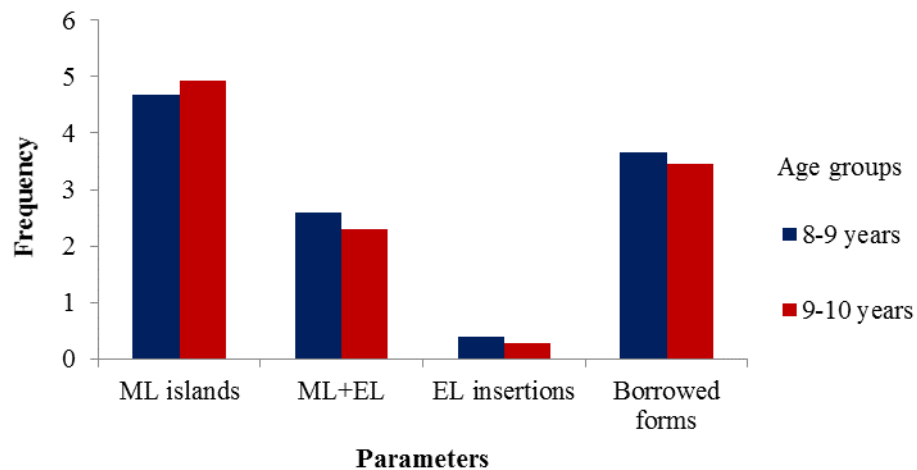


Figure 4.4 Comparison of performance of children on MLF

ML Islands

Descriptive statistics were used to calculate the mean, mode and standard deviation values. The analysis of results revealed that the frequency of ML Islands were similar between 8-9 years (Mean=4.9; SD=2.2) and 9-10 years (Mean=4.94; SD=2.1). To compare the groups statistically parametric tests were done. Results of two-way MANOVA revealed that there was no significant difference across the age groups [$F(1,61)=0.67$; $p>0.05$]. Comparison was done to compare the gender differences and the results revealed that there was no significant difference across the performance of both males and females [$F(1,61)=0.13$; $p>0.05$].

ML+EL Constituents

The analysis of the results showed that the occurrence of ML+EL constituents were similar across both the age groups for M-E bilinguals of 8-10 years old. The younger age group showed a mean occurrence of ML+EL of 2.59 (SD=1.64) and the older age group showed a mean of 2.3 (SD=1.48). To compare the two age groups statistically, non-parametric Mann-Whitney test was used and the results revealed no significant difference across the two age groups ($|Z|=0.66$; $p>0.05$). Analysis of Mann-Whitney revealed that there is no significant gender effect ($|Z|=1.39$ for 8-9 years; $|Z|=0.206$ for 9-10 years; $p>0.05$).

EL Insertions

The results of analysis revealed that the frequency of occurrence of EL insertions were very limited in both the age groups. EL insertions were not exhibited by all the children who took part in the current study. The results of analysis revealed that the

frequency of occurrence of EL insertions were similar across both the age groups; Mean=0.38; SD=0.07 for 8-9 years and Mean=0.27; SD=0.517 for 9-10 years ($|Z|=0.28$; $p>0.05$). Also, there was no gender difference for the frequency of EL insertions within each age group ($|Z|=1.4$ for 8-9 years; $|Z|=0.98$ for 9-10 years; $p>0.05$).

Borrowed Forms (BF)

The results of analysis revealed that frequency of occurrence of borrowed forms were similar across both the groups. Borrowed forms were used by both the younger and older age groups. The 8-9 years old group showed a mean of 3.66 (SD=1.38) and the older age group, that is 9-10 years old group showed a mean of 3.45 (SD=1.09). To compare the groups statistically, non-parametric Mann Whitney U test was carried out. The results revealed no significant difference in the usage of borrowed forms by both the age groups ($|Z|=0.59$; $p>0.05$). Also, there was no significant gender effect for the usage of borrowed forms within each age group ($|Z|=0.65$ for 8-9 years; $|Z|=0.19$ for 9-10 years; $p>0.05$).

Qualitative analysis of the transcribed data (examples are included in the Appendix II) was also carried out based on the parameters of MLF model for the M-E bilinguals of 8-10 years. Based on a qualitative analysis (*Sample C*) it was inferred that children in the 8-9 years group showed lesser number of Matrix Language (ML Islands). It was observed that children exhibited an increased usage of ML+EL insertions and borrowed forms. In the presence of alternative words in Malayalam, child used words such as 'grandma', 'chair', 'ball', 'pets' and 'walking'. The child also used few borrowed forms such as 'slide', 'see-saw' and so on. It was observed that the child also exhibits

usage of EL insertions. However, other parameters such as EL Islands, ML Shifts and revisions were not observed.

The qualitative analysis of another sample (*Sample D*) revealed that in the older age group there were fewer instances of code mixing. Observations showed that, with development, instances of code mixing are were tend to be reduced. Most of the code mixed utterances showed usage of borrowed forms such as ‘badminton’, ‘slide’ and ‘sea-saw’ where alternate words in Malayalam are not available. The child also exhibited an increased frequency of ML islands than the younger age group. Parameters such as EL insertions, EL islands, MI shifts and revisions were not observed.

Further, a qualitative analysis was done on the transcribed samples of the sixty five participants in the study to compare the parameters of SALT and MLF model. The observation indicated that, the total number of constituents that indicated code mixing in MLF i.e., ML+EL constituents, EL insertions and borrowed forms in a given sample was equal to the TCS that was obtained using SALT. The sum of ML+EL constituents, number of elements constituting the EL insertions and the borrowed forms were comparable with the total number of code mixing or code switching instances in the sample.

In general, the results of quantitative and qualitative analysis based on the MLF model revealed that there is a developmental trend in the pattern of code mixing an code switching though a significant difference was not observed on all parameters. It was observed that usage of ML+EL insertions were greater in the 8-9 years old group when compared to 9-10 years old group. Also, there was an increased frequency of the usage of ML islands with an increase in age. Borrowed forms were observed in both age groups in

a similar trend. EL insertions were exhibited by only few participants in the 8-10 years old M-E bilinguals. ML shifts, EL islands and revisions were not exhibited by any participants in the current study.

The overall results based on the qualitative and quantitative analysis using SALT software, Perelman's level of code mixing and code switching and Matrix Language Frame model, revealed that the frequency of code mixing was higher in the younger age group. The frequency of code mixing was found to be reduced with an increased age. However, a significant difference across age and gender was not observed for frequency of code mixing in 8-10 years old M-E bilingual children. Inter-sentential code mixing was not exhibited by any of the children who participated in the current study.

CHAPTER 5: Discussion

The aim of the current study was to investigate the code mixing and code switching in 8-10 years old Malayalam-English successive bilingual children. The objectives of the study was to explore the developmental pattern of code mixing and code switching in 8-10 year old Malayalam-English (M-E) successive bilingual children and to compare the type, extent and level of code mixing (CM) and code switching (CS) of 8-10 years old Malayalam-English (M-E) successive bilingual children. A total of 65 M-E bilingual children of the age 8-10 years were considered for the study.

The further sections of this chapter explain the findings of the current study.

- 5.1 Frequency of code mixing (CM) and code switching (CS) in 8-10 year old M-E successive bilingual children on SALT
- 5.2 Comparison of performance across age groups on parameters of Systematic analysis of Language Transcripts (SALT)
- 5.3 Comparison of performance of M-E bilingual children on Perecman's level of Code mixing and Code switching
- 5.4 Comparison of performance of M-E bilingual children on parameters of Matrix Language Frame Model

5.1 Frequency of code mixing (CM) and code switching (CS) in 8-10 year old M-E successive bilingual children on SALT

The frequency of CM and CS was analyzed in M-E bilingual children across two age groups i.e., 8-10 years old children. The findings of the study revealed that the instances of code switching were greater in the 8-9 years old children than the 9-10 years old children. The results revealed that the number of code mixing instances reduced with age thus indicating a developmental trend in the pattern of code mixing and code switching. Also, the results indicated that code mixing instances were greater than code switching in both the age groups. The results of the present study are in congruence with previous literature indicative of a developmental trend in code mixing. Few reasons for decreased instances of code mixing for children in the older age group are attributed to the fact that older children might use appropriate lexical items from their L1 while communicating, thus reducing the frequency of code switched items in their speech (Goodz, 1989; Genesee, Nicoladis, and Paradise, 1995; Lanza, 1997; Lanvers, 2001; Quay, 1995). Another reason for reduced frequency of code mixing could be that older children use code mixing as a tool to indicate stress or comfortability or prestige rather than as tool to fill the lexical gaps (Akere, 1977; McClure, 1977).

As indicated by Paradis, Nicoladis and Genesee (2000), the younger children tend to code switch as a result of non-availability or lack of knowledge of vocabulary in their first language. The findings of the present study indicated greater frequency of code mixing in younger children which could be due to decreased proficiency in both the languages. It was also observed that children in the present study used code mixed words from English to Malayalam indicating an effect of schooling in the development of

bilingual language acquisition. However, it was observed that these children were less proficient in English which may be attributed to the fact that usage of English was limited or restricted to the school environment and thus reduced proficiency in English. Similar observations were reported by Saffo (2010) where he investigated language use in 3-4 years old Spanish-English bilinguals across home and school environments and the findings of the study revealed that children produced differently across school and home environments i.e., they preferred to use L1 (Spanish) than L2 (English) in home environment.

Literature on code mixing and code switching suggested that code mixing occurs as a result of inadequate mastery of languages (Thirumalai & Chengappa, 1986). Thus it is inferred that instances of code mixing in younger age group children is greater due to inadequate mastery of languages. On similar lines, studies have been conducted in the Indian scenario to understand the developmental trend in code mixing and code switching. Hellows (2013) conducted a study to compare the type, pattern and extent of code mixing and code switching in 6-8 years old children and the findings revealed that CM instances were observed to be greater in younger age group than older children. Similarly, in yet another study, Aparna (2015) investigated the code mixing and code switching in Malayalam-English successive bilingual children of 6-8 years. Picture description samples were collected from sixty typically developing children. Analysis of findings revealed that 6-7 years old children were observed to have greater frequency of code mixing instances than 7-8 years old children. Comparing the results with the present study, a similar developmental trend was observed in the pattern of code mixing and code switching. It can be concluded that as age increases, the frequency of code mixing seem

to reduce as a result of improved mastery of the languages in bilingual children. Thus, it can also be inferred that, CM/CS is used as a compensatory mechanism to fill in the lexical gaps due to inadequate proficiency in the L1.

Another finding of the current study was that among the sixty five M-E successive bilingual children included in the study, none exhibited instances of code switching (Figure 4.1). One possible reason that could be attributed to this could be the fact that since the children who participated in the study were instructed to use Malayalam, they would have had a tendency to restrict their language usage to only one language. This finding can be supported by the view that children are able to choose their language based on the communication partner or the context. Thus the language choice of a bilingual child depends on the language of the individuals involved in communication (Brice, 2000; Ruan, 2003; Arias & Lakshmanan, 2005).

It could also be inferred from the current study that code mixing was greater for nouns than verbs and also used and borrowed forms. Following nouns, few verbs were also code mixed by the children in the current study. Greater CM observed for nouns and verbs could be because of the mastery of these grammatical categories seen much earlier in the developmental acquisition of language in children when compared to the other linguistic categories (Vihman, 1998).

Thus, the overall findings of the study revealed that there was a developmental trend in the pattern of code mixing and code switching in 8-10 years old M-E successive bilingual children. Children tend to borrow words from the second language to compensate for the missing lexicon in the first language. Also, children tend to maintain

the fluency of task without disrupting it by using strategies such as code mixing or switching or borrowing the words from the second language.

5.2 Comparison of performance across age groups on parameters Systematic analysis of Language Transcripts (SALT)

The performance of the two groups of children was compared using Systematic Analysis of Language Transcripts, Version 2012 (Miller & Chapman, 1981). The parameters included for analysis were total number of utterances (TU), total completed words (TWC), mean length of utterance (MLU) in words, number of different words (NDW), type token ratio (TTR), and total number of code switches (TCS).

The overall findings of the study indicated that there was a greater frequency of total completed words (TWC), number of different words (NDW), type token ratio (TTR) and total number of code switches (TCS) in the 8-9 years old age group than 9-10 years old group. However, the frequency of total number of utterances (TU) and mean length of utterance (MLU) in words were found similar across both the groups. The findings of the study did not indicate a significant developmental trend which is in contrary to previous studies reported by Aparna (2015) and Hellows (2013). Aparna (2015) conducted a study in 6-8 year old M-E bilingual children and the findings revealed that TU, TWC, NDW and TTR were higher for children in the older age group i.e., 7-8 years old group. However, TCS were greater in the younger age group children. This difference in findings from both the studies could be attributed to several reasons. Findings from the current study showed that there were lesser no of code switched words in the older age group children, whereas the TWC, NDW, TTR and TCS were found to be higher for

children in the younger age group. It is known from literature that as the age increases, proficiency in language improves (Thirumalai & Chengappa, 1986). This holds good for both L1 and L2. Thus, lexical gaps in L1 which occurs due to lack of proficiency in L1 would be compensated by the use of words from L2. This might probably result in an increased usage of different words which indeed imply increased TWC and TTR as well for children in the younger age group. On the other hand, the children in the older age group become more proficient in both languages, reflecting lesser lexical gaps in L1. This will be evidenced by the lesser no of CS by older children. Thus, implying reduced TWC and NDW and in turn lower TTR. Lesser TWC, NDW and TTR in the older children could also be thought as a practical implication of ‘principle of linguistic economy’ where a speaker attempts to minimize the time and effort on his part in the communication of messages (Leech, 1983). As exposure to each of the languages increases from 8-10 years children achieve mastery in linguistic production in both languages and children learn to select appropriate lexicon from the learned languages according to the situations.

The findings from the study also indicated that the mean length of utterance (MLU) in words were similar across both the age groups. Although it is known that MLU increases with age, it is subjected to further change. Blake, Quartaro and Onorati (1993) studied the validity of MLU by collecting spontaneous speech samples from 87 children, ranging in age from 1;6 to 4;9 years and the results suggested that MLU is reliable only upto a value of 3.5, but after that the value levels off. This could be a probable reason for similar MLU for children of both the age groups in the current study.

Another finding of the present study indicated that children of both the age groups code mixed words though corresponding words were available in Malayalam. For example, children in the present study used words such as ‘chair’ for /kasera/, ‘ball’ for /pandu/, ‘swing’ for /o:ɳal/ and so on. Though these words are commonly used in Malayalam, children preferred to use words from English. This could be supported by a study done by (Apte, 1976; Mathai, 2014). The findings from these studies revealed that children may have a preference to use words from English due to the popularity and commonality of the language. Schooling also plays an important role in this aspect. It was also reported by Girish (2005) that, Malayalam speaking individuals often do code switching from Malayalam to English to show their 'prestige attitude' towards English which is considered as the global language. Thus, children could be using words from English unconsciously or automatically.

Thus, overall findings from analysis using SALT revealed that the TWC, NDW, TTR and TCS were higher for children in the younger age group indicating a developmental trend. The present study also indicated similar MLU in both the age groups. The findings of the present study also revealed that total number of code switches used were greater in the 8-9 years old children than 9-10 years old children. Thus it is evident that with development, children become proficient in using the learned languages.

5.3 Comparison of performance of M-E bilingual children on Perecman's level of Code mixing and Code switching

The transcribed samples were classified into lexical-semantic, morphological, syntactic and phonologic levels of CM and CS using Perecman's level of code mixing and code switching. The findings from the study indicated that among the sixty five M-E bilingual children, none exhibited syntactic and phonological levels of CM and CS. The findings revealed that children in 8-9 years old group exhibited greater number of lexical and morphological levels of CM and CS. The younger age group children showed a greater frequency of lexical level of code mixing than the children in the older age group. Similarly, the frequency of morphological level of code mixing was higher in the 8-9 years old group than 9-10 years old group. Also, the children in 8-10 years old group used more of lexical code switches than morphological level of code switching.

The development of vocabulary and subsequent mastery of languages by the children in the older age group of the present study can be linked to the reduced number of lexical and morphological level of code mixing and code switching. The increased number of morphological and lexical level of code switches by the younger age children in the current study can be attributed to the fact that they might be compensating their lexical gaps in L1 by code switching words from the L2. Similar results and developmental trend was reported by Aparna (2015) from a study conducted in 6-8 years old Malayalam-English successive bilingual children. The findings from her study revealed that the frequency of code mixing at word level and morphological level reduced in M-E successive bilingual children with increase in age. Also, the frequent use

of lexical level of code mixing than morphological level in the current study indicated that mental lexicon may be loosely bound than other levels of language (Yaron, 2000).

The absence of syntactic and phonological levels of code switching in 8-10 years old indicated that there would be fewer constraints in Malayalam for CM at lexical and semantic level. The absence of CM at phonological level indicated that the English words are not nativised with respect to phonological aspects in children. Word order in Malayalam, on contrary to English does not follow a strict pattern i.e. it follows S-V-O, O-S-V and S-O-V order. This could be one reason that syntactic constraints were not violated by the M-E bilingual children in the current study. For example /kuttikal parkil kalikkunnu/ (S-O-V order) and /parkil kuttikal kalikkunnu/ (O-S-V) are both accepted in Malayalam. Hence, CM at syntactical level was not noticed in children with in the age group of 6-8 years. At the lexical and morphological level, use of borrowed forms were observed such as 'shuttle', 'ice-cream', 'cycle', 'scooter' etc. by the children in current study. Findings from the current study also revealed that children did not exhibit any phrase level code switching. This could be due to the fact that the successive bilingual children are less proficient in L2. They could have inadequate mastery to use English at sentence level, thus children may not exhibit mixing at phrase level. Also, due to lack of proficiency in terms of vocabulary in both the languages and reduced exposure to the English would have resulted in CM restricted only at word level.

Another finding of the present study revealed that 8-10 years old M-E bilingual children showed morphological level of code switching. One probable reason for this could be the agglutinative nature of Malayalam. That is, Malayalam sound units or markers are added to the English words, resulting in code mixing at the morphological

level. For example, analysis of a sample (*Sample A*) showed that child used words such as /slidil/, /sea-sawyl/ and so on. In these, examples, it can be observed that though the root word is in English, the child uses markers in Malayalam. Literature suggests that, in a language like Malayalam, which is highly agglutinative in nature, a word can be easily formed by adding suffixes to the root word (Jayan, Rajeeve, & Rajendran, 2011; Mathai, 2014). This could be considered as a reason for the presence of morphological level of mixing by these children. The findings from the study revealed that at a younger age children are able to use agglutinative features of Malayalam. This would be used as a compensatory strategy by these young children to fill their lexical gaps.

An interesting finding of the present study was the usage of ‘double marking’ wherein children used utterances such as ‘sliding cheyunnu’, ‘swimming cheyunnu’, and ‘skating cheyunnu’ and so on. Here ‘cheyunnu’ means doing which is verb. The children add these words to other verbs such as skating, sliding etc. Similar findings were reported by Mathai (2014) and Aparna (2015). However, a significant developmental trend could not be observed across the mentioned age groups in the study.

Thus, the overall findings from the study indicated that there was a developmental trend in the pattern of acquisition of bilingualism which was observed from the analysis using Perelman’s level of code mixing and code switching. The reduction in the frequency of lexical and morphological level of code mixing and code switching with increase in age indicated a developmental trend in acquisition of language in M-E successive bilingual children.

5.4 Comparison of performance of M-E bilingual children on Matrix Language Frame Model

Matrix Language Frame (MLF) model was used to explain the intra-sentential code switching in the 8-10 years old M-E bilingual children. The findings of the study revealed that children exhibited ML islands, ML+EL constituents, EL insertions and borrowed forms in both the age groups. However, EL islands, ML shifts and revisions were not exhibited by any of the participant in the current study. The findings indicated that frequency of ML+EL insertions were greater for children in the younger age group when compared to older children. Another finding was that, there is an increased frequency of the usage of ML islands with an increase in age. EL insertions were exhibited by only few participants in the 8-10 year old M-E bilinguals. Borrowed forms are observed in both age groups in a similar trend. The findings from the current study indicated a developmental trend. Similar findings were reported by few other authors like Hellows (2013) in Hindi-English bilingual children of 6-8 years and Aparna (2015) in Malayalam-English bilingual children of 6-8 years old. The findings of these studies revealed that occurrence of ML islands and usages of borrowed forms were greater in older children whereas ML+EL constituents and EL insertions were greater in younger children.

The children in the 8-9 years old age group showed lesser frequency of occurrence of ML Islands than the children in 9-10 years old group. This indicated that with age, the children acquire mastery and as a result of which children are able to complete their utterances in the L1 only without borrowing words from L2. Also, with improved mastery in a language, children would also be able to inhibit the constituents

from L2. This skill would be poorer for children in the younger age group, thus would result in fewer occurrences of ML islands in the younger age group children in the current study. Another reason that could be attributed to increase in ML could be the fact that children are able to select the language according to the interlocutor. Similar results were also reported by Arias and Lakshmanan (2005) who studied the code switching in Spanish-English bilingual children. Another finding from the present study was that, none of the subjects exhibited EL islands and ML shifts which indicated absence of inter-sentential code switching. However, inter-sentential switches are considered as better proficiency in the languages. The children in the current study might use inter-sentential switches at a later age when the proficiency of the language improves.

It is clear from the findings of the present study that the occurrences of ML+EL constituents are greater in the 8-9 years old children than the 9-10 years old children. This may be due to the fact that younger children could be using constituents from the EL to maintain fluency of the utterance in L1. Also, it is clear that young bilingual children are able to access vocabulary easily from both L1 and L2. They are able to strategically transfer skills from second language to the native language. This can be supported by the 'Cummins Principle' which suggests that in the course of learning one language a child acquires a set of skills and implicit metalinguistic knowledge that can be drawn upon when working in another language (Baker, 1988; Shoebottom, 2003). Thus, children are able to select vocabulary from L2 and add with the L1 constituents resulting in ML+EL constituents. One reason for the occurrence of ML+EL constituents could be the inability to inhibit constituents from L2 or could be due to inadequate activation of L1 in young children (Myers-Scotton, 1993; Backus, 2003). This would not be the case of older

children as their proficiency in both languages have improved, thus lesser frequency of occurrence of ML+EL constituents in young children. This can also be correlated to the fewer number of code switches in the older children.

Another finding of the current study was that children in both the groups did not violate the syntactic constraints of both the language. Although morphological level of code switching was exhibited by the children, these did not violate the syntactic constraints of the language. It is clear that the M-E bilingual children of 8-10 years old followed the principles of MLF model (Morpheme Order Principle) i.e., children will follow surface morpheme order of ML in the ML+EL constituents (Myers-Scotton, 1993). Most of children who participated in the study followed the S-O-V order followed by O-S-V and S-V-O order which are acceptable in Malayalam. This is due to the flexibility of Malayalam language (Mohanam, 1982). It was also noted the syntactic structure of Malayalam was influenced by English in 8-10 years old children. For example, children used utterances like /oru kutti kalikkunnu/ (a child is playing), /oru kutti slide cheyunnu/ (a child is sliding). Here /oru/ refers to the article 'a' in English. Though it is not necessary to use such markers in Malayalam, children tend to use them due to the influence of English. However, such usage does not violate the syntactic rules of the language.

Use of borrowed forms from English was also observed in the ML+EL constituents. This could be linked with the increased level of exposure to English to the M-E bilingual children. As the exposure of language increases with age children will be more adept in using borrowed forms and thus can use more number of borrowed forms.

According to Mathai (2014), children tend to borrow word from other language or context especially for categories such as science, commerce, and electronics and so on. In this study, it was observed that children used borrowed forms for words such as cycle, scooter, slide, seesaw, monkey-bar, shuttle, badminton, ice-cream and so on. Due to agglutinative nature of Malayalam, children could add the ML constituents to these root words resulting in a morphological level of code mixing. However, it was also observed from the present study that few children used description strategies to fill the lacunae in their language. For example, /charukunna sadanam/ for 'slide', /thoongunna sadanam/ for 'climbing bar', /electricil odunna kuthira/ for 'merry-go-round' were used by few children in the younger age group as their exposure to English would have been less.

The presence of EL insertions can be attributed to the difficulty in selecting appropriate words from learned languages. An example of EL insertion is /oru girl parkil walking cheyyunnu/ which means that 'a girl is walking in the park'. Similar results were also reported by Harini and Chengappa (2008), Hellows (2013) and Aparna (2015). The absence of revisions in both the age groups can be due to the better proficiency in both the languages. However, in a study done by Hellows (2013) in 6-8 year old Hindi-English bilinguals revealed that the children in the younger age group exhibited revisions which were attributed to the lack of proficiency in both languages.

It was evident from the finding that the total number of constituents that indicated code mixing in MLF i.e., ML+EL constituents, EL insertions and borrowed forms in a given sample was equal to the TCS that was obtained using SALT. The sum of ML+EL constituents, number of elements constituting the EL insertions and the borrowed forms

comparable with the total number of code mixing or code switching instances in the sample.

The overall findings of the present study revealed a developmental trend in the pattern of bilingual acquisition of languages, Malayalam and English. The increased frequency of ML islands and lesser number of ML+EL constituents in the 9-10 years old children as a result of improved proficiency of languages, evidence the trend in bilingualism. Also, the use of more borrowed forms by the older children can be linked to the greater or increased exposure to English suggests an influence of L2 in the development L1 i.e., influence of English in Malayalam during acquisition in M-E bilingual children.

Summary and Conclusions

The aim of the current study was to study the pattern code mixing and code switching in 8-10 years old Malayalam-English bilingual children. The present study was conducted to investigate the influence of English in young Malayalam speaking children. Several researches have been conducted in the area of bilingualism to understand the trend in acquisition of the languages. Studying the pattern of language contact and code switching is one method of understanding language acquisition in bilinguals. Various attempts have been conducted by several researchers to understand code switching and code mixing in bilingual population in different context such as Spanish-English, Korean-English, Japanese-English, Mexican-English, and Chinese-English and so on. Studies in the Indian context include Kannada-English, Hindi-English and Malayalam-English. However, there are limited studies that have studied the developmental pattern of code mixing and code switching in older range of bilingual children who could show a different pattern with greater experience in any particular language. Thus, the objectives of the current study was to study the developmental pattern of code mixing and code switching in 8-10 year old Malayalam-English (M-E) successive bilingual children and also to compare the type, extent and level of code mixing (CM) and code switching (CS) of 8-10 years old Malayalam-English (M-E) successive bilingual children.

The study included 65 Malayalam-English successive bilingual children of 8-10 years old. The participants were divided into two groups of 8-9 years and 9-10 years. Successive bilinguals were selected on the basis of De Houwer criterion (1997). The participants in the study had Malayalam as native language and were exposed to English

in the school settings. A picture description task was carried out wherein a picture depicting a 'park' was selected as the stimulus. The collected samples were transcribed, scored and analyzed using SALT software, MLF model, Perelman's level CM and CS. The different parameters selected for analysis included total number of utterances (TU), total completed words (TWC), mean length of utterance (MLU) in words, number of different words (NDW), type token ratio (TTR), total number of code switches (TCS), matrix language islands (ML islands), matrix language shifts (ML shifts), embedded language islands (EL islands), matrix language+embedded language constituents (ML+EL), borrowed forms, embedded language insertions (EL insertions), revisions, lexical-semantic, morphological, syntactical and phonological levels of CM and CS.

It was inferred from the current study that the children of younger age group exhibited more instances of code mixing and code switching than older children. The findings of the current study indicated that children of 8-9 years had greater frequency of CM and CS than 9-10 years old children. One probable reason attributed to this was that children of younger age group have an inadequate mastery of both languages. As a result of which, they might be using vocabulary from L2 to compensate for their lexical gaps in L1. Thus, reduced number of CM instances as the age increases indicates a developmental trend in the pattern of acquisition of languages. It was reported in literature by various authors that children at a very young age use CM as a strategy to compensate for lexical gaps rather than for functions such as focus, elaboration, emphasis and so on (Gumperz, 1972; McClure 1998). One probable reason for reduced instances of code mixing could be that older children use code mixing as a tool to indicate stress or comfort or prestige rather than as tool to fill the lexical gaps (Akere, 1977; McClure,

1977). It was also noted from the findings of the present study that code switching instances were not exhibited by 8-10 year old children. Absence of CS instances could be because, since children were instructed in Malayalam, they tend to maintain the same language while describing the picture. It could also due to the fact, children of 8-10 years old could be having a lack of proficiency in both languages to switch languages at a sentence level (Aparna, 2015).

On analysis of various parameters such as TU, TWC, NDW, MLU in words, TTR and TCS using SALT, it was revealed that there was a greater frequency of total completed words (TWC), number of different words (NDW), type token ratio (TTR) and total number of code switches (TCS) in the 8-9 years old age group than 9-10 years old group. One reason attributed was the lexical gaps in L1 which occurs due to lack of proficiency in L1. Thus, younger children would compensate their lexical gaps by the use of words from L2. This resulted in an increased usage of different words which indeed imply increased TWC and TTR as well in the younger age group. On the other hand, children in the older age group who seemed to be more proficient in both languages, reflected with lesser lexical gaps in L1. This was evidenced by the lesser number of CS by older children and in turn reduced TWC, NDW and TTR. Also, as mastery in languages improve, children become more adept in selecting appropriate lexicon according to the context. It was also evident from the findings of the current study that children in both the age groups showed similar values for MLU. This could be supported by the fact that MLU can be considered as reliable only up to value of 3.5 (Blake, Quartaro & Onorati, 1993).

Further, analysis on Perecman's level of CM and CS revealed that, younger children showed greater frequency of lexical and morphological levels of CM and CS. The younger age group had a greater frequency of lexical level of code mixing than the older age group. Similarly, the frequency of morphological level of code mixing was higher in the 8-9 years old group than 9-10 years old group. Also, the children in 8-10 years old group used more of lexical code switches than morphological level of code switching. This developmental trend can be linked to the fact that, as age progress, mastery of languages improved which in turn reduce the frequency of occurrence of code switching. The absence of syntactic and phonological levels of CM and CS in 8-10 years old children in the current study indicates that there could be fewer constraints in Malayalam for CM at lexical and semantic level. Also, since any word order is acceptable in Malayalam, the syntactic constraints are not violated by children in the current study. The agglutinative nature of Malayalam language could be linked to the presence of morphological level of code switching (Aparna, 2015; Mathai, 2014).

Apart from the above findings, analysis using MLF model was done and parameters such as ML islands, ML+EL constituents, EL insertions, EL islands, ML shifts, revisions and borrowed forms were compared across both the age groups. Findings revealed that ML islands were greater in the older children whereas ML+EL constituents and EL insertions were greater for younger children. Frequency of borrowed forms was observed in both groups in a similar trend. The increase in ML islands at higher group can be associated with the fact that as mastery of language improves, they would be more adept in selecting vocabulary from L1 and also inhibit constituents from L2. Also, it was evident from the findings that ML+EL constituents indicated a developmental trend; i.e.,

fewer number of ML+EL constituents with increase in age. This is attributed to the fact that, children use constituents from L2 to fill in their lexical gaps. The presence of EL insertions in younger age group could be attributed to the confusions in selecting appropriate vocabulary from the lexicon. The absence of ML shifts indicated the absence of inter-sentential code switching in 8-10 year old M-E bilingual children. Further, it was also revealed that children in both the age groups used borrowed forms, which can be linked to the increase exposure to L2/ English.

Thus, it can be inferred from the present study that, there was a trend in the pattern of CM and CS indicating a developmental trend in the acquisition of languages by M-E bilinguals. The findings revealed that 8-10 year old M-E bilingual children exhibited intra-sentential type of code switching. Among the 65 children who participated in the study, none exhibited inter-sentential code switching. This in turn would indicate that children might acquire skills to switch languages at a sentence level at a later stage. However, intra-sentential switching (code mixing) was considered as a compensatory mechanism to fill in the lexical gaps that occur as a result of lack of proficiency in languages. The usage of borrowed forms due to an increased exposure to L2 would also suggest about the influence of English on Malayalam in children. A trend could be clearly observed by comparing the results with a previous study by Aparna (2015) wherein a developmental trend in the pattern of CM and CS in 6-8 years old children was observed and this trend continues to develop till 10 years of age as revealed from the findings of the present study. Thus overall findings of study indicated a developmental trend that could be observed across age groups i.e, 6-7 years, 7-8 years, 8-9 years and 9-10 years.

Implications of the Study

The current study in young Malayalam-English bilingual children indicated a developmental trend in the bilingual acquisition of languages with respect to code mixing and code switching. Most of the children acquire their second language as a part of their schooling. Thus, it becomes important to understand the effects of English on Malayalam. The current study provides an insight into the language abilities of the bilingual children and also highlights the knowledge about how their performance could vary depending on the age and duration of exposure.

The present study also supports the theoretical knowledge about bilingual acquisition of languages in young children. Even though children learn English as a part of their school curriculum at a very young age itself, it is not necessary that they acquire equal mastery in both the languages. Children's proficiency in both the languages might vary to different extent depending on several factors such as age of exposure, duration of exposure, context and language preference and so on. This would lead to difference in the competency and use of both the languages. The current study could explain the reason for differential competency in languages based on the developmental pattern of bilingualism. The current study also supports the existing literature on bilingualism with respect to code mixing and code switching. The study could also support Cummins Theory (Cummins, 2000) where it suggests about the strategic transfer of skills from one language to other.

The current study also provided evidence about phenomenon such as language contact and CM and CS. It supports the view that CM and CS are normal phenomenon

that occurs during the developmental period and they need not be related to a disordered language or require intervention. The current study also attempts to imply that CM and CS behaviors exhibited by children should be considered as a part of language acquisition. Also, it suggested that since proficiency of languages may vary, similar performance in both languages should not be expected from children by teachers or parents or speech language pathologists.

The current study helps in facilitating the knowledge about the pattern of language interference in Indian languages, especially in a Dravidian language. Also, the study provides a continuum of developmental pattern in understanding code-switching and code-mixing in M-E bilingual children reported in a previous study by Aprana (2015). It was reported from that, the frequency of code mixing reduced from 6 years to 8 years of age. Studying a continuum to explore the developmental pattern of code mixing and code switching in older range of bilingual children with greater experience in any particular language, could provide evidences towards acquisition of bilingualism in children. The current study also explained the syntactical constraints of code mixing and code switching. Understanding the pattern of language switching in typically developing children would also help in identifying the difficulties that could be observed in language disordered population such as Specific Language Impairment, Language Learning Disability and Childhood Aphasia. It is important for professionals dealing with such children such as the Speech-Language Pathologists to understand their difficulties in each of the learned languages and know the assessment and management options for such bilingual children.

The current study provides an insight into the developmental trend of CM and CS and the type, pattern and extent of CM and CS in 8-10 years old typically developing Malayalam-English successive bilingual children. Also, study evidences the various reasons for the occurrence of CM and CS and also suggests that children at a very young age are adept at selecting appropriate vocabulary according to interlocutor and also can fill in their lexical gaps by borrowing word from the other language.

Limitations of the Study

The aim of the present study was to understand the CM and CS behaviors in M-E bilingual children of the age range of 8-10 years only. However, to comment on the developmental pattern of bilingualism in children, extensive studies need to be carried out with a wider age range. Thus, a further research considering a broader age range and larger sample size will be required to generalize the results of the present study.

Future Directions

CM and CS behaviors could vary with respect to the tasks such as conversation, narration etc. Analyzing CM and CS behaviors during various other activities such as conversation and class room interaction will help to understand the social and pragmatic functions of code mixing and code switching. In addition, CM and CS could also be studied in a multilingual population to understand about the language contact in multilinguals. Future research can also probe into the pattern of CM and CS in language disordered bilingual/ multilingual children.

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Picture Description Task



Source: Picture Stimuli- Park. Adapted from *Code mixing and Code switching and Hindi-English Bilingual Children*, Hellows (2013). Unpublished Masters Dissertation, University of Mysore, Mysore.

APPENDIX 2

Sample A: 8-9years

C moonu kuttikalidil [CS] charuki kondirikkunnu.

C oru anty [CS] anenki oru babyne [CS] tholil vechond povunnu.

C oru kutti anenki ivide odi kondirikkunnu.

C oru kutti ivide skooteril [CS] ride [CS] cheythondirikkunnu.

C oru kutti ball [CS] kond kalichondirikkunnu.

C rand kuttikal tennis [CS] kalichondirikkunnu.

C oru kutti cycle [CS] odichondirikkunnu.

C rand kuttikal seesaw [CS] kalichondirikkunnu.

C rand kutti ball [CS] kalichondirikkunnu.

C rand kutti climbing [CS] frameil [CS] poykondirikkunnu.

C korach kuttikalee horse [CS] merry-go-roundil [CS] kalichondirikkunnu.

C korach kuttikal swingsil [CS] kalichondirikkunnu.

C pinne oru apoopanum oru kuttiyum benchil [CS] irikunnu.

C rand kuttikal sand [CS] pitil [CS] castle undaki kondirikkunnu.

C avidekoode oru bird [CS] parannondirikkunnu.

C avide oru daddiyum [CS] kunjum koode odikondirikkunnu.

C pinne avide rand dogs [CS] und.

Sample B: 9-10 years

- C kurach kuttikal anenki basket ball [CS] kalikkunnu.
- C kurach kuttikal cycle [CS] scooter [CS] okke odikkunnu.
- C kurach kuttikal vellathil okke kalikkunnu.
- C chilar badminton [CS] kalikkunnu.
- C chilar pandhu kalikkunnu.
- C kurach per irikunnu.
- C kurach per seesayil [CS] kerikalikkunnu.
- C kuach per slidil [CS] kerikalikkunnu.
- C chilaranenkithoongikalikkunnu.
- C chilarmannil sandcastle [CS] undakikalikkunnu.
- C chila kuttikal matte a electricil [CS] odunnu kuthirayil kalikkunnu.
- C pinne kore per kambiyil keril kalikkunnu.

Sample C: 8-9years

- C rand peru swingil [CS] irikkunnu.
- C ivide merry-go-roundil [CS] kerunnu.
- C rand piller ball [CS] kalikkunnu.
- C pinne sea-sawiyil [CS] kalikkunnu.
- C oru kutti kambiyil pidich kerunnu.
- C grandmother [CS] ivide irikunnu.
- C grandma [CS] de koode oru mol irippund.

C oru kutti badminton [CS] kalikkuva.
C oru kutti icecream [CS] kazhikua.
C ivaru rand perum fountainil [CS] kalikkuva.
C ivaru cycle [CS] odikkuva.
C ivaru dognte [CS] koode kalikkuva.
C pinne ivide grandma [CS] chairil [CS] irikunnu.
C ivaru walking [CS] cheyunnu

Sample D: 9-10 years

C oru kuttislidil [CS] charukunnu.
C rand kuttikal seasawiyil [CS] adunnu.
C rand kuttikal oonjaladunnu.
C rand kuttikal pandu kalikkunnu.
C rand kuttikal dande kambiyil okke pidich thoonganu.
C rand kuttikal mannilu kalikkanu.
C oru kutti odanu.
C oru kutti anenki vavenem pidichondodanu.
C oru kutti nadakkanu.
C rand kuttikal badminton [CS] kalikkanu.
C rand kuttikal vellachatathil odikondirikanu.
C oru mamanum oru kutteem koode kaseril irikan ponu.
C rand kuttikal anenki canteenil [CS] irikanu.