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Bilingual First Language Acquisition: Code Mixing in Children Who Speak a Minority Language.

by

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A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements of Master of Science

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Abstract

Two Nepali-English siblings and two French-English siblings were videotaped in naturalistic play situations at the approximate ages of 2;3 and 4;0. Transcriptions were analyzed to determine possible effects of the minority/majority language distinction on code mixing, something not previously discussed in the literature. All children were found to be highly interlocutor sensitive, with the Nepali-English children showing more sensitivity. No evidence for the parental discourse hypothesis was found, but there was possible evidence for the modeling hypothesis. Language status and ability, and adult mixing rates were found to be key in determining why children code mix. Evidence for adherence to the constraints of the Matrix Language Frame (MLF) model from an early age was found. Possible developmental trends in interlocutor sensitivity and sensitivity to the minority/majority language distinction were found, but not in adherence to the constraints of the MLF.

This thesis is dedicated to my son, Teio Rio Bibas, the light of my life; and to my Mum, without whose love and support I could not have...

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List of Abbreviations

Acc= Accusative

ANA = Two-year-old Nepali-English child

APR = Four-year-old Nepali-English child

AR = Adult Repetition

Aux= Auxilliary Verb

BFLA = Bilingual First Language Acquisition

BRG = Two-year-old French-English child

CHI = Child

Cop= Copula

CP = Complementizer Phrase

CS = Code Switching

Dat= Dative

DAN = Four-year-old French-English child

Det= Determiner

EG = Expressed Guess

EL = Embedded Language

ENG = English

EP = English Parent

ES = English Stranger

F= Feminine

FAT = Father

FRE = French

FP = French Parent

FS = French Stranger

Fut= Future

Gen= Genitive

Hon= Honourific

Inf= Infinitive

Instr= Instrumental

IP= Inflectional Phrase

M= Masculine

MG = Minimal Grasp

MH = Modeling Hypothesis

ML = Matrix Language

MLF model = Matrix Language Frame Model

MOP = Morpheme Onset Principle

MOS = Move on Strategy

MOT = Mother

Neg= Negative

NEP = Nepali

Nom= Nominative

NP = Nepali Parent

NS = Nepali Stranger

PDH = Parental Discourse Hypothesis

Pej= Pejorative

Pl= Plural

Poss= Possessive

PP= Prepositional Phrase

Pres= Present

PstPt= Past Participle

Sg= Singular

SMP= System Morpheme Principle

STG= Stranger

ULS= Unitary Language System

VP= Verb Phrase

Chapter 1

1.1. Statement of the Problem

Bilingual first language acquisition (BFLA) occurs when children learn two or more languages from birth. These bilingual children may be aware that they are acquiring two different languages, but they often code mix, that is mix elements from both their languages within and between utterances. Researchers are currently debating many possible explanations for the code mixing that bilingual children engage in. On one hand, some have proposed through the Unitary Language System hypothesis (ULS) that code mixing stems from a child's inability to differentiate between his two languages (Leopold, 1970; Swain, 1972; Volterra & Taeschner, 1978). On the other hand, others have refuted the aforementioned ULS (Genesee, 1989; among others) and are looking to parental response, parental modeling, and differential vocabulary size in each language for answers to why children code mix. In this study, I will be examining code-mixing data from two sibling pairs, two-years and four-years old, one of whom speaks a minority language (Nepali) and English and the other of whom speaks a majority language (French) and English in order to address the following questions concerning the "whys" and "hows" of code mixing: Do these children show interlocutor sensitivity, both with their parents and with strangers? What are the effects of internal factors (language status and language dominance) and external factors (parental response and parental modeling) on code mixing? Are there structural constraints that govern the code mixing behaviour of bilingual children?

Many of these questions have been addressed in the literature with respect to majority languages, but not the question of what effect the minority/majority language distinction may have on code mixing behaviour. The impetus for this study is to

investigate whether the findings of previous researchers concerning the code mixing of bilingual children who speak a majority language, such as French, can be extended to children who speak a minority language, such as Nepali, or whether the latter have different motivations and structures for their code mixing. Finally, what developmental trends are apparent in the data with respect to the aforementioned questions?

1.2. Background on Language Differentiation.

1.2.1. Code Switching in Adults

Code switching, alternating between two or more languages, has been widely studied in adults. Focus on the part of researchers ranges from the psycholinguistic—how code switching can give insight into the nature of the mental lexicon—to the sociolinguistic—how code switching can be used to convey social messages—to the purely linguistic—whether or not code switching is a rule-governed process. Early research into intrasentential code switching, or the mixing of two or more languages within a sentence, considered it to be a syntactically random phenomenon. Some researchers even believed such behaviour to be representative of language deficiency, and though not all went so far, few, if any, identified syntactic restrictions on switching (Labov, 1971; Lance, 1975; among others). However, studies in the mid- to late nineteen seventies began to suggest possible syntactic constraints on code switching (Gingras, 1974; Reyes, 1974; Gumperz, 1977, Pfaff, 1979; among others). The idea that code switching in adults is a result of language deficiency has been rejected by linguists, and though there is still disagreement over the exact constraints at play in code switching, it is now viewed as a rule-governed behaviour that requires a high level of

competence in both, or all, of a speaker's languages. One of the major theories being investigated by researchers is Myers-Scotton's Matrix Language Frame Model.

Code switching amongst adults has long been studied in terms of its sociological implications. Gumperz (1977), Poplack (1980), Heller (1992), and Lo (1999), among others, all refer to code switching as a purposeful activity used to mark members of the 'we group' as opposed to members of the 'they group'. Lo (1999: 462) argues that "since codeswitching involves sharing norms of denotational code, it is the basis of co-membership in... a language community." Different communities have differing views as to the appropriateness of code switching. Heller (1992: 130) points out that in many communities in Quebec, "it became necessary to speak French (and only French)." In order to challenge the dominance of English in Canada, a lack of code switching became the norm in Quebec. In South Africa, however, Finlayson *et al.* (1998) report high levels of code switching in everyday speech, with language being used as both an index of identity and a tool of communication among different ethnic groups. Adult code switching is used as a powerful sociolinguistic tool according to the norms of the differing speech communities.

1.2.2. Language Mixing in Bilingual Children

The notion that adult code switching stems from language deficiency was laid to rest in the late 1970s, but debate over the nature of child code mixing continues today. Bilingual first language acquisition is a much-studied topic at the moment, with a great deal of lively debate on the cognitive effects of learning two languages at once. Parents are worried that their young children might somehow be disadvantaged by their bilingualism, with some of their greater concerns prompted by the fact that bilingual children often mix their languages together. Perhaps the reason that concern over

children's mixing has outlived that of adult switching is that young children's code mixing is not seen as a purposeful activity, whereas adults are perceived as switching in accordance with definite sociopragmatic norms. Vihman (1998) investigated the development of code switching in children from a sociopragmatic point of view and concluded that adult-like code switching emerges over time, with the development of language.

Researchers investigating the language systems of bilingual children often define code mixing as the use of the inappropriate language for the communicative context. As such, they have found it useful to distinguish between inter- and intra- sentential code mixing. Inter-sentential code mixing includes mixing across utterance boundaries. For example, if a mother asks her daughter a question in French (*Tu veux du lait?* 'you want some milk?'), but the child responds with a word ('no'), phrase ('no thanks'), or sentence ('no I don't want any') in English, this would be inter-sentential mixing. The morphological, lexical, and phrasal mixing discussed below would all fall under the heading of intra-sentential mixing, or the co-occurrence of elements from both languages in a single utterance.

Mixing can occur at any level of speech. Children, and even adults sometimes, can mix on many different levels. Genesee (1988) reviewed the findings of various researchers on phonological, lexical, phrasal, morphological, syntactic, semantic, and pragmatic mixing. For the purposes of this research, mixing on the morphological, lexical, and phrasal levels will be of most interest.

Morphological mixing occurs when grammatical morphemes from one language are used with grammatical or content morphemes of another language. Myers-Scotton (1993) reports many instances of such mixing in the speech of adults, using the data as support for her Matrix Language Frame Model of code switching. Examples such as, *ku*-BEHAVE (' to behave') and *wa-na-vyo*-BEHAVE ('as they behave') are not rare in her

Nairobi Swahili-English corpus (103). Examples of children's German-English morphological mixing provided by Redlinger & Park (1980) are *pfeift*-ING ('whistling') and *Die Madchen*-'S GOING NIGHT NIGHT('The girl's going night-night'). Finally, within my own corpus, there are many examples of morphological mxing such as the French-English OPEN-*er* ('to open').

Lexical mixing, which appears to be the most frequent in the language data for older children and adults, involves the mixing of whole words. Content words, especially nouns, are the most frequently mixed lexical items. Leopold (1970: 181) cites German-English examples such as: *right da* ('right there') and *three meows lost Handschuhe* ('three little kittens lost their mittens'). Interestingly, there is a debate over whether functional or lexical mixing is prevalent in early bilingual first language acquisition. Vihman (1985) found that function words, rather than nouns or verbs, were mixed the most frequently in the utterances of an Estonian-Bilingual child aged 1;8-2;0. In a later study, Vihman (1998) found that from the age of 2;8, this child tended to mix more nouns and verbs (lexical mixing). Meisel (1994), and Koppe and Meisel (1995) found similar patterns of emergence when studying the code mixing of German-French bilingual children. Lanza (1997) reported similar findings for one of her Norwegian-English bilingual subjects, but an opposite pattern for the other subject. Nicoladis and Genesee (1998) found approximately equal rates of mixing for functors and contentives, and they also noted that the penchant for grammatical versus lexical mixing was child-dependant.

Phrasal mixing is mixing of a PP, VP, NP, etc. Pfaff (1979: 301) cites examples such as: $_{NP}$[*El perro*] *chewed him up* ('the dog...'), and $_{NP}$[*Todos los Mexicanos*] *were riled up* ('all the Mexicans...'). Poplack (1980) uses the example: *Sometimes I'll start a sentence in Spanish y termino en espanol* ('... and finish in Spanish'). As will be discussed in a following section, numerous constraints on phrasal mixing, as on

morphological and lexical, have been proposed. A bilingual's ability to adhere to these constraints argues against the view that mixing is a sign of confusion.

1.2.3. The Unitary Language System Hypothesis

Historically, researchers have used the fact that young children code switch to argue that young bilingual children cannot differentiate between their two languages (Leopold, 1970; Swain, 1972; Volterra & Taeschner, 1978). These researchers proposed a *unitary language system.* In his famous diary study, Leopold (1970: 175) notes that at about age 1;4, "Hildegard did not associate the languages with definite persons... She constructed a unified linguistic medium of her own out of the bilingual presentation. The separation of the two languages belonged in her case to a later stage." Indeed, many researchers who posit a unitary language system claim that separation of languages does not occur until the age of three (Murrell, 1966; Imedadze, 1978). Leopold was watching for signs of differentiation, however, and notes that "while eating an egg at 1;9, she called it alternately *Ei* and *egg*, apparently the German form meant for me, the English for her mother. But such impressions were untrustworthy" (175) as Hildegard continued to use English words for which she apparently knew the German when speaking to her father. Leopold's data, however, were not collected equally in German and English contexts, since he addressed his daughter in German. And, interestingly, by age 1;11, Hildegard's language was "definitely dominated by English" (182). Without knowing what she was producing in English language contexts, it is difficult to say whether her language was, in fact, undifferentiated, or if other factors such as language dominance were affecting her mixing.

Volterra & Taeschner (1978) argued that bilingual children go through three stages in the process of language acquisition, in the first of which, they cannot

differentiate between their two languages at all. In this stage "it is difficult to make any assessment concerning syntax. In practice, the bilingual child speaks only one language, which is a language system of his own" (317). In the second stage, languages are differentiated lexically but not syntactically. The child "uses a consistent syntactic system of her own, instead of imitating the adult system. She is therefore using two lexicons but one and only one syntax" (324). According to them, children acquire two separate language systems only in their late preschool years. In support of stage one of their model, Volterra & Taeschner use examples of lexical mixing addressed to the child's German-speaking mother, but do not give any indication of how the child uses language with the Italian- speaking father.

Genesee (1989) questioned the methodology and interpretations of proponents of the ULS on several grounds. The first, as has been mentioned above, is that the researchers do not present or analyze their data by context. For example, children might mix because of a lack of vocabulary in their weaker language. However, those same children may use more words from their weaker language when speaking with the parent who speaks their weaker language than they do with the parent who speaks their stronger language. Should those children exhibit a different pattern of language use depending on context, then they can clearly differentiate between their two languages; though, in practice, they may fall back on language mixing in order to keep the communicative ball rolling. Leopold (1970) and Volterra & Taeschner (1978) cite as evidence language mixing from only one language context. Genesee also criticized work by Redlinger & Park (1980), Vihman (1985), and Swain (1972) on the grounds that they did not investigate language use in different language contexts.

A child's ability to use his language differentially along a bilingual situational continuum is further evidence against the ULS. If the child can judge when and where it is appropriate to code mix, then he can clearly distinguish between his two languages

and make choices as to how much of each language to use at a given moment. The investigation of language use in different language contexts is important because, as Grosjean (1997: 225) argues, "psycholinguistic models of language processing in bilinguals have to account for the perception and production of language in the bilingual's different language modes." Everyday, both adult and child bilinguals find themselves at different points along situational continuums that induce different language modes—the monolingual mode, the bilingual mode, and intermediary modes along the continuum. The monolingual mode is generally set when the bilingual is communicating with a person who knows only one of the bilingual's languages, and the bilingual deactivates (as much as possible) his or her other language. The bilingual mode is set when both (or all) interlocutors share two or more languages. In bilingual mode, the interlocutors generally adopt a base or matrix language, but can then bring in the other language whenever desired or necessary. Grosjean considers the monolingual and bilingual language modes to be endpoints, but also points out that bilinguals may find themselves at intermediary points depending on the interlocutor, the topic of conversation, the setting, and so forth. He argues that "one consequence of not controlling for the language mode is that a lot of ambiguous data is obtained, as some participants may be in a monolingual mode, others in a bilingual mode, and others still between the two. Researchers into bilingual first language acquisition who examine only one of the child's language contexts are missing more than half the story. Their data does not cover the full range of situations and abilities of the child. As a result, the conclusions that they draw are not necessarily representative of the child's abilities or of the phenomenon under investigation. For example, if one were to observe a child in a bilingual context speaking his weaker language, one might make very different assumptions about that child's abilities and code switching patterns than if one observed that same child in a monolingual context speaking his dominant language.

1.2.4. Differentiated Languages.

In contrast to the findings supporting the ULS, recent research has shown that young children acquiring two languages at the same time can distinguish between their languages, and, when in separate language contexts, can make appropriate language choices (Pye, 1986; Genesee, Nicoladis, & Paradis, 1995; Lanza, 1997; Nicoladis, 1998; Deuchar& Quay, 2000; among others). However, children still code switch. Researchers have looked at children of various ages, in different language contexts, trying to discover the underlying motivations for the mixing of their languages since the ULS is not tenable as a cause.

Genesee, Nicoladis, & Paradis (1995) examined language differentiation in five bilingual children, ranging in age from 1;10 to 2;2. The children, residents of Quebec, came from families in which the mother spoke English predominantly, whereas the father predominantly spoke French. Children were observed in different language contexts: presumably an English context with the mother, a French context with the father, and a bilingual context with both parents present. Each child's use of English-only or French-only utterances with each of his or her parents was examined in each of the contexts. Four of the five children used more English with their mothers and French with their fathers when playing alone with their parents. The fifth child used the same amount of each language with both parents. In the bilingual context, all five children used more English with their mothers and French with their fathers. Clearly these children were able to differentiate between their two languages, even though they were younger than three years. Two of the children were further observed playing with a monolingual English-speaking stranger. Both children used more English-only utterances with the stranger, but there was no less mixing with the completely monolingual stranger than

with their parents, a result the researchers interpreted as indicating that the children were constrained by their proficiency in English, and used French out of necessity. When their French was not understood by the stranger, various repair strategies were used, with varying degrees of success. The researchers then examined the children's rate of mixing in relation to the rate of parental mixing and language dominance (as calculated by MLU, Upper Bound, MMU, and word types). They found no evidence for the effect of the former, but some evidence for the latter.

Genesee, Boivin, & Nicoladis (1996) extended the aforementioned study to look more closely at bilingual children interacting with monolingual strangers. They observed four children (average age 2;2) acquiring French and English simultaneously in Quebec. Each of the children had one parent who spoke predominantly English and one who spoke predominantly French. Children were observed playing alone with each of their parents and then with a monolingual stranger. The stranger spoke the child's less proficient language in order to test the limits of the child's ability to use the languages differentially. The children all used more of their dominant than non-dominant language with both parents; however, they were clearly using English and French in context-sensitive ways. The researchers also found that these young children were able to assess the native language of the stranger, and were even able to judge the stranger's level of proficiency in the other language. In other words, they were able to ascertain that the stranger was a monolingual speaker. Three of the children used more of the stranger's language with the stranger than they did with the parent who used the corresponding language. Clearly the children were able to use their language in context-specific ways and to judge relative proficiency.

1.3. Possible Explanations for Code Mixing

Given that young children are actually able to differentiate their languages and to use them in context-specific ways, why do they code mix? Some researchers posit internal reasons for code mixing. For example, children with limited linguistic resources will use whatever means they can to maintain communication. In other words, if a child lacks a word in one language, rather than hampering the flow of communication, that child will use a word from their other language to express the same idea (although, depending on the communicative context, this mixing can actually hamper communication because their interlocutor may not speak the child's other language). External reasons for code mixing have also been posited. These are exemplified by the theory that children can respond to socio-pragmatic cues as to the appropriateness of code mixing as well as the theory that bilingual children's rates of mixing are related to rates of mixing in the input.

1.3.1. Language Ability

Nicoladis & Secco (2000) studied a Portuguese-English boy between the ages of 1;0 and 1;6. He was filmed every week in two sessions, one with his Portuguese-speaking father, and one with his English-speaking mother. His parents also made weekly vocabulary reports. The researchers examined the child's translation equivalents (the child actively used a word in both his languages to refer to the same object, class of objects, action, or state/process) to determine if the child's language choice could be explained by the fact that he did not possess a translation equivalent at that time. The researchers found that the child did code mix more with the parent who spoke his non-dominant language and that 90% of the child's code mixing could be accounted for by

gaps in the productive lexicon (lack of translation equivalents). Most of the parent's code mixing could be accounted for by the use of words that were in the child's productive vocabulary. They concluded that, though children can distinguish between their languages from a very early age, they must develop a sufficiently large productive vocabulary before they have the option of using only one language or the other. This theory that code mixing is a way for children to extend their limited proficiency is supported by the findings of many researchers (Genesee *et al*, 1995, 1996; among others) that suggest that children code mix more when speaking their non-dominant language. In addition, Meisel (1994) showed that rates of code mixing drop as language proficiency goes up. For the purposes of this study, the term "language ability" will be used as a general cover term to refer to both language dominance and vocabulary size. The individual terms will be used when the distinction between the two is important.

One might predict that gestures would be used as a means of compensating for limited linguistic resources, such as small vocabulary size. Researchers have found that young children who do not yet speak, as well as deaf children, use gestures to communicate (Acredolo & Goodwyn, 1988; Goldin-Meadow & Mylander, 1984). Nicoladis, Mayberry, and Genesee (1999) studied the relation of gesture to speech in a longitudinal study of five French-English bilingual boys. They found that the onset of iconic gestures coincided with the onset of multi-word speech, and that this occurred separately for each of the children's two languages. Mayberry *et al* (1998) and Scott (1999), in studies on non-stuttering and stuttering children, found that gesture complexity coincided with the syntactic complexity of the accompanying speech. Nicoladis *et al* (1999) also found that children used significantly more symbolic gestures in their stronger than their weaker language. These findings suggest that gestures do not compensate for speech; rather, they are part of the same underlying cognitive and linguistic system.

1.3.2. Parent's Pragmatic Cues

Lanza (1992, 1997) supports the claim that young children can differentiate between their two languages, and that code mixing is probably related to language dominance, but focused more on the question of how parents' socio-pragmatic cues can shape a child's code mixing. Lanza studied the simultaneous acquisition of English and Norwegian, by a child between the ages of 1;11 and 2;7. Audio tape recordings were made of the child's speech in separate father-child and mother-child interactions as well as in family interactions. The parents claimed to practice a one-parent, one-language strategy. The mother also kept a diary of the child's general language development. In addition to examining the ability of the child to differentiate between her languages, Lanza also presents a highly systematic framework for the analysis of parental discourse strategies and how they affect children's mixing. She maintains that parents can negotiate either a monolingual or a bilingual context of interaction with their children, depending on which strategies they adopt. These strategies include *minimal grasp*, in which the parent signals a lack of comprehension of a child's mixed utterance; *expressed guess*, in which the adult makes a guess as to what the child's mixed utterance means, to which the child can respond with a yes or no answer; *repetition*, in which the adult repeats the child's mixed utterance in the appropriate language; *move on*, in which the parent gives no repair cue whatsoever; and *code switching*. Lanza maintains that these strategies may be placed along a continuum, with minimal grasp negotiating a monolingual context, and code switching a bilingual context. The other utterances fall along the continuum as they are listed above.

Deuchar & Quay (2000), who collected data on a Spanish-English bilingual child between the ages of 1;7 and 1;8, theorize that the child's monolingual English

grandmother created a bilingual context by showing willingness to accept Spanish as well as English words (move on strategy) so that conversation could continue and a communicative breakdown could be avoided. The bilingual father in their study was often more insistent on monolingual conversation, using expressed guess strategies. The child may have responded to these strategies, and this could explain the higher rate of code switching in the child's English (with her grandmother) than in her Spanish (with her parents). Juan-Garau & Perez-Vidal (2001), who collected data on a Catalan-English bilingual boy between the ages of 1;3 and 4;2, found that once the English-speaking father started to use strategies to impose a monolingual context, the child's rate of mixing with the father (in his non-dominant language) declined sharply. The evidence in this study, as supportive of the socio-pragmatic reasons for code mixing, could just as easily be used to argue for developmental reasons for code mixing: the child's decrease in mixing followed a protracted visit to England and occurred at about three years of age, a time when, arguably, the child's non-dominant language should have improved significantly, thereby lessening the need for code mixing.

Other researchers have examined the claim that young children can respond to such parental cues, and have not found evidence in support of it (Genesee, Nicoladis, & Paradis,1995; Genesee, Boivin, & Nicoladis, 1996; Nicoladis & Secco, 2000). Whereas Lanza (1992) claims that the child she studied switched to the context-appropriate language when parents used a minimal grasp strategy, Nicoladis & Genesee (1998) found that five French-English bilingual children switched to the appropriate language most often when parents used a move on strategy, continuing the conversation in their native language. In fact, they found significant negative correlations between discourse style and rates of code mixing, whereas Lanza predicted positive correlations. Nicoladis & Secco (2000) hypothesize that Lanza's strategies can work only with young children if the parents have already exposed their child to a translation equivalent which the child

can be expected to remember at a later date. They suggest that "previous studies on child-parent communication in two-year old bilingual children may have had conflicting results because communication patterns have been established earlier in development" (26). Thus far, it is unclear whether or not parental cues have an effect on code mixing in young children and, if so, what this effect might be. One might hypothesize that, rather than one theory being correct and the other not, the evidence indicates a developmental trend—children begin code switching for developmental reasons, and either continue or not depending on the socialization they receive.

1.3.3. The Modeling Hypothesis

The Modeling Hypothesis (MH) is another explanation for the code mixing observed in child language. This theory posits that children's rates of mixing are related to the rates of mixing in the input addressed to them. It differs from the pragmatic cues theory in that it correlates the children's rate of mixing directly to the mixing rate of their interlocutors during the interaction under observation. A parent's use of pragmatic cues to indicate to a child whether the child's mixing is acceptable could lead to an established pattern of code mixing (or non-mixing) in parent-child interactions. The MH suggests that if an adult code mixes frequently during an interaction with a child, the child may code mix accordingly. The language behaviour of the child is adjusted according to the language behaviour modeled by the adult during that interaction. Just as children are capable of language use in context-specific ways, children may be able to assess where on the language mode continuum their interlocutor is choosing to communicate, and to respond accordingly. As Genesee, Comeau, and Baynton (in press) suggest, the MH is non-controversial with respect to older children, as they are able to adopt code mixing patterns appropriate to the speech communities in which they

live. These researchers examined six French-English children at the age of roughly 2;4. These children were first observed playing with each parent, who mainly used a one parent-one language strategy for interaction. These recordings provided data for determining the children's development in their respective languages. Following this, the children were recorded on three separate occasions playing with a stranger who spoke their non-dominant language. During the first session, the stranger code mixed approximately fifteen percent of the time, increasing to forty percent for the second session, and then returning to an approximate mixing rate of fifteen percent for the third session. The researchers found a significant increase in the children's mixing from session one to two, and a significant decrease from session two to three. They also found that the adults' use of a mixed utterance was much more likely to be followed by a mixed than a non-mixed utterance by the children. The researchers posit that their findings differ from those of Genesee, Nicoladis, and Paradis (1995) because the earlier study focused on parent-child patterns, which may be subject to a variety of factors, including the socio-pragmatic cues presented by Lanza (1992). Presumably, parents already have established acceptable code mixing patterns with their children by using, for example, pragmatic cues. Thus Genesee *et al* (1995) found that children did not necessarily change their mixing rate to match those of their parents during individual play sessions. By looking at strangers, Genesee *et al* (in press) were able to observe how children followed the code mixing lead of people with whom there was no established code mixing rate.

1.4. Summary

Bilingual first language acquisition occurs when children learn two or more languages from birth. These bilingual children can clearly differentiate between their languages and use them differentially when in separate language contexts, however,

they still code mix, or mix elements from both their languages. One possible explanation for this mixing is that young children's language skills are limited, and, in order to maintain communication, they will use all the linguistic resources at their disposal. This is supported by evidence that young children tend to code mix more when conversing with adults who speak their less proficient language, and that children will code mix when lacking translation equivalents. A second explanation is that children's code mixing patterns will be related to the discourse styles and strategies of their parents. In other words, if a child's parents signal that bilingual discourse is acceptable, then the child is more likely to code mix more frequently in general. A third explanation, is that rate of code mixing produced by a child's interlocutor (usually a stranger) will affect that child's rate of code mixing during that interaction. All three explanations can be related to Grosjean's model of a language mode continuum. The child's proficiency in his languages will affect the child's ability to deactivate one of his languages when in a monolingual mode. The discourse styles and strategies of parents will help a child determine where on the bilingual continuum it is most appropriate to be when conversing with that parent in general. And the rate of code mixing of an interlocutor will also help a child determine where on the continuum he should be for a particular conversation.

1.5. A Psycholinguistic Model of Code Switching.

Research into the code mixing behaviour of adults has revealed that it is a rule-governed behaviour that reflects a high level of competence in both, or all, of a speaker's languages. These rules reflect both socio-pragmatic and grammatical knowledge. Grammatically, these rules, or constraints, apply to intra-sentential code mixing, as they restrict what and where elements from one language can be inserted into another language. On the formal level, research on children's code mixing has focused on the

question of whether or not young children also have systematic rules or constraints governing their mixing. Given that they ultimately develop the linguistic systems of adult bilinguals, researchers are now asking whether bilingual children adhere to the same code mixing constraints as adults from the emergence of multiword utterances in their speech, or whether there is a developmental shift in the structure of their code mixing. Recently, many researchers have looked at the frequencies of different syntactic categories occurring as single-item insertions in mixed utterances. As mentioned in 1.2.2, some researchers (Vihman, 1985, 1998; Meisel, 1994; etc) found that young children tend to mix more function words, but that there is a developmental trend toward the mixing of lexical words. Other researchers (Nicoladis & Genesee, 1998) found that the rates of mixing for functors and contentives was child dependent. So, the question of possible developmental changes in code mixing is still on the table for debate.

Early researchers (Volterra & Taeschner, 1978; among others), who posited the unitary language hypothesis, argued that since a child has only one syntactic system, that child does not need any special rules or framework in order to mix his two languages together. This preempts the notion that children have a set of structural constraints that guide their code mixing. As the unitary language hypothesis has been discounted, researchers have been looking to models of code switching in adults that may also reflect the code mixing behaviour in children.

The Matrix Language Frame (MLF) model, as developed by Myers-Scotton (1993) and Myers-Scotton & Jake (1995, 2000), offers an integrated, comprehensive set of constraints for code switching in adults. For ease of reference, a detailed discussion of these constraints is provided along with the analysis in chapter five. In short, the MLF model distinguishes between the matrix and the embedded language and between content and system morphemes. The MLF model provides a series of principles and constraints, as exemplified by the System Morpheme Principle (SMP), Morpheme Order

Principle (MOP), and the Matrix Language (ML) Blocking Hypothesis. These constraints can be examined empirically in code switching corpus data. Myers-Scotton has applied them to an extensive corpus of code switching data that she had collected in Africa, and there were only a very few exceptions to any of the principles outlined in the model.

1.5.1. Evidence for the MLF in Child Language Data.

The MLF model was conceived to explain code switching in adults. Recently researchers have been investigating the question of whether or not children have a set of structural constraints that guides their code mixing, and, if so, whether said code mixing is governed by the principles and constraints of the MLF model. Lanza (1997) examined the code switching data from a two-year old Norwegian-English bilingual child in reference to the MLF model. She concluded that the code mixing that children engage in is no different from the code mixing that adults engage in, although not all early mixing is code switching, and sometimes factors such as dominance will motivate mixing. However, she argues that the instances of actual code switching in her data do support the MLF model. Lanza does not provide an analysis of whether the grammatical principles of the MLF model were adhered to, but focusses on the relationship between dominance and the matrix language with respect to overall code-mixing patterns in general. Vihman (1998), who recorded conversations between her two Estonian-English bilingual children (ages 2;8 to 6;7 and 5;11 to 9;10), also concluded that the linguistic constraints of the MLF model are adhered to, for the most part.

In a recent study, Paradis, Nicoladis, & Genesee (2000) used the code mixing data from 15 French-English bilingual children, filmed in conversations every six months from the approximate ages of 2;0 to 3;6. The researchers examined the data from these children to determine whether or not they adhered to the constraints delineated in the

MLF model. They found that the children adhered to the MOP and to the interaction of Congruence and Matrix Language Blocking, but that there were some violations of the SMP that decreased with age. This study is particularly important in that it examines a large group of children and controls for age, birth order, and familial language practices. In addition, children were recorded in both French and English language modes. Previous studies (Lanza, 1997; Vihman, 1998; among others) tended to focus on the data collected from one or two children only, and Vihman's study also looked only at data recorded in a largely Estonian environment, with no data recorded in an English context.

1.6. Family Bilingualism and Minority Languages.

Child bilingualism and the question of how best to raise a child bilingually are not new topics at all. Ronjat (1913) was not the first to describe in detail his attempts at raising his child bilingually. Diary entries, letters, and personal notes on this subject go back more than a hundred years. With Ronjat, however, the records became more systematic and he laid out a definite methodological approach. Ronjat introduced the so-called *Rule of Grammont*, or the one parent-one language principle. He insisted that his son's success in acquiring and differentiating his two languages was due to this approach. In fact, he claimed that even as young as 1;4, Louis was able to use French and English appropriately, using *merci* with him, and *danke* with his German-speaking mother. Other parents and researchers have attempted to follow his lead, with varying degrees of success. As previously mentioned, Leopold (1970) also attempted to raise his daughter following the one person-one language strategy, but did not feel that she could differentiate her languages before the age of three years. The success and consistency with which the rule of Grammont is applied varies considerably in each

particular instance. Many researchers have found that even though many parents view themselves as addressing their child in only one language, in practice, they may mix languages more than they realize (Goodz, 1989; among others). Also, as previously mentioned, Lanza (1992) reports that a move on strategy promotes a bilingual language context, whereas Nicoladis & Genesee (1998) found that a move on strategy prompted the child to follow the language lead of the adult. It should also be noted that though one parent may use only one language with the child, the child still hears his or her parents communicating together and is probably aware that at least one parent is bilingual, depending on which language the parents use to communicate with each other.

Family bilingualism may be an option for parents with two different mother tongues, but for children of immigrants, it is almost a necessity. These children are often acquiring a minority home language (spoken as a native language by both parents) and the societal language. As with children in one parent-one language environments, the language environments of these immigrant children are different in each case. Parents vary considerably in terms of fluency in the societal language, attitudes towards both the minority and societal language, insistence upon monolingual speech, and a host of other factors. Pan (1995: 316) suggests that "many parents see children as the vehicles through which the societal language encroaches on the home language, and view themselves as keepers of the gate." In contrast, Lo (1999) presents a boy who was raised speaking English by a mother he describes as "one of those people who was, like 'you have to assimilate'" (463).

Despite the obvious differences between children raised in an immigrant home and a home with a one parent-one language rule, there are several noteworthy similarities. The first seems to be that one of the languages the child is acquiring is the language spoken by the majority outside the home, whereas the other language is less commonly heard. Many researchers have found that the bilingual children they are

studying are language dominant, often in the language of mainstream society (Leopold, 1970; Nicoladis & Secco, 2000; Juan-Garau & Perez-Vidal, 2001; among others). Research on French-English children in Quebec, where children can hear both languages outside the home, is an exception to this, though even there, most of the children studied have proven to be dominant in one of their languages. Research into so-called majority/minority languages has tended to focus on the success of acquisition—whether children ultimately become balanced bilinguals, receptive bilinguals, or something in between. Döpke (1986) lists many factors that can contribute to the ultimate fluency that children possess in their minority language. They are basically sociolinguistic factors such as amount and variety of exposure to the minority language, the parent's consistency in language choice, their attitudes towards bilingualism and their confidence in their children's success, and also the children's talkativeness and general temperament. She also found that the differing interactive styles of the parents are likely to influence balanced or imbalanced acquisition of both languages. Her analysis showed that children are more likely to speak the minority language if the minority language parent adopts at least as child centered a mode of interaction as the majority language parent. Juan-Garau & Perez-Vidal (2001) also claim that the more insistent the minority language parent is on imposing a monolingual context, the more likely the child is to increase use of the minority language. These findings can be extended to children in immigrant homes—the more insistent the parents are that the child learn their mother tongue, the more active a command of the language the child will attain.

While much research has been done on a bilingual child's ultimate control over his or her minority language, it is difficult to articulate what exactly a minority language is. Strictly speaking, a minority language could be defined as the language that is not the societal language, or the language of the community in which one lives. Given this

definition, one can clearly separate a majority from a minority language, but this definition does nothing to capture the scalar nature of minority languages. In other words, some languages are more minor than others. To muddy the waters even further, the point at which a language falls along the minority continuum may vary, not only with geographical location in a country, but with different families within a community. Lo (1999), for example, contrasts the language experiences of a Chinese American man, Chazz, and a Korean American man, Ken. Arguably, both grew up learning a majority (English) language, and a minority (Chinese/Korean) language. However, their experiences differed vastly. Chazz grew up in a small city on the East coast where his family was one of only four Asian families. He was completely isolated from other Chinese Americans, aside from the occasional two-hour trip to the closest Chinatown. Compared with relatives who grew up in cities with larger Chinese communities, his acquisition of Chinese was minimal, leaving him at the passive end of the bilingual continuum. Ken, on the other hand, grew up in the Los Angeles region, with a vibrant Korean community of 165,000. He had access to many other Korean speakers, as well as cultural institutions such as church and weekend language schools. Wei (1994) studied the code switching patterns of 58 Chinese-English speakers in Newcastle upon Tyne, where the Tyneside Chinese number somewhere between 5,000 and 7,000, and are the second largest ethnic minority in the region. He found that those speakers within the community who had more Chinese ties in their social network tended to have a better command of Chinese. Even within this community, some speakers had as few as six Chinese ties, whereas some had twenty or more. Clearly those speakers with fewer Chinese ties might feel themselves to be more of a minority than those with many ties.

Apart from the studies carried out by Genesee *et al* in Montreal, almost all of the research done on bilingual first language acquisition has involved children acquiring a majority and a minority language. And yet, the scalar nature of minority languages has

not yet been addressed for language choice in bilingual first language acquisition. Nor has the relationship of minority and majority languages been studied in terms of interlocutor sensitivity.

One cannot help but be struck by the linguistic milieu of the children already studied. Many researchers (Lanza, 1992; Juan-Garau & Perez-Vidal, 2001; among others) have done case studies of children acquiring a societal and a non-societal language. In many cases, the non-societal language of these bilingual children has been English, a high status language. On the other hand, Genesee *et al* looked primarily at multiple French-English bilingual children growing up in Quebec. Here both languages that the children are acquiring are high status languages. In Canada, English is the language spoken by the majority of the population, and therefore French would be a minority language (though, according to statistics Canada, the most commonly spoken minority language). In Quebec, however, the status of French and English is not as clear. There are certain regions where French is clearly dominant, and English is not very acceptable, but there are also areas, and even neighbourhoods, where the case is less clearly defined. Some children in Quebec grow up as completely monolingual francophones, others as monolingual anglophones, and still others as bilinguals.

Though the families these researchers observed may try to stick to a one parent-one language rule, as do the parents in the studies of many other researchers, the language that the child is exposed to outside the home, and where his or her languages fall on the minority scale, may have an impact on the way that a bilingual child uses his or her languages. This impact may be limited to language dominance in the child, or it could have more far reaching effects. Children who have little contact with their minority language outside the home may be reluctant to speak that language. This reluctance may be limited to more public environments, or it could extend into the home, with children reluctant to converse with parents in one of their home languages. The more

contact a child has with their language outside the home, the more acceptable it may seem to speak that language in both the public and private spheres. In addition, the more exposure children receive to their languages outside the home, the less aware they may be of the monolinguality of others. If many people outside the home speak a child's minority language, then the chances of that child being understood when he code mixes are significantly higher than those of a child whose language is not widely spoken. As a result, the former child's notions of monolinguality will be challenged every time someone indicates an understanding of that child's code mixing. If the latter child were to code mix, his notions of monolinguality would be reinforced, as interlocutors outside the home would be unable to understand the mixing.

Though the function of code mixing may be linked with the majority/minority language distinction, there is also the question of whether the form of code mixing could be linked with it. In other words, does the minority/majority language distinction affect language choice as well as language form, or are they separate kinds of knowledge? The structural differences between a child's two languages will vary markedly depending on the structures of the two languages that a child is learning. If there were no constraints, the code mixing of all children would be similar in its randomness. Assuming there are constraints such as those proposed in the MLF model, the code mixing of children should be similar in that children should obey the constraints of the MLF model, even though the differing structures of their languages affect the structures of their mixed utterances. This should hold true, unless the majority/minority language distinction and language dominance play a role in the child's ability to adhere to structural constraints on code mixing. Paradis *et al* (2000) found no developmental trend in the acquisition of the MOP and congruency, and only a slight trend in adherence to the SMP. In other words, they found that from the emergence of multi-word utterances, very young children were being governed by a highly sophisticated system of

constraints. Other researchers have found developmental trends in both the structure of code mixing (Vihman, 1985; for example) and the motivation for code mixing (Nicoladis & Secco, 2000; for example). This raises the question of whether a child's knowledge of the function of his language and his knowledge of the structure of his language are linked, or whether they develop separately.

1.7. Questions to Be Addressed

With this study, I propose to investigate whether the language choice of children who speak, what I term, a minority language, such as Nepali, will resemble the language choice of children who speak, what I term, a majority language, such as French (a minority language that falls on the least minor end of the minority scale). Two sibling pairs, aged 2;3 and 4;0, will be examined—a means of determining developmental trends without a longitudinal design. The "other" language of all the children is English.

Although I will be investigating many of the same things as previous researchers (for example interlocutor sensitivity—in general and with strangers—, internal and external motivations for code mixing, constraints on the structure of code mixing, and developmental trends of all the aforementioned factors), I will be examining them from the perspective of the minority/majority language distinction. In other words, how does the prevalence of a language in society affect the language choice of children?

Chapter Two

2.0. Method

2.1. The Children and their Families

This study involved four children—two Nepali-English siblings and two French-English siblings—residing in Edmonton, Alberta. At the time of taping, the average age of the older siblings was 4;0, ranging from 3;11.26 to 4;1.18, and the average age of the younger siblings was 2;3, ranging from 2;3.7 to 2;4.4. There were three girls and one boy.

The Nepali-English siblings were born in Canada, and have been raised bilingually from birth. The two girls live with their parents who are both Nepali and who speak English fluently. Their grandparents also reside with them. Their grandfather is also bilingual, but speaks primarily Nepali, except when company is visiting. Their grandmothers are both monolingual Nepali speakers, but one of them is almost deaf, and communication with her is slow and difficult. At home, the parents speak both Nepali and English. They want their daughters to speak the language of their heritage, but they also want to ensure that they are capable of functioning in English society. In the home, the mother uses primarily Nepali, unless English speaking friends are visiting, but even then many of her child-directed utterances are in Nepali. The father uses more Nepali than English in the home, unless English speakers are visiting. He tends to use much more English with the children than does the mother. Both parents tend to use English in public. The siblings prefer to use English when communicating with each other. The younger sibling attends an English playschool two half-days a week, and all her friends are English speakers. The older sibling attends one English playschool two half-days a week, and another for a full day once a week. Her friends are also all

English speakers. When not at playschool, both children are cared for by their monolingual Nepali grandmothers. On average, the younger sibling is exposed to 4-6 hours per day of English on weekdays and the elder 6-8 hours. This comes from playschool, swimming and skating lessons, television, music, and reading stories. On weekends, the children both get considerably more exposure to Nepali because both parents are at home and there is more home interaction. These children are not growing up in a one parent-one language home, but, in a sense, their weekday caregivers (Nepali grandmother, English daycare workers) do create a similar dichotomy. Their parents both report that their children appear to be English dominant.

The French-English siblings were also born in Canada. They are being raised in a (mainly) one parent-one language home. The mother addresses the children primarily in English, though she does use some French with both siblings, and has admitted to using more French with the younger sibling since moving to Alberta to encourage her use of French. She speaks English in the home and in public, but does address the older sibling 20-30% of the time in French. She uses French and English fairly interchangeably with the younger sibling, addressing her approximately 60% of the time in French. French is used exclusively by the mother at the daycare. The father uses very little English with the children—there are no particular contexts in which he would use English. The parents do use English 80-90% of the time when addressing each other. Both children attend a French playschool for about 8 hours on weekdays. The older sibling is exposed to roughly five hours of English on weekdays, and more on weekends because of more time spent at home with his mother. His friends speak both French and English. Sometimes he uses English with his friends at the French daycare, but it is unsure how much. Books and television are in both French and English. The younger sibling is exposed to less English now that her mother has started using more French during her time at home with her. The siblings address each other in both

French and English, but their mother has noted that since the younger is French dominant, the elder has started to address her more in French. The younger sibling is reported to be French dominant, whereas the older is probably English dominant, though both are willing to use both their languages.

All the parents have fluency in both languages that their children speak. Three of the four parents do admit to trying to stick to one language with their children, but also admit that they often address the children in both languages. The father of the French-English children seems to stick mainly to French, though his children would be aware of his abilities as a bilingual given that he communicates with their mother mainly in English.

All parents in this study are university educated. The father of the Nepali-English children has his PhD in engineering, having completed both his Master's degree and PhD in Canada. Nepali is his native language, but he started learning English and attending English school from the age of 5 years. He has also been living, studying, and working in Canada for more than 13 years. The mother of the Nepali-English children is a veterinarian. She started learning English at the age of 8 years, and has been living, working, and studying in Canada for more than 6 years. The mother of the French-English children has a PhD and is a university professor. Her native language is English. Her first contact with French was as a preschooler, though she learned to speak it with reasonable fluency as an adult. Their father is also university educated, and his native language is English, but he learned to speak French while living and working in French institutions in Montreal for 10 years. He is now a near-native speaker. All the parents work outside the home.

2.1.1. Rationale for Participant Selection

These families were chosen for several reasons. Not only was it possible to age match the children, but having siblings with roughly the same age gaps allows one to infer possible developmental trends, without a longitudinal design. Because these children are siblings (i.e. same environment), there is more control over inferences about development than if four unrelated children from four different families were studied. Although there are obvious familial differences, the children are all being raised by bilingual speakers, with some input from mainly monolingual caregivers: the grandparents and daycare workers for the Nepali-English children, and the daycare workers for the French-English children. In terms of socio-economic status, and the amount of time parents spend in the home, the families seem well matched. In addition, each child is receiving input from one parent in the parent's native language, and input in the other language is given to the children by parents who learned to speak the second language fluently, in a naturalistic environment.

What is most interesting and important to this study is the difference in the second languages of these bilingual children. As residents of Alberta, these children are learning a majority language (English) and a minority language (French/Nepali). But, as has been previously mentioned, the notion of a minority language is scalar. French is a high status language in Canada: It is one of the official languages; there is much government-funded institutional support for French schools, library books, summer camps, cultural events, etc; the French-English community in Edmonton is fairly large and quite strong[1]. There is a French daycare for children in Edmonton, and French schooling for older children is certainly a possibility. French books are easily attainable,

[1] According to the 1996 census, there are 12,725 people in Edmonton who consider French to be their mother tongue, and 3,940 who use French as a home language. There was not even a section on the census to list the number of Nepali speakers. One representative theorized that

both in bookstores and libraries. French television and movies are widely distributed. Not only are there a large number of francophones for the children to interact with (social ties outside the home), but many people in Edmonton are learning or have learned French as a second language, and so the possibility of a French-English child finding someone to communicate with in French are fairly high. This is not so for Nepali-English children. There are very few Nepali families residing in Edmonton, so use of Nepali is mostly restricted to the home. There are no daycares or schools offering Nepali (even as a weekend language class); there are no readily obtainable books or movies. And other than members of the Nepali community, there are probably only two "Westerners" in Edmonton who speak Nepali, the researcher and a foreign missionary. Thus, these children may have differing notions about monolinguality and bilinguality. Because so few people outside the home can understand their home language, and therefore their code mixing, the Nepali-English children's view of monolinguals as strictly monolingual may be more cut and dried than the view of the French-English children, who could have their notions of monolinguality challenged by strangers who happen to speak some of their minority language. (The use of French in Edmonton is so much more prevalent than is Nepali that, for terminological ease, I will henceforth refer to French as a majority language and Nepali as a minority language, rather than the wordy major-minor language and minor-minor language). Thus the Nepali-English children could show themselves to be more sensitive to the monolingualism of the strangers than the French-English children by code mixing less.

The acceptability of code mixing differs from one language community to another. Unlike other communities in which code mixing is prevalent, mixing is marked in the French-Canadian community (Heller, 1982). Therefore, one might expect parents

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this might mean there were fewer than 10 speakers at that time. In Edmonton, 19,235 people spoke languages identified under the catch-all "other".

and caregivers in this community not to model code mixing behaviour for their children. They are likely, in fact, to discourage it. For Nepali people, however, it is considered high status to be able to speak English, and code mixing when speaking Nepali is common. In addition, there are many English words without translation equivalents in Nepali and vice versa. Therefore, for Nepali people living in Canada, code mixing is sometimes the only way to convey meaning. Thus, though Nepali parents might not actively encourage code mixing, they are more likely than French-English parents to model it. By examining the language environments of these two groups of children, differing pragmatic cues as to the acceptability of code mixing may be observed. Also, there are likely to be different rates of code mixing in the speech of the adults and, as a result, the rates of code mixing in the speech of the children may vary from session to session. By observing children at two different ages, possible developmental trends in the ability to respond to pragmatic cues and modeling may be evident.

The question of whether there is a developmental trend in the acquisition of constraints on the structure of code-mixed utterances may also be examined because of the use of sibling pairs in this study. Should the two-year-olds follow the same constraints to roughly the same extent as do the four-year-olds, there will be evidence for adherence to a universal set of constraints from the onset of multi-word utterances.

2.2. Procedure

The families were initially visited with a proposal for this study. I discussed with them the methods proposed, answered any questions they may have had, and obtained a signed consent form. After this, the families were visited and observed by the bilingual observer on four separate occasions for each sibling. These four visits were all made within one month of each other. During these visits each individual child was observed

and videotaped playing once with the parent who speaks primarily English, once with the parent who speaks primarily French/Nepali, once with a monolingual English stranger, and once with a monolingual French/Nepali stranger. It was not possible to use true monolinguals in the French and Nepali conditions of this study, but the strangers used were instructed to insist on a monolingual discourse. Attempts were made to keep the play situations one-on-one, although occasionally siblings refused to be left out of the fun, or other family members came in very briefly to relay messages or ask questions. With the strangers, a parent was always present, at least for the first little while, to ensure the child felt comfortable. If the child expressed any distress at the parent leaving, the parent remained through the whole session. When parents remained to ensure comfort of the child, their contributions were generally minimal. The parents and strangers were asked to do whatever would feel normal in a free play situation. The observer attempted to abstain from taking part in the proceedings, but would not ignore remarks addressed to her. These play situations lasted between 45 and 60 minutes, depending on when a natural finishing point for the interaction occurred. Upon arrival, the observer attempted to set a monolingual mode by addressing the parents and child in the language of the interaction for the day.

Children were observed with both parents and strangers because a child's language choice with parents may not reflect his true ability to differentiate between his languages or his sensitivity to the language mode being set. Even in households with a one parent-one language rule, children are aware of the fact that their parents can communicate with each other. Thus, even in such households, there is the possibility of a bilingual language mode being set. In the households being studied, three of the four parents readily admit to mixing with their children, and the parent who does not mix, tends to address his wife in English, though he maintains a monolingual French code with his children. So, though the parents may try to set a monolingual language mode

for the play situation, the question still remains, can a situation ever be truly monolingual if a child is cognizant of his parent's bilingual abilities? Monolingual strangers were used to test the limits of the bilingual children's abilities to use their languages differentially. In addition, unlike Genesee, Boivin, & Nicoladis (1996) children in the present study were observed with monolingual strangers in both their dominant and non-dominant languages.

2.3. Transcription and Coding.

Forty-five minute segments from each of the recorded sessions were transcribed and coded. The first five minutes of each session was not included to allow the participants time to adjust to being recorded. The only exception was one short, forty-five minute tape. Here the full tape was transcribed. The father and daughter in the tape had been playing quietly for about ten minutes, and the observer was able to start recording without the child noticing, so the initial "settling in" period was not felt to be necessary. The segments were first transcribed by the bilingual observer employing standard English and French orthography, using the CHAT transcription system (MacWhinney & Snow, 1990). The Nepali language data was transcribed using a roman alphabet approximation of the Nepali sound system. The actions of the participants were recorded if they were judged to be useful in understanding the child's or parent's utterances. Physical responses to questions, such as nodding, pointing, or shrugging, were also recorded.

The transcriptions were divided into utterances, following Lanza's (1992: 638) definition of an utterance as "a word or group of words with a single intonation contour". Each utterance was then coded for language and addressee. Utterances were coded as "English", "French", or "Nepali" only if they contained elements that clearly belonged to

those languages and no others. Utterances were coded as "mixed" if they contained at least one word from both utterances. Some words, such as proper names (Daddy, Kishor), onomatopoeic words, and interjections (oh, umm, hmm, uh oh, etc) which could belong to either language were coded as "both". If a clearly English utterance contained a word that could belong to either language, it was coded as "English". For example, "umm, I want Mommy", would be considered an English utterance, whereas "umm, *je veux Daddy*" would be considered a French utterance. Unintelligible segments were labeled as "unknown". Mixed utterances were representative of intra-utterance mixing, whereas a French-only utterance in an English context would be considered inter-utterance mixing. This coding will be used to calculate the children's interlocutor sensitivity by allowing one to compare the percentages of the children's French/Nepali-only, English-only, and mixed utterances addressed to each adult interlocutor.

The transcriptions and coding were checked for reliability by volunteers, who transcribed and coded ten minutes of each tape without seeing the original transcriptions, in the case of the English and French tapes. The transcriptions were then compared at both the word and utterance level. Inter-rater agreement ranged from 85% to 96% for the French and English tapes. The percentages were averages of the inter-rater agreement scores for both the word and utterance levels. The French transcripts were also checked in their entirety by a speaker of Quebec French. The Nepali transcripts were checked in their entirety by a native Nepali speaker. Inter-rater agreement ranged between 82% and 94% (again an average of inter-rater agreement at both the word and utterance level) for the Nepali tapes. Any discrepancies between any of the transcripts were discussed and resolved.

Parental responses to children's inter- and intra-sentential code mixing were also coded for, using Lanza's (1992) categories on the parental discourse-strategy continuum. The parents' responses were coded as "minimal grasp", "expressed guess",

"repetition", "move on", and "code switching". Examples of each of these responses are provided in chapter four. Sometimes, the adults did not respond to the children's code mixing. Although a non-response could have an effect on the child, it was difficult to predict what that effect might be, and thus these episodes were left out of the analysis (Nicoladis & Genesee, 1998). To determine the adults' style, all utterances that were responses to the children's code mixing were counted. To calculate the children's responses to the different adults' strategies, only the last utterance in a parental turn was counted. The effect of each of these cues on the language behaviour of the child was noted.

Finally, the transcriptions were coded for the language choice of the adult interlocutors. Both inter- and intra- utterance mixes were coded as "mixed". Following Genesee *et al* (in press), I examined the contingency between the adults' and children's overall rates of code mixing as well as the contingency between the adult's and child's turn by turn mixing.

The intra-utterance code mixes were isolated from the rest of the transcriptions. This sub-group was further limited to include mixed utterances that are constraint relevant with respect to the MLF model. Following the rationale of Paradis *et al* (2000), the constraint neutral utterances were left out of the analysis because they provided no challenge to the constraints. Constraint relevant utterances were ones that contained system morphemes and/ or content morphemes in utterances with differing ML/EL word orders. These constraint-relevant utterances were examined for adherence to the constraints delineated in the MLF model. This will be expanded on in chapter five.

2.4. *Summary of Participants/Procedures*

Table 2.1. includes summary information on the children: their minority languages and their ages at the time of each taping session.

Child	Minority languages	Age-English Parent	Age-Nepali/French Parent	Age-English Stranger	Age-Nepali/French Stranger
ANA	Nepali	2;3.13	2;3.12	2;3.16	2;3.20
BRG	French	2;3.7	2;3.30	2;3;8	2;4.4
APR	Nepali	4;1.2	4;1;4	4;1.18	4;1.9
DAN	French	4;0.9	3;11.25	4;0.11	3;11.26

Table 2.1. Summary of participants' languages and ages at the time of each taping session

2.5. *Language Dominance*

Language dominance was analyzed to allow for the examination of possible effects of dominance on code mixing behaviour (both the function and form of code mixing). Language dominance as a possible explanation for why children code mix will be discussed in chapter four, and as a possible influence on the form of children's code mixing in chapter five. Because it was not feasible to obtain standardized parental vocabulary reports, language dominance for each child was determined using five factors: mean length of utterance (MLU), upper bound (UB), unique word types, verb types, and volubility over a thirty-minute period (Paradis *et al,* 2001). Utterances labeled as mixed, unintelligible, or both were excluded from the calculation as there was no way of attributing such utterances to their respective languages. These indices were derived from transcriptions of the sessions with the parents only, as children were expected to use their languages differently with strangers. Table 2.2. is an indication of each child's dominant language.

		MLU	UB	Word Types	Verb Types	Volubility	Dominance
DAN	Eng	6.466	51	201	44	281	English
	Fre	5.670	39	132	33	204	
APR	Eng	4.619	18	154	33	71	English
	Nep	2.177	7	99	12	229	
BRG	Eng	1.938	7	65	8	255	French
	Fre	2.667	9	73	12	232	
ANA	Eng	2.422	10	71	11	200	English
	Nep	1.877	4	47	7	186	

Table 2.2. Language dominance as calculated by each child's MLU, Upper Bound, word types, verb types, and volubility.

The relationship between these language dominance scores and rates of code mixing was examined to assess the possible role of dominance as a reason for code mixing. Finally, in an effort to examine the possible effect of dominance on the form of code mixing, SMP violations were examined to determine whether system morphemes were being inserted into a non-dominant matrix language frame from the dominant embedded language, or vice versa.

2.6. Analysis of Interlocutor Sensitivity

We know from prior research that bilingual children can differentiate by interlocutor as early as age two (Genesee *et al*, 1995; among others). However, these previous studies were of children being raised with a strict one-parent, one-language style of presentation. The children in this study were exposed to a less segregated pattern, so it is important to examine their differentiation-by-interlocutor abilities, even with their parents. The results of the analysis of interlocutor sensitivity will be presented in chapter three. This particular analysis attempts to address (1) the question of how the minority/majority language distinction affects children's ability to assess the language skills of their interlocutors, as reflected in their code mixing behaviour, both with their

bilingual parents and with monolingual strangers, and (2) whether or not there is a developmental trend associated with their ability to respond to the monolinguality of their interlocutors. For the purposes of this analysis, each child's use of English-only utterances, Nepali/French-only utterances, and intra-utterance code mixes with each of his or her parents and the strangers was examined when each parent/stranger was alone with the child. To control for the talkativeness of the different children, the actual number of each utterance type used by a child with an adult was calculated as a percentage of the total number of utterances addressed to that adult. I also examined the children's total use of each of their languages with each parent/stranger as a percentage of the total number of the specified language utterances addressed to both parents/strangers. For example, the amount of French BRG addressed to her father was compared to the total amount of French she addressed to both her parents. If the children can distinguish between their two languages, then one would expect them to use more of each parent's predominant language with that parent than with the other parent, even though the children may be dominant in one of their languages (Genesee *et al*, 1995). The children were compared across their dominant and non-dominant languages respectively. Thus, BRG's use of French was compared with ANA's use of English, their respective dominant languages. The children were compared not only across language groups, but also across age groups.

2.7. *Analysis of Internal Constraints*

Two internal factors that may influence why a bilingual child code mixes are the status of a language in society (minority/majority distinction) and language ability. Results of the analysis of these constraints will be discussed in chapter four.

2.7.1. Analysis of Minority/Majority Language Distinction

The rates of code mixing engaged in by the children were compared across the two pairs of children, based on whether they spoke a majority or a minority language. In other words, the overall code mixing rates of the Nepali-English children were compared with the code mixing rates of the French-English children in the four different conditions. Further, because I hypothesized that the Nepali-English children would show more reluctance to speak their non-societal language with a bilingual speaker than would the French-English children, the difference in code mixing rates between the parent and stranger conditions were examined. The difference (shift) between the Nepali-English children's code mixing rates with each of their parents and the respective-language stranger was compared with the difference between the rates of the French-English children. Results were further analyzed by age to detect possible developmental trends.

2.7.2. Analysis of Language Ability

In order to determine whether language ability had an effect on rates of code mixing, the language dominance scores discussed in 2.5. were used. The children's rates of code mixing were compared across their dominant and non-dominant languages. Further, the rate of code mixing was examined in relation to language ability (as represented by different measures used to calculate language dominance). Finally, in an attempt to tease apart the effects of language ability and language status, the children's dominance scores were compared by age to see whether language status may have had an effect on the children's language ability over time.

2.8. *Analysis of Parental Influence*

Two external factors that have been put forward as possible explanations for why children code mix are the Parental Discourse Hypothesis (PDH) and the Modeling Hypothesis (MH). In order to examine the relative merits of these two hypotheses, a two-fold analysis is necessary. Results of this analysis will be presented in chapter four.

2.8.1. Analysis of PDH

As delineated by Nicoladis and Genesee (1998), parental strategy scores were calculated by assigning a weight of 1 to 5 to each of the possible parental responses, with 1 assigned to the most monolingual strategy (minimal grasp) and 5 assigned to the most bilingual (code switching). Weights 2, 3, and 4 were assigned to strategy types "move on", "repetition", and "expressed guess" respectively. The total of all the weights was divided by the number of parental responses in order to control for differences in code mixing frequencies of the children. This results in higher scores for parents who use more bilingual strategies and lower scores for parents who use more monolingual strategies.

Once parental strategy scores were obtained, correlations between the parental strategies and children's rates of code mixing were calculated. Parents who use more bilingual strategies (those with higher scores) were expected to have children who code mix more frequently. Parents who use more monolingual strategies (those with lower scores) were expected to have children who code mix less frequently. Both scenarios should yield positive correlations. In this situation, code mixing refers to both inter- and intra-sentential code mixing.

In order to determine the effect of the strategy types on the child's next conversational turn, the children's verbal responses to each strategy were classified as either continuing code mixing or no code mixing. Bilingual strategy types should result in more code mixed responses, whereas the more monolingual strategies should result in no code mixing. The relative rates of children's code mixing in response to parental strategy type were compared.

2.8.2. Modeling Hypothesis

The rate of code mixing engaged in by each child was compared with the rate of mixing for the adult in the play session. Each child's rate of mixing in one of his/her languages was compared across interlocutors, and a correlational analysis was performed. For example, ANA's rate of mixing in Nepali play sessions was compared across both sessions to see if differing rates of code mixing engaged in by her mother and the stranger affected ANA's rate of code mixing. There could be no comparison across all four of the child's play sessions as language dominance also plays a role in code mixing. It would be impossible to determine how to separate the effects of language dominance and rate of adult code mixing if one were to compare across both the child's languages.

In addition, a turn by turn analysis was conducted to determine the extent to which an adult's code mixed utterance was followed by a child's code mixed utterance. In other words, the reciprocity between the adults' and children's use of mixed and non-mixed utterances was examined.

2.9. *Analysis of Adherence to Structural Constraints*

A sub corpus of code mixed (intra-utterance) utterances that are constraint-relevant with respect to the MLF model was created. These utterances were examined to determine their adherence to the SMP, MOP, and Blocking Hypothesis. Each constraint was examined individually. Frequencies of violations were compared across ages to determine if there was a developmental trend in children's ability to adhere to the above constraints.

2.10. *Predictions*

The French-English children do have significantly more French ties outside the home, and will probably show less reluctance to speaking their non-societal language than would the Nepali-English children, whose Nepali ties are severely limited. Despite this obvious difference, I expect to find that the motivations and overall patterns of code mixing will be the same for children from both groups. In other words, both Nepali-English and French-English children will be able to differentiate their languages and to use them in appropriate language contexts. However, rates of language mixing will, in part, be determined by language dominance. These children will all code mix more when speaking their non-dominant languages. In addition, the younger children will code mix more frequently than the older children who presumably have a higher level of proficiency in their languages.

The children's responses to the different language modes they are in will be different however. There is the possibility that the Nepali-English children will show more reluctance than the French-English children to speak their minority language with their parents and will therefore code mix more frequently when speaking Nepali. I also

expect to find that the Nepali-English children will be more sensitive to the monolinguality of strangers, and will therefore code mix significantly less than the French-English children do when speaking with monolingual strangers. As an alternative to code mixing, strategies such as pointing, changing the subject, avoidance of topics, and even silence will be used. In sum, though the Nepali-English children may be more sensitive to the monolingualism of strangers, they may also refuse to follow the language lead of their parents, whom they know to be bilingual, choosing to speak, rather, in their preferred language.

In terms of the ability of children to respond to the pragmatic cues of adults, I will follow the predictions of Nicoladis & Secco (2000) in assuming that children must have sufficient command over their languages in order to respond to the cues of their parents. Therefore, it is probable that the older children in this study will be able to respond to an adult's cues as to the appropriateness of their code switches, whereas the younger children will not be able to respond. It is also likely that the frequency of code mixing in the adults' speech will affect the overall rate of mixing in the speech of the children, though this effect is more likely to be observed in the play sessions with the stranger. In the play session with the parents, previously established norms of interaction could inhibit the children's ability to respond to any possible changes in the frequency of code mixing engaged in by the parents.

Finally, I expect that, for the most part, all the children will adhere to a set of constraints governing their code mixing behaviour. Based on the findings of Paradis *et al* (2000), I expect the children to obey the constraints of the MLF model most of the time, with a possible development in adherence to the SMP. Both the Nepali-English children and French-English children should show equal adherence to these principles, though the different structures of their languages will mean that the code mixing patterns may differ. Should there be no effect of the majority/minority language distinction on the

form of code mixing, one could argue that a child's knowledge of the function of his language and the form of his language are actually separate forms of knowledge.

This study is designed to build on previous work done in the field of BFLA. It extends previous work to look at the possible influences of minority languages on the language choice of young bilingual children, an issue that has not been addressed as of yet. By examining sibling pairs, it also allows one to speculate on possible developmental trends in BFLA. By examining multiple subjects in multiple environments, it allows one to speculate on the effects of different language modes on children. It also examines the language mode set by strangers in both a child's dominant and non-dominant languages, something that previous researchers have examined only in a child's non-dominant language.

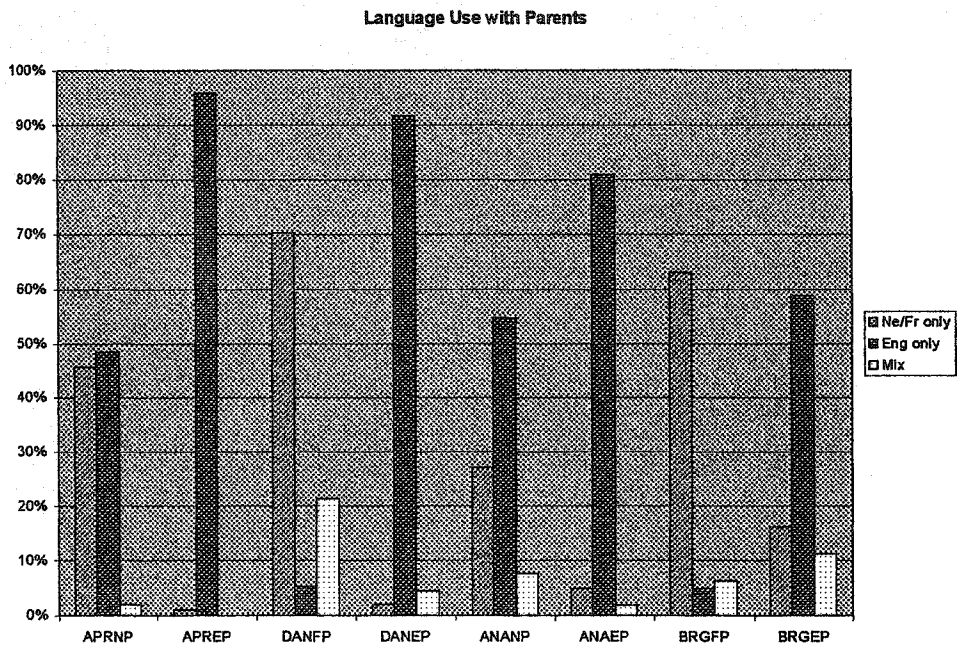
Chapter Three

3.1. Language Choice

In the first chapter, it was argued that bilingual children, even at a very young age, are able to differentiate between their languages, and, when in separate language contexts, are able to make appropriate language choices. In this chapter, I will examine the ability of these children to distinguish between their languages, their awareness of the varying language proficiencies (monolingual vs bilingual) of their adult interlocutors as demonstrated by their code mixing rates, and whether this awareness develops as they get older.

3.1.1. Language Choice with Parents

For the purposes of this analysis, each child's use of English-only utterances, Nepali/French-only utterances, and intra-utterance code mixes with each of his or her parents was examined when each parent was alone with the child. The children's relative use of English, French/Nepali, and mixed utterances with each parent as a percentage of the total number of utterances for the respective session was calculated. These results are presented in Figure 3.1. As has been mentioned earlier, BRG's dominant language is French. When comparing the children it is more useful to compare their use of their dominant language with their non-dominant language. Therefore, BRG's use of French will be compared with the other three children's use of English, and her use of English will be compared with their use of French and/or Nepali.



NP= Nepali Parent, EP= English Parent, FP= French Parent

Figure 3.1. The children's relative use of English, French/Nepali, and mixed utterances with each parent as a percentage of the total number of utterances for the respective session.

Looking at the children's results, it is clear that the children were sensitive to the language context being set by their parents. With their English-speaking parents, APR, DAN, and ANA used considerably more English than French or Nepali, and BRG used considerably more French than English with her francophone father. There is an interesting switch when the data for the non-dominant language is examined. DAN used considerably more French than English with his French parent and BRG used considerably more English than French with her English parent. On the other hand, the Nepali-English children, used more English than Nepali with their Nepali parent. But, of relevance to my hypothesis, APR and ANA both used considerably more Nepali with their Nepali-speaking parent than they did with their English speaking parent. In fact, it is useful to examine the children's use of each of their languages with each parent as a percentage of the total number of utterances addressed to each parent (Figures 3.2. and 3.3.).

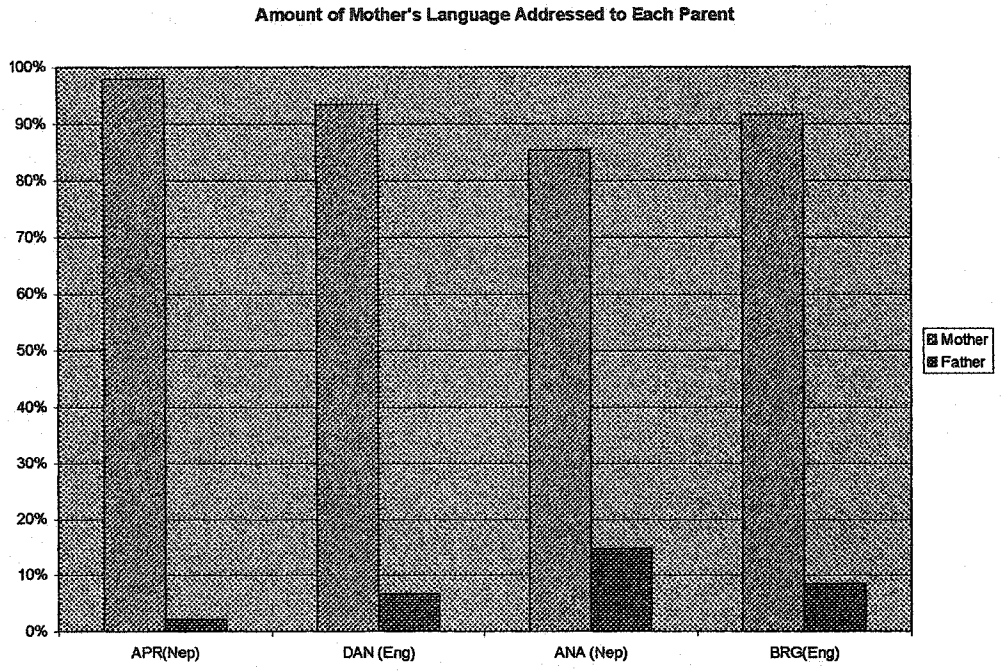


Figure 3.2. The children's use of their mothers' language with each parent as a percentage of the total number of utterances addressed to each parent.

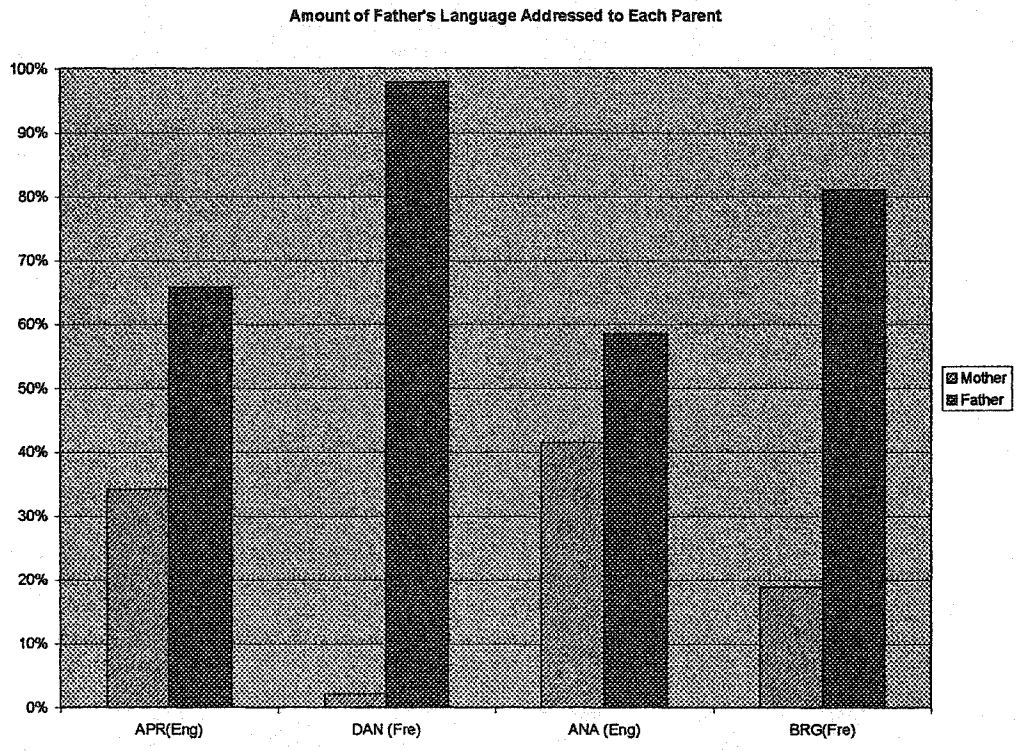


Figure 3.3. The children's use of their fathers' language with each parent as a percentage of the total number of utterances addressed to each parent.

Once the percentage of the total number of utterances addressed to each parent was calculated, excluding incomprehensible utterances and utterances coded as mixed (intra-utterance) or both, the results were analyzed using two-by-two chi-square procedures. Reported results are ones that have been corrected for continuity.

The following two-by–two tables were used to calculate the chi-squares:

APR:	Mother	Father
Nepali	139	1
English	148	94

DAN:	Mother	Father
French	8	215
English	386	16

ANA:	Mother	Father
Nepali	67	13
English	136	216

BRG:	Mother	Father
French	62	219
English	225	17

The chi-square analyses were significant at the .0001 level for all the children: APR, $\chi^2(1) = 66.983$; DAN, $\chi^2(1) = 522.005$; ANA, $\chi^2(1) = 51.464$; BRG $\chi^2(1) = 261.183$. As Figure 3.2. indicates, each child used more of the mother's language with the mother than with the father and more of the father's language with the father than with the mother. The four-year-olds used their non-dominant languages almost exclusively with the parent who speaks their non-dominant language, whereas the two-year-olds' use is not as exclusive. This may be a developmental trend in interlocutor sensitivity, or it may be a reflection of limited vocabularies constraining code mixing, a subject which will be dealt with in chapter four. In terms of the use of their dominant languages, the Nepali-English children used a lot more of their dominant language with their non-dominant language parent than the French-English children did. However, their language choice still shows sensitivity to the language mode being set by their parents (the parents' language of interaction for the play session).

3.1.2. Language Choice with Strangers

Though it was clearly demonstrated in the previous section that all the children studied were able to differentiate their languages, this section will focus on their ability to make this differentiation with an unfamiliar adult. The questions to be examined here are (1) whether the children are able to follow the language lead of an unfamiliar adult, (2) whether the children will be able to recognize the monolinguality of the stranger, and (3) whether this ability develops with age.

For the purposes of this analysis, each child's use of English-only utterances, Nepali/French-only utterances, and intra-utterance code mixes with each of the strangers was examined when the strangers were alone with the child. The children's relative use of English, French, and mixed utterances with each stranger as a percentage of the total number of utterances directed to the stranger for the respective session was calculated. These results are presented in Figure 3.4. As can be seen, all of the children were able to follow the language lead set by the monolingual stranger. Not only that, but all showed significant decreases in the amount of inter- and intra-utterance mixing used with the strangers, as compared with their respective parents, indicating that the children were probably sensitive to the monolinguality of the strangers. These children clearly avoided mixing much more with the strangers than they did with their parents, indicating that they were able to assess the language abilities of the unfamiliar interlocutors.

When speaking English, their dominant language, neither Nepali girl code mixed at all. DAN code mixed at a negligible rate (0.23% inter-utterance and 0.23% intra-utterance mixing). BRG showed the least reduction in rate of code mixing of all the children when speaking her dominant language, French. Two percent of her utterances were inter-utterance mixes, and 3.66% were intra-utterance mixes. In terms of her

dominance scores, her dominant language appears comparable to ANA's dominant language, thus she should not be more developmentally constrained by a lack of ability to code mix than ANA is (they are both 2;3). In this respect, her higher rate of mixing with the stranger when speaking her dominant language may be due to a lesser degree of sensitivity to the monolingualism of the stranger than was exhibited by ANA.

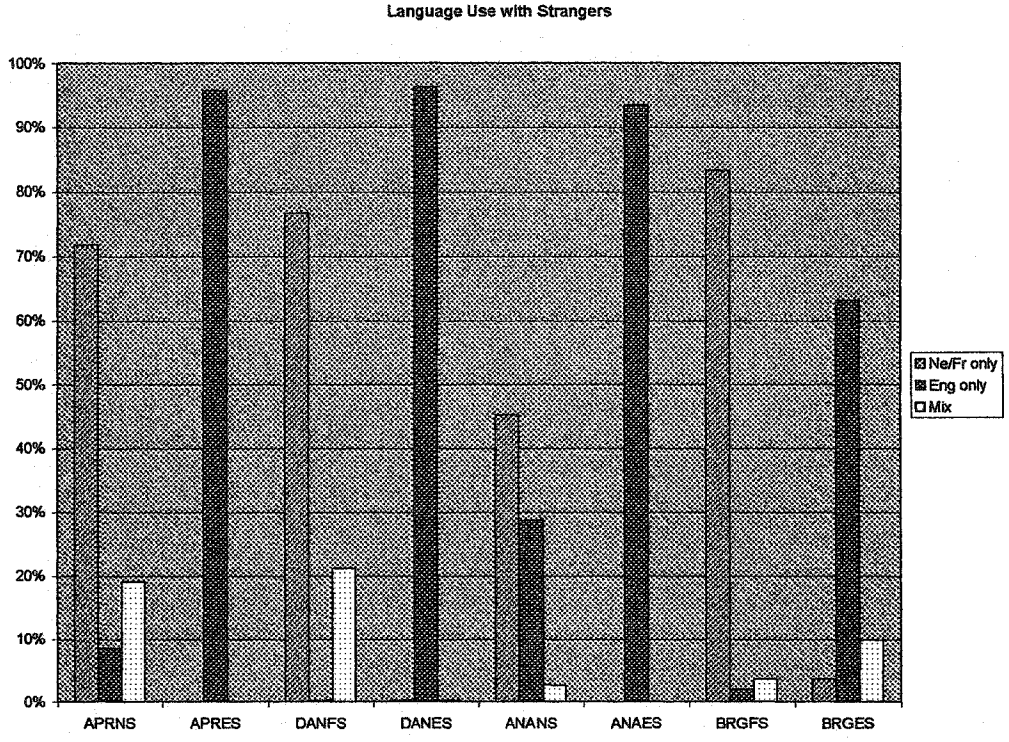


Figure 3.4. The children's use of English, French/Nepali and mixed utterances with each stranger as a percentage of the total number of utterances for the respective session.

When speaking their non-dominant language, the children continued to show a remarkable sensitivity to their interlocutors. Because of possible interference from factors such as vocabulary size, it is more useful to examine the shift in language choice between the parent-condition and the stranger-condition than it is to compare across the children. As can be seen when comparing Figure 3.4. with 3.1., the Nepali-English children exhibit radically different language behaviour. APR's use of Nepali-only jumped by approximately 26% and her rate of English-only dropped by about 40% in the

stranger-condition. She was clearly making a great effort to accommodate the monolingualism of the Nepali stranger. ANA's use of Nepali-only jumped by about 18% and her use of English-only dropped by about 26% in the stranger-condition. Although the French-English children also made concessions to the monolinguality of the strangers when speaking their non-dominant language, the shift is less startling. DAN's use of French-only increased about 6%, and his rate of English-only dropped 5%, though his rate of intra-utterance mixing remained virtually the same while playing with the stranger. BRG increased her use of English-only by about 4%, but was able to drop her rate of French-only utterances by about 12%. This is possibly because these children showed more clear differentiation to begin with in the sessions with the parents.

Again, it is useful to examine the children's use of each of their languages with the respective stranger as a percentage of the total number of utterances addressed to each stranger (Figure 3.5. below). Clearly, though the Nepali-English children did use some English in the session with the Nepali stranger, all the Nepali utterances in these play sessions were addressed to the Nepali stranger. Though she had addressed 14.68% of her Nepali utterances to her father, ANA addressed 0% of her Nepali utterances to the English stranger. DAN's use of French with the English stranger was so slight as to be considered non-existent. BRG mixed the most in her non-dominant language, addressing 2.46% of her English utterances to the French stranger.

Again, the children used their dominant language predominantly with the appropriate stranger. As with their parents, the Nepali-English children used some English with the Nepali stranger, however, the amount of English used is strikingly less than the amount used with their Nepali parent. DAN used less English with the French stranger than he did with his father, and BRG used less French with the English stranger than she had with her mother. The change in language behaviour is not nearly so startling with the French-English children as with the Nepali-English children.

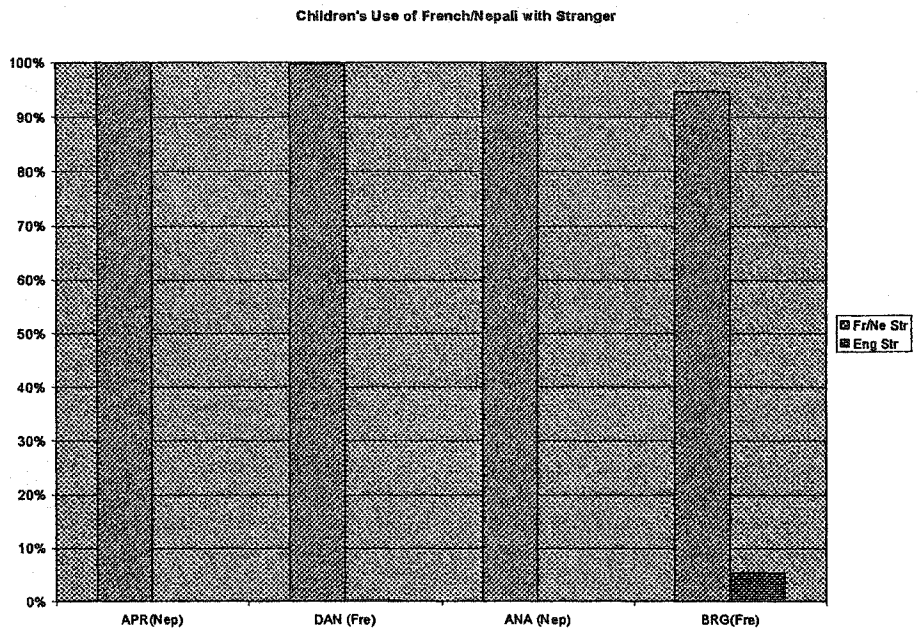


Figure 3.5. The children's use of French/Nepali with each stranger as a percentage of the total number of utterances addressed to each stranger.

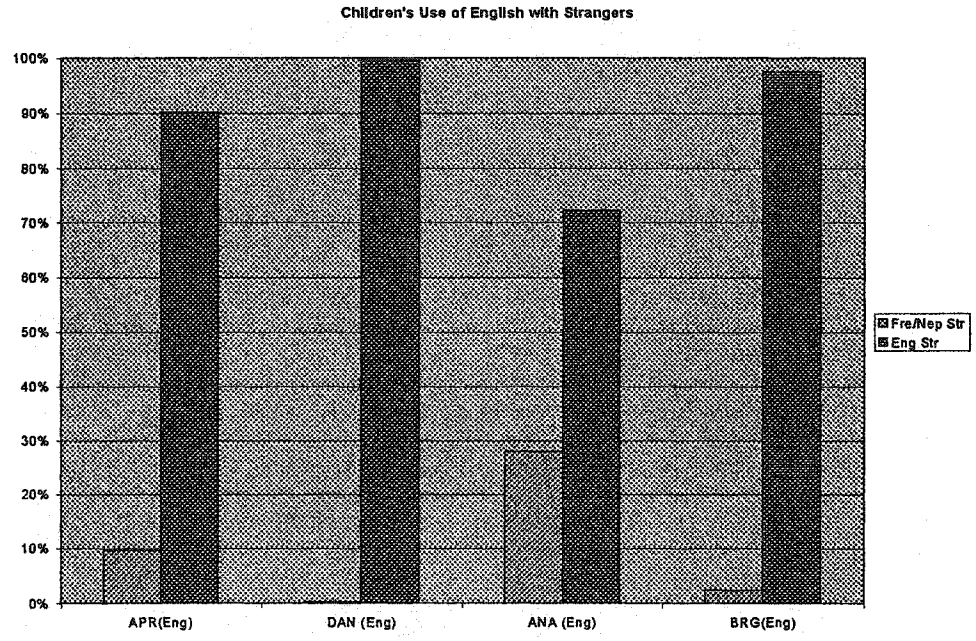


Figure 3.6. The children's use of English with each stranger as a percentage of the total number of utterances addressed to each stranger.

A two by two chi-square analysis was performed, and the reported results were corrected for continuity. The following two-by--two tables were used to calculate the chi-squares:

APR:	NepSt	EngSt
Nepali	191	0
English	23	421

DAN:	FreSt	EngSt
French	322	1
English	1	419

ANA:	NepSt	EngSt
Nepali	52	0
English	216	33

BRG:	FreSt	EngSt
French	205	6
English	5	103

These analyses were significant for each child at the .0001 level: APR, $\chi^2(1) = 533.165$; DAN, $\chi^2(1) = 730.848$; ANA, $\chi^2(1) = 155.499$; BRG, $\chi^2(1) = 267.800$. This indicates that all children are highly interlocutor sensitive and are able even to assess and accommodate the language abilities of strangers.

The four-year-old Nepali-English girl is more sensitive to the monolinguality of her interlocutors than is the four-year-old French-English boy, arguably because of the status of her language in society (see chapter one for a full discussion). When speaking with the English stranger, she did not code mix at all. When speaking with the Nepali stranger, she radically decreased her rate of code mixing from the play session with her Nepali parent. DAN also decreased his code mixing behaviour from the play session with his parents to the play session with the strangers, however, this decrease is less striking than APR's. As will be discussed in the following section, though APR used strategies to avoid code mixing, DAN did not, also an indication of APR's greater sensitivity.

The four-year-olds are both more sensitive to the language abilities of the strangers than the two-year-olds, with the Nepali-English two-year-old being slightly more sensitive than the two-year-old French-English child, again a possible function of language status. Evidence comes from the fact that ANA and BRG have similar

language dominance scores in their dominant languages, however, ANA did not code mix at all when speaking with the English stranger, whereas BRG did. In terms of age, the four-year-olds clearly have greater proficiency and therefore greater control over their languages. As a result, they were both able to keep their code mixing to a minimum.

3.2. Alternate Strategies

As predicted, the Nepali-English children appear to be slightly more sensitive to the monolingualism of strangers than the French-English children are, and though they may be reluctant to speak their non-dominant language when it can be avoided, they make greater concessions to respect the language mode set by unfamiliar interlocutors. This sensitivity also seems to develop with age, with the four-year-olds showing more sensitivity than the two-year-olds. In chapter one, it was predicted that, as an alternative to code mixing, the Nepali-English children would use more strategies such as pointing and silence. The transcripts were coded for strategies such as nodding, shaking the head, shrugging, pointing, and showing. Gestures that were counted were ones used as the sole response. For example, they were not accompanied by words, such as a shake of the head accompanied by the word "no". Also, gestures used as a requested response were not counted, such as pointing in response to "show me the ___". The results are presented in Table 3.1.

	Nepali/ French Stranger	Nepali/ French Parent	English Stranger	English Parent
DAN	0	0	1	1
APR	4	6	6	3
BRG	5	2	11	4
ANA	37	25	6	11

Table 3.1. Gestures used by each child as a sole response.

The use of gestures as a strategy to avoid code mixing appears to have been used primarily by the younger children. The four-year-olds tended to respond verbally, rather than using a physical response strategy, and their use of physical responses seem to be idiosyncratic to the child. APR used more of them than did DAN, but it does not seem to be connected to dominant/non-dominant language. The two-year-olds, on the other hand, seemed to use gestures as a response strategy. There are, however, also other strategies to be discussed. For simplicity, the alternate strategies of each child will be discussed child by child.

3.2.1. ANA's strategies

Of the four children, ANA used the most alternate strategies to avoid the use of code mixing. These can be seen mainly in her play session with the Nepali stranger. In the English play sessions, she seemed to have high enough proficiency to feel comfortable. She used more physical responses in the play session with her mother than in the English play sessions. Since she realizes that her mother understands English, she tended to use code mixing when she was unable to continue communicating in Nepali.

With the Nepali stranger, ANA used three strategies to keep the conversation in Nepali as much as possible. In general, she did not initiate any conversation, merely responding to questions addressed to her. Her most frequent response was *tahaa chhaina* ('I don't know'). In fact, this response constituted 38% of the Nepali utterances directed to the Nepali stranger. If pushed for an answer to a question, ANA generally switched to a physical response, usually shrugging, nodding, shaking her head, or pointing to an object that she had been asked about. Her use of physical responses equals the total amount of inter- and intra-utterance mixing that she used with the Nepali

stranger, and is only 10% less than the total number of Nepali utterances in the play session[2]. Ultimately, if pushed for an answer, she would respond with a code mixed utterance, the majority of these being inter-utterance mixes. Of the 33 such mixed utterances, 26 were one-word answers, and 31 referred to pictures that she had been asked to name. She generally only code mixed when the other two response strategies had failed. But even when code mixing, she kept the amount of English being used to a minimum, responding with only one word. This contrasts with the inter-utterance mixes in the play session with her mother, only 31 out of 148 of which were one word answers, and most of which came from conversation initiated by the child, rather than forced answers to questions. Table 3.2. shows the MLUs for both inter-utterance mixes and Nepali utterances in the play sessions with her mother and the Nepali stranger. The MLU for her Nepali utterances is roughly the same in both the session with her mother and the session with the stranger, but there is a dramatic difference in the length of her inter-utterance mixes between the two sessions. In addition, her one-word responses to the question 'what is that?' contrast with her responses to this same question posed during her English play sessions. During these play sessions, her response was almost always of the construction "it's ___". When asked what the picture in a book was, she responded "it's dalmation dog"; when asked what she was wearing, she responded "it's bracelets", and even went on to add the information that "Mina-didi[3] buy it Anupa". Clearly, though she eventually responded by mixing, ANA used many strategies to keep English in the conversation with the Nepali stranger to a minimum.

[2] This does not contradict the work of those researchers who found that children's use of gestures became more complex as their language skills did (Mayberry *et al*, 1998) or those who found that children used more iconic gesture in their dominant languages (Nicoladis, 1999; among others). ANA's use of gestures in this instance is limited to gestures that even children who do not speak yet can make use of (shrugging, pointing), and is neither highly symbolic nor iconic.
[3] Mina-didi is the name of one of ANA's aunts.

MLU	Stranger	Mother
Inter-utterance mixes	1.58	2.91
Nepali utterances	1.98	1.91

Table 3.2. MLUs for ANA's inter-utterance mixes and Nepali utterances in the play sessions with her mother and the Nepali stranger.

3.2.2. BRG's strategies.

The only strategy that BRG seemed to use to avoid code mixing was the use of gestures. BRG used more gestures (16) with the strangers than she did with her parents (6), and she used twice as many physical responses when speaking with the English stranger (11) than with the French stranger (5). Similarly, she used twice as many gestures when speaking with her mother in English (4) than with her father in French (2). BRG, like ANA, used these physical responses more when speaking her weaker language, though she certainly did not use them to the same extent as ANA.

3.2.3. APR's Strategies.

As mentioned earlier, the four-year-olds did not seem to use physical responses as a strategy to avoid code mixing. Clearly, when speaking her dominant language, APR was able to avoid code mixing without having to resort to other strategies, and, as mentioned in the discussion on ANA, did not seem to feel a need to avoid code mixing when speaking with her mother, whom she knows to be bilingual. It is interesting to note that in the play session with the Nepali monolingual, her inter-utterance mixing dropped dramatically from the amount used with her mother, but that her intra-utterance mixing rose. As with ANA, APR seemed to be trying to use as little English as possible. The

matrix language for all of her intra-utterance mixes was Nepali[4]. Of these utterances, 82% involved a Nepali sentence with only one English lexical item inserted, and 76% referred directly to the activity that APR and the stranger were involved in so that the relationship to the physical object being referred to was clear. In other words, APR generally inserted concrete nouns that she could physically show to the stranger. For example, when building a puzzle, APR said *yo che square ho* ('this is a square'). *Square yahaa maa jaanchha* ('the square goes here'). By contrast, the intra-utterance mixing in her play sessions with her mother often had English as the matrix language, and the words inserted did not necessarily make reference to the immediate play situation. See table 3.3. for the percentage of Nepali-matrix and English-matrix intra-utterance mixes for the play sessions with the mother and the Nepali-stranger.

Matrix Language	Intra-utterance with stranger	Intra-utterance with mother
Nepali-matrix	100%	33%
English-matrix	0%	67%

Table 3.3. Distribution of APR's Nepali-matrix and English-matrix intra-utterance mixes in the play sessions with the Nepali stranger and APR's mother.

3.2.4. DAN's Strategies.

DAN did not seem to use many, if any, alternate strategies to code mixing. He showed himself capable of communicating almost exclusively in English. In the play session with the French stranger, he was able to greatly reduce the amount of inter-utterance mixing that he used, though his rate of intra-utterance mixing remained virtually the same in the play session with the French stranger as in the session with his father. The nature of this mixing did not seem to be different between the two sessions either. His mother has indicated that he tends to perceive English speakers in Western Canada as being monolingual, but tends to expect French speakers here to be bilingual.

[4] Matrix language was determined by the language from which the majority of the morphemes came in a stretch of discourse. For a more complete discussion, see chapter five.

Perhaps he perceived the French stranger as being less of a monolingual than the English stranger. And yet, two weeks before the taping of her session with the Nepali stranger, APR's father told her that all Nepali people in Canada can speak English. Even still, she made more efforts to accommodate the monolingualism of the Nepali stranger than DAN did the French stranger, as indicated by her use of strategies to minimize code mixing as discussed in the previous section.

3.3. Conclusions

Clearly all four children studied were able to differentiate their languages and to use them in contextually appropriate ways. The two-year-olds certainly showed themselves to be highly interlocutor sensitive. Not only were they able to follow the language lead of familiar interlocutors, but they could do the same with unfamiliar interlocutors. In addition, they were able to judge the language proficiency of the unfamiliar adults. In short, they were able to assess the monolinguality of the strangers, and changed their own language behaviour accordingly. There did seem to be a developmental trend to this interlocutor sensitivity since the four-year-olds accommodated their language behaviour to the needs of the strangers even more than did the two-year-olds.

Two factors that may be seen to influence children's ability to use their languages appropriately in language-specific contexts are language ability and the status of the language in society. Both of these will be discussed in more detail in chapter four. All four children showed a sensitivity to their parents' bilinguality. They all code mixed more when speaking with their parents than they did when speaking with the strangers, and they did not seem to feel it necessary to avoid mixing with their parents. The Nepali-English children, though they did follow the language lead of their Nepali parent,

showed less willingness to use Nepali with her. All four children also seemed able to judge the monolinguality of the strangers, for they all used less mixing with them than with their parents. The effects of language status on interlocutor sensitivity is demonstrated by the Nepali-English children's striking decrease in code mixing from the play sessions with their parents to those with the respective strangers and in their greater use of alternate strategies to avoid code mixing. The French-English children were also sensitive to the language proficiency of the unfamiliar adults, however they showed a smaller decrease in code mixing and used fewer avoidance strategies. This is in keeping with the prediction that the more prevalent a child's language in society is, the less sensitive they will be to the monolingualism of strangers.

Chapter Four

It has been established that the code mixing engaged in by children is not a result of a fused linguistic system that does not distinguish between the children's two languages. As discussed in chapter three, the children in this study were not only able to distinguish between their two languages, they were also able to assess the language abilities (i.e. bilingual vs monolingual) of their interlocutors. This chapter will examine internal factors (language status and language ability), apart from the ULS, and external factors (PDH and MH) that may explain why children, who are so clearly interlocutor-sensitive, code mix.

4.1. Language Status

The perception of the value of one's language may come from both (or either) the status of a language in terms of the ethnolinguistic community and in terms of an individual family's attitudes towards that language. As discussed in chapter two, French and English are both high status languages within Canada, and they are equally valued in BRG and DAN's home. For ANA and APR, Nepali has low status outside the home, and thus, for these children, English has become the desirable high status language of mainstream society, and Nepali a low status language, despite their parents attempts to engender positive attitudes towards Nepali.

The attachment of a high and low status to language has great potential to affect code mixing behaviour. Though a mainstream language, English is perceived almost as a threat by many French Canadians, and is therefore avoided in speech by the adults. As children acquire the socio-pragmatic norms that allow them to code mix in keeping

with societal code mixing behaviour, French-English children can be expected to begin to avoid code mixing when speaking French. Both French-English children in this study do code mix at high rates (BRG-11% and DAN-26%) when speaking with their Father, but they drop these rates significantly when speaking with the French stranger (5.69% for both). There are two possible explanations for this shift: (1) a belief in the stranger's monolinguality, or (2) adherence to societal norms. DAN's mother has said that he perceives English speakers in Western Canada as mainly monolingual and French speakers as bilingual. So, can DAN's 20% drop in code mixing be accounted for by the French stranger's monolinguality? Although it is entirely possible that he believed in the stranger's apparent monolinguality, despite his feeling that French speakers are bilinguals, it is also possible that when faced with a stranger, he conformed more to the societal (French-Canadian) expectations of acceptable code mixing behaviour. Why not behave this way with the father as well? The home is a place of long established patterns of behaviour. For this family, the home is a bilingual environment, where both French and English are perceived as high status languages. When faced with a stranger, it is possible that DAN behaved according to the norms of society, rather then behaving according to the norms of the home.

The Nepali-English children seem to avoid the use of their "low" status language as much as possible. Intra-sentential code mixing could be argued to indicate lesser avoidance of a low status language than inter-utterance mixing does. To clarify, in a Nepali-language setting, if a child uses Nepali as the ML frame and inserts only a few EL items, then the child is showing a willingness to use Nepali. If, however, the child mixes inter-sententially (a completely English utterance), then no Nepali is being used, indicating more of a reluctance to use Nepali. When speaking with their mother, who was trying to establish a Nepali context, ANA and APR's rates of code mixing were extremely high. The mixing in these cases was primarily inter-sentential (ANA—54.84%

English-only utterances to 7.66% mixed utterances; APR—45.57% English utterances to 1.97% mixed utterances). It would appear that in their mixing, there was very little effort being made to speak Nepali—there were very few Nepali matrix language (ML) utterances with just one or two English embedded language (EL) words inserted. When speaking with the Nepali stranger, however, APR's code mixing (19.03% mixed utterances and 8.58% English utterances) more closely resembles that of adult Nepali code mixers (the adults in this study used many more mixed utterances than English-only utterances in their code mixing behaviour). When speaking their "high" status language, both girls code mixed slightly when speaking with their father and not at all when speaking with the strangers. As with the French-English children, they appear to have code mixing behaviour in a family environment that is distinct from the "socially acceptable" code mixing behaviour they engage in when speaking with strangers. The language behaviour with their parents may reflect a perception of Nepali as a low status language, whereas their language behaviour with the strangers may reflect the societal code mixing norms. This is related to both the PDH and the Modeling Hypothesis, however, the code mixing behaviour results from the internal perceptions the child possesses as to the status of his language, whereas the other models refer to external cues the child receives as to the appropriateness of code mixing.

The code mixing behaviour of the two-year-olds differed from that of the four-year-olds mainly in terms of frequency: The two-year-olds tended to code mix more, both with their parents and with the strangers. It is probable that the difference in mixing rate is due to developing vocabularies, and will be discussed in the following section. DAN and BRG showed similar mixing patterns, except that DAN used more intra-utterance mixes with his non-dominant language (French) parent, whereas BRG used more inter-utterance mixes with her non-dominant language (English) parent. A similar pattern holds true for the Nepali-English girls in the sessions with the Nepali stranger:

APR used more inter-utterance mixes whereas ANA used more intra-utterance mixes. It is unclear from these data what the source is of the inter-/intra- utterance differences are.

4.2. Language Dominance

As discussed in chapter one, code mixing has been characterized as a way of stretching bilingual children's limited lexicons. Although children can distinguish between the languages they speak, they must have sufficiently large productive vocabularies before they have the option of using one and only one language.

As mentioned in section 4.1., the younger children in this study code mix at higher rates than do the older children. This can easily be explained by assuming that children code mix to fill lexical gaps. One would assume that the four-year-olds have larger vocabularies than the two-year-olds, and this assumption is borne out by the numbers of word and verb types of these children (presented in table 2.2.). The scores of the older children are nearly double those of the younger children. It seems clear that, the larger a child's vocabulary, the less that child will need to code mix.

While there is a clear developmental trend in the code mixing behaviour of these children, their code mixing can also be explained in terms of language dominance. DAN, who is English-dominant, code mixes more when he is speaking in French, and BRG, who is French-dominant code mixes more when she is speaking English. APR and ANA both code mix at much higher rates when speaking their weaker language, Nepali. In fact, both girls have shown themselves capable of not code mixing at all (when speaking with the English stranger).

APR is the child who seems to have the largest gap in proficiency between her two languages. It is interesting to note that most of APR's Nepali scores on the above

table are similar to BRG's French scores. In many ways, it appears as if APR's Nepali is at about the level of a two-year-old. Perhaps this accounts for much of her reluctance to speak Nepali with people whom she knows to be bilingual. Code mixing may be the only way for a child to reconcile a four-year-old's cognitive ability with a two-year-old's linguistic ability. How frustrating for a child who is used to being able to express her complex thoughts and feelings to be reduced to speaking at a much lower level than she is capable of thinking at! Although she made much more of an effort to speak in Nepali with the Nepali stranger, she focused her attention on the play situation at hand, referring mainly to the puzzle that they were working on together, and avoiding non-concrete topics that would tax her limited vocabulary.

4.3. The Interrelation of Language Status and Language Dominance

Intuitively, it makes sense that there should be a connection between the status of a language and a child's proficiency in that language. In fact, language status may have a causal effect on language proficiency. Much of a language's status comes from where it falls on the majority/minority continuum. The more opportunities a child has to speak a language, the more motivated that child should be to communicate well in that language. If a child has few opportunities to speak one of his languages, he may come to perceive it as relatively useless. As has been mentioned, BRG and DAN's parents have created ample opportunities for their children to speak French, despite the fact that it is a minority language. Unfortunately for ANA and APR, the only chance they have to speak Nepali is in the home, with their bilingual parents or with their grandmother. This seems to have had a remarkable effect on their language proficiency. BRG and DAN, though raised in the same household, have differing dominant language, a fairly reliable indication that both languages are valued in the

household and the children have good opportunities to speak in both their languages. ANA and APR, on the other hand, are both clearly English-dominant and have shown great reluctance to speak Nepali, causing their parents to worry that they will grow up not speaking or even valuing the Nepali language. Although they at first refused to speak Nepali with this researcher for fear of not being understood ("she has a white face so she won't be able to understand"); by the time of the videotaping, APR used significantly more Nepali than English with her when the researcher chose to communicate in Nepali. Of the fifty-six utterances that she addressed to the researcher, thirty-six were in Nepali, eighteen were in English, and two were intra-utterance mixes. This seems to lend support to the idea that the children could be motivated to speak their non-dominant language if given opportunities to speak it with someone from outside the family sphere who values that language, and that it is a lack of a social network to motivate them which has caused these children to allow their Nepali to fall by the wayside. In other words, the Nepali-English children's perception of Nepali as a minority language has affected their proficiency in Nepali.

Does status have an effect over time on language development? In other words, does language dominance become more pronounced for "low" status children? These data do seem to indicate that this may be the case. ANA and BRG have similar MLU, upper bound, word type, and verb type scores in their dominant languages. Clearly, though, even by the age of 2;3, BRG's non-dominant language is stronger than ANA's (BRG has higher scores on the dominance table). However, the slight gap between BRG and ANA's scores for their non-dominant languages is not nearly as striking as the gap between DAN and APR's scores. Whereas, in their dominant languages, APR and DAN score almost twice as high as their younger siblings, APR's non-dominant language scores hover around the language scores of the two-year-olds, certainly

suggesting that perceived language status has exerted a strong influence on her language development.

One might assume that a child's perceptions of the status of his language affects how willing he is to speak his language, and thereby affects his abilities in that language. But it would seem that the less able a child is to speak one of his languages, the less "good" he will feel about himself when trying to communicate, and the less willing he will be to use that language, thereby limiting his development even further. Though this cycle probably starts with language status, both language skills and perceptions of a language continuously affect each other.

4.4. The Parental Discourse Hypothesis

Lanza (1992) hypothesized that the rates of code mixing in bilingual children's speech may be influenced by discourse strategies that the parents use, rather than the amount of code mixing engaged in by the parents. As discussed in chapter one, these discourse strategies fall along a continuum with code switching (CS) encouraging a bilingual context, minimal grasp (MG) encouraging a monolingual context, and the move on (MO), adult repetition (AR), and expressed guess (EG) strategies falling between those two points.

Lanza considered code mixing to be the most bilingual parental strategy. In this case, a parent would switch from his native language to the language the child had used, indicating to the child that code switching is an appropriate means of communication. For example, here APR is speaking with her Nepali mother:

MOT: *tyo* *pasal* *maa.*
that store in
'in that store'
APR: that's a kitchen!
MOT: that's not a kitchen.

In the move on strategy, the parent continues the conversation with the child without drawing attention to the child's code mixing. This is considered to fall midway between the monolingual and bilingual strategies. In the following example, BRG is speaking with her English mother, and the mother's response indicates an understanding of what her child is asking for, perhaps encouraging further code mixing:

BRG: *veux* *le* *crocodile.*
want:1sg Det:M crocodile
'want the crocodile'
MOT: I don't really want to look at Peter Pan, to tell you the truth.

Lanza dubbed a parental repetition of what the child had said in the parent's native language "adult repetition". This is considered a fairly bilingual strategy because it shows an understanding of the child's code mixed utterance. Here ANA is speaking with her father during an English play session.

FAT: Papa bear's bed was too...
ANA: *thulou.*
'big'
FAT: yes, too big.

The expressed guess strategy is a more monolingual strategy in which a parent guesses at what the child has just said using only his native language. In this example, DAN is speaking with his francophone father:

DAN: his wings.
FAT: *tu* *veux* *dire* *les* *ailes* *du* *train?*
2Sg want:2SG say:Inf Det:Pl wing:Pl of train?
'you mean the wings of the train?'

The minimal grasp strategy is meant to be the most monolingual of all the strategies. Here, the parent requests a clarification of a child's utterance after the child has code mixed (even if it is not clear whether the parent is questioning the language or something else). In the following example, ANA is speaking with her Nepali mother:

ANA: pretending cookie, Mommy.
MOT: *haajur?*
'pardon?'

Though intuitively appealing because it suggests that children's patterns of language use are a result of a growing understanding in parent-child interactions, some doubt has been shed on the PDH, as proposed by Lanza (1992). Or rather, doubt has been shed on the ability of young children to understand the implications of the different strategies along the continuum. The present study addresses the predictions made by Lanza (1992) over two different age groups and for two different code mixing families.

4.4.1. Analysis of the Effects of Adult Response on Rates of Code Mixing

In this analysis, I examined the relationship between the parental discourse strategies and overall rates of code mixing engaged in by the children. The children's ability to respond to these strategies was further tested by examining the relationship between the discourse strategies of strangers and the children's code mixing rates.

Adult strategies were assigned a weight from 1 to 5, with 1 being given to the most monolingual strategy (minimal grasp), 5 being given to the most bilingual strategy (code mixing) and 2, 3, and 4 being assigned to the expressed guess, adult repetition, and move on strategies respectively. Examples of each type of strategy have been given above. The overall scores were determined by dividing the total of all strategy types by the total number of adult responses. A comparison was made between the adult strategy scores and the overall rates of inter- and intra- sentential code mixing for each respective play situation. The results are presented in Figures 4.1. and 4.2.

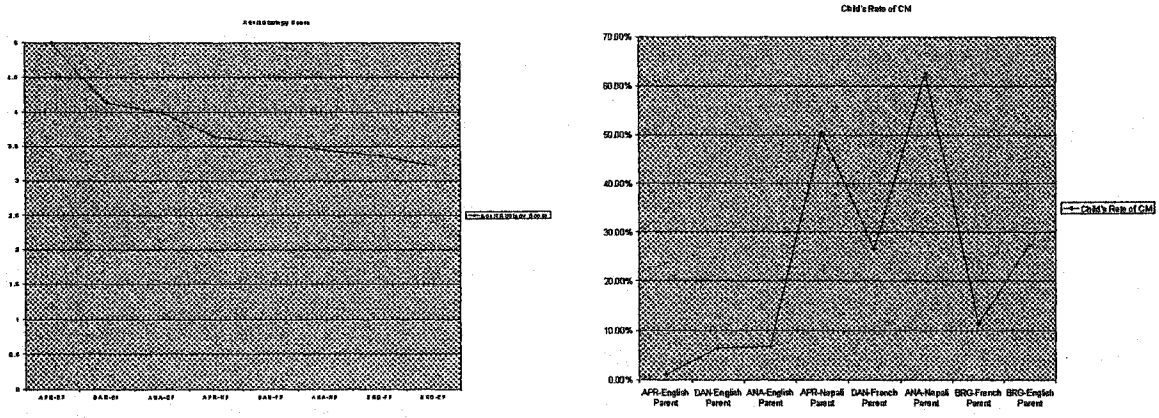


Figure 4.1. A comparison of parental strategy scores, on a scale of one to five, and the overall rates of the children's code mixing, calculated as a percentage of each child's total utterances.

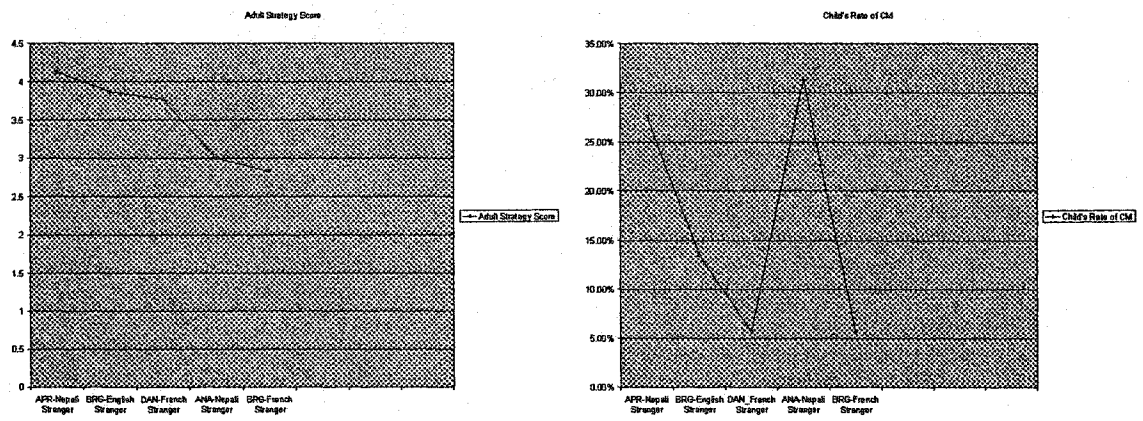


Figure 4.2. A comparison of strangers' strategy scores, on a scale of one to five, and the overall rates of the children's code mixing, calculated as a percentage of each child's total utterances.[5]

As can be seen in Figures 4.1. and 4.2., there does not appear to be any relation between the adult strategy scores and the overall rates of mixing engaged in by the children. In both figures, the left-hand figure depicts the adult strategy scores in descending order and the right-hand figure depicts the corresponding child's rate of code

[5] The play sessions involving DAN and the English stranger, ANA and the English stranger, and APR and the English stranger were left out of the figures because the English stranger did not respond to DAN's code mixing, and ANA and APR did not code mix at all.

mixing for the play session. If there were a correlation between adult strategy scores and children's rate of code mixing, one would expect the right-hand figures to show a similar descending pattern. No such pattern was manifest, however. According to Lanza, the highest adult strategy score, APR's father's (a score of 5) should correspond to the highest code mixing score. However, the highest code mixing score was obtained when ANA was playing with her Nepali Parent (62.5%). Despite the fact that a score of 5 should indicate that the parent was actively encouraging code mixing, APR mixed only 1.02% of the time with her English parent, whereas she mixed 50.49% of the time with her Nepali parent who used more monolingual strategies (3.64). A similar trend can be seen when DAN interacted with his parents. His father, who used a more monolingual style (3.56), encountered more code mixing than his mother (4.13), who used a more bilingual style. The waters are muddied even further when examining the data from the interactions with the strangers. The Nepali stranger used a more bilingual mode (4.13) when interacting with APR than did her mother (3.64), and yet APR code mixed 50.49% with her mother, and only 27.61% with the stranger. The same trend holds true for DAN in his interactions with his father and the French stranger. Some possible explanations will be discussed in the next section, following the examination of effects of adult strategies on the next conversational turn.

Interestingly, the strangers are not consistently more "monolingual" in style than the parents. This, however, is not necessarily due to the strangers indulging in frequent code mixing. In their study, Deuchar and Quay (2000) found that the Spanish-English child's monolingual grandmother created a bilingual context by accepting Spanish words ("move on" strategy) in order to avoid a communicative breakdown. Some of the strangers in this study seemed to use a preponderance of "move on" strategies rather than asking the child for clarification. Perhaps they felt that going with the conversational flow of the child would help to establish a rapport with the child and keep

the play situation going, whereas always questioning a child's mixing might frustrate the child and cut the play session short. For example, in the play session with BRG, the English stranger used the move on strategy far more than any of the other strategies, whereas the mother used more adult repetition.

4.4.2. Effect of Adult Strategies on Next Conversational Turn

In this analysis, I examined the relationship between each type of adult strategy and the children's code mixing in the next conversational turn. This is based on Nicoladis and Genesee (1998)'s assumption that "the effects of parental discourse styles might be most evident immediately following the relevant speech acts" (94). In other words, this study sought to determine if children code mix more immediately following relatively bilingual parental strategies than after relatively monolingual strategies.

All instances in which the children code mixed were identified and examined in more detail. There were 818 such instances, only 579 of which the adults responded to. The instances when parents did not respond verbally to their children's code mixing were left out of the analysis because it was difficult to predict what effect a non-response would have on the children. The children themselves made no response (or were not given a chance to respond) to 343 of the parental responses to their mixing. The remaining 236 child responses were classified as either continued code mixing (either inter- or intra- sentential) or no code mixing (an utterance in the parent's native language or a both-language utterance). Unlike Nicoladis and Genesee (1998), the relative rates of children's code mixing in response to the adult strategies were not aggregated across the sessions for all the children because of the potential for different responses created by different ages and language groups.

Figure 4.3. shows the percentage of children's utterances that were code mixed immediately following each parental strategy. Should Lanza's predictions have been verified, one would expect to see a graph with the highest rate of code mixing at the left, with a steady decline as one moves rightward through the strategies on the graph. This would reflect Lanza's theory that children code mix more in direct response to adult strategies at the more bilingual end of the continuum and less in response to the more monolingual strategies.

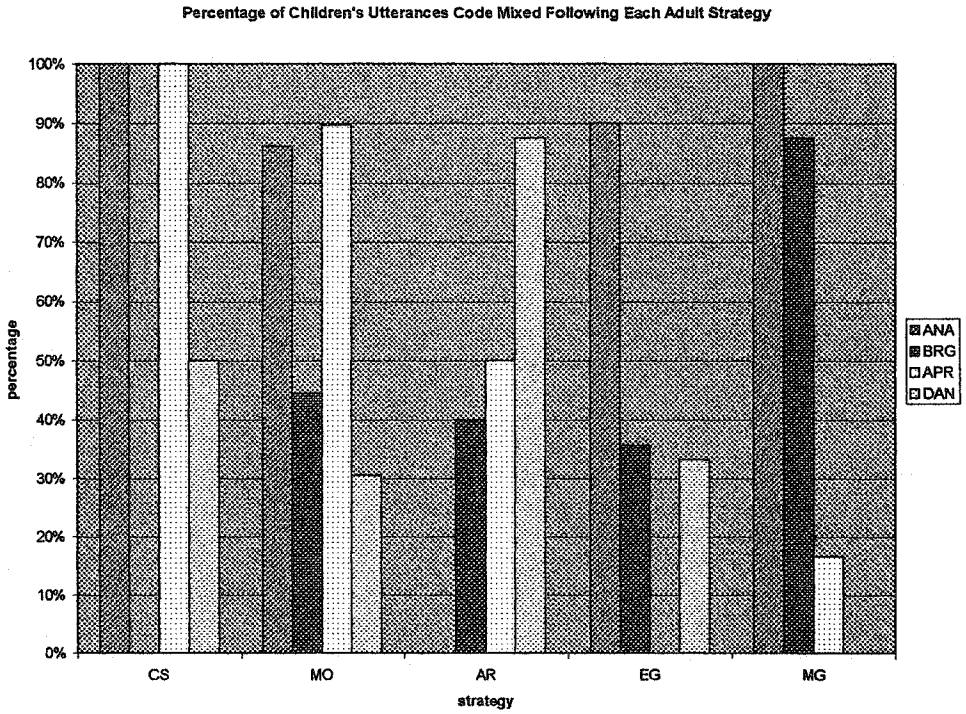


Figure 4.3. Percentage of children's utterances that were code mixed following each parental strategy (code switching, move on, adult repetition, expressed guess, and minimal grasp).

The results obtained in this study, as with those obtained by Nicoladis and Genesee (1998) did not show the pattern expected by the PDH. The children's responses did, however, differ in distribution from those of Nicoladis and Genesee. In this study, there does not appear to be a discernible pattern to the code mixing rates. ANA's rate of mixing to all the adult strategies was quite high (there were no responses

to the AR strategy), with both code switching and minimal grasp, two responses at opposite ends of the spectrum, eliciting the most code mixing. BRG did not code mix in response to adult code switching, but did code mix 100% of the time in response to the minimal grasp strategy. APR seemed to fulfill the predictions of the PDH, although she made no response to the expressed guess strategy. DAN code mixed more frequently in response to the adult repetition strategy than to the code switching strategy.

4.4.3. Discussion of the Parental Discourse Hypothesis

The results of this study did not support Lanza's (1992) PDH, either when examining the children's overall code mixing rate, or when examining the effect on the children's next conversational turn. Both analyses showed individual code mixing rates for each child that did not appear to be linked to the predictions made by the PDH. As discussed earlier, language dominance seemed to play a major role in code mixing rates with parents, whatever strategy each parent chose. The children all code mixed less frequently with the strangers than with their parents whether or not the stranger used a more bilingual strategy than the parents did. As Nicoladis and Genesee (1998) found, the adults in this study used more bilingual strategies, all but one having a score of 3 or higher.

There did not seem to be a discernible relationship between adult strategy and next conversational turn. That said, it is interesting to note that the two younger children responded to the minimal grasp strategy with extremely high levels of code mixing—in fact, they tended to repeat what they had just said. ANA once repeated herself 19 times trying to get her mother to understand her statement, "pretending cookie". Rather than interpreting their parents' minimal grasp strategy as a request to rephrase their last utterance in the parents' language, the two-year-olds seem to have viewed it as a

request for repetition. The minimal grasp strategy seems to have had its intended effect with the older children, although this may be due to slightly different minimal grasp tactics on the part of the adults. With the younger children, the adults tended to formulate the minimal grasp strategy as the question "what?" or its rough equivalent. With the older children, on the other hand, the adults tended to ask the children "how would you say that in [my language]?". Perhaps the adults believed the older children to be more linguistically aware and felt it possible to draw on some of their metalinguistic knowledge. In any case, the latter question, when it received a response, received a response in the adult's language (non-code mixed) 100% of the time. This may reflect a developmental trend (i.e. ability on the part of older children to respond to the different adult strategies). However, because the adults treated the children of different ages differently, it is difficult to say whether the younger children might not have been able to respond to the adult strategies in much the same way as their older siblings had they been faced with similar MG strategies.

This raises the question of whether the children were really able to understand the implications of the parental strategies. The expressed guess and adult repetition strategies can be virtually identical, apart from intonation. From an observational point of view, many adults respond to the utterances of young children by restating what was just said in the form of a question, but rather than waiting for a response, the adult continues.

Child: I want a cookie.
Adult: You want a cookie? Ok, go get one.

Perhaps, young children are used to adults responding to their statements with a question, and therefore the difference between expressed guess and repetition is not so clear to them. In addition, children may have different reasons for responding in different ways to these strategies at different times. A child may respond monolingually to the

adult repetition strategy because he has been provided with the appropriate word in the appropriate language, or he may code mix because the parent has shown an understanding of his code mixing. A child may respond in a similar manner to the expressed guess strategy, if the adult happens to guess correctly what the child had been trying to say.

Although this study did not support Lanza's formulation of the PDH, a child's ability eventually to code mix according to the sociolinguistic norms of his community is evidence that the speech acts of adults affect a child's code mixing. The development and exploration of alternate versions of the PDH are necessary to determine how and why adult language use influences the code mixing behaviour of children, and how response to parental speech acts develops.

4.5. The Modeling Hypothesis

According to proponents of the Modeling Hypothesis, children are sensitive to the rates of code mixing in the input they receive and are able to modify their code mixing behaviour in accordance with the input. The Modeling Hypothesis is related to the PDH in that code mixing itself is seen as the parental speech act that encourages children to code mix. The two hypotheses are distinct in that the former emphasizes the statistical aspects of the input and the situation-by-situation assessment of the child-adult code mixing relationship, whereas the latter emphasizes the discourse features of the input and the socialization aspects of the relationship. Having found no support for Lanza's (1992) articulation of the PDH, I now turn my attention to the Modeling Hypothesis.

4.5.1. Analysis of the Modeling Hypothesis

The results for each child were analyzed separately for the sessions with the parents and the sessions with the strangers. This allows for the examination of possible effects of language, familiarity, and age on the ability of children to model their output in accordance with their input.

4.5.2. Children's Language Use with Parents

The sessions with the parents allowed for the observation of the established patterns of language use and code mixing of the parents and children. It was predicted that the children's response to the amount of code mixing in their parents' speech may already have been coloured by previously established norms of communication. In these play sessions, the parents used mainly one language with their children. Parental mixing rates varied from 0.74% (DAN with Father) to 6.38% (APR with Nepali Parent). The Nepali-English parents tended to use primarily intra-sentential mixing, whereas the French-English parents used equal amounts of inter- and intra-sentential mixing. The children's rates of mixing with their parents varied enormously from 1.02% (APR with English Parent) to 62.5% (ANA with Nepali parent). Results are presented in Figure 4.4.

There was a significant positive correlation found ($r=0.836$, $p<.01$). With the exception of DAN, the children code mixed less frequently with the adults who code mixed less frequently. One could also say that the children code mixed less frequently with the parents who spoke their dominant language, in which case DAN would no longer be an exception.

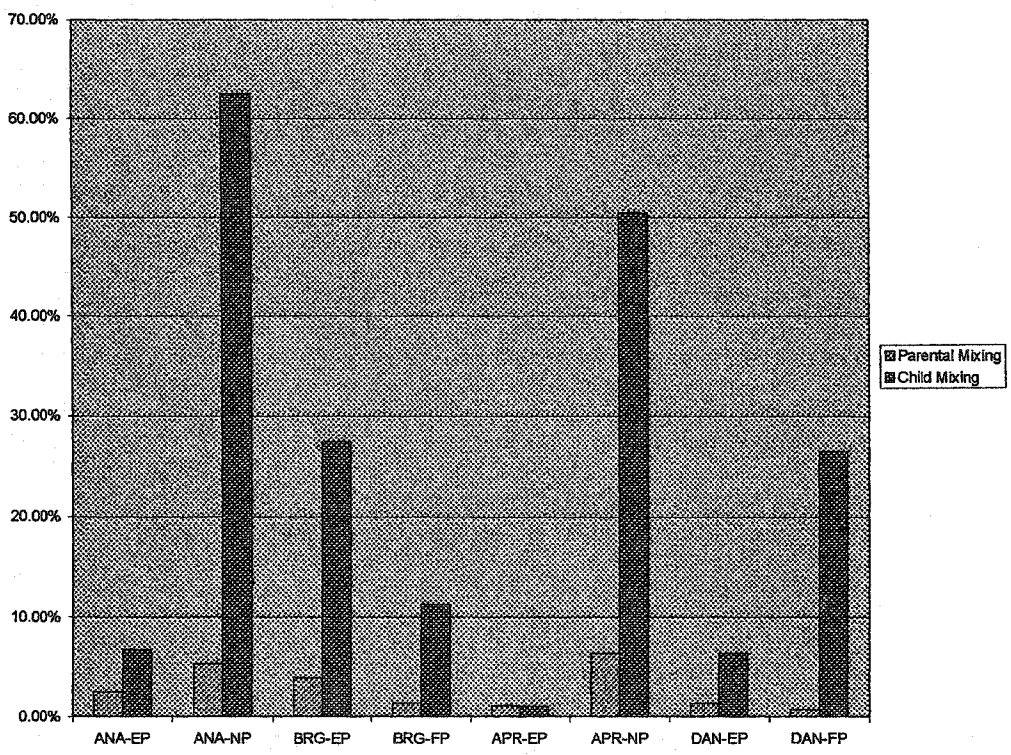


Figure 4.4. Children's rates of code mixing in each play session, as a percentage of total utterances addressed to the respective parent, and the corresponding parents' rates of code mixing, as a percentage of the total utterances addressed to that child.

4.5.3. Children's and Strangers' Overall Mixing Rates

The children's and adult strangers' frequencies of overall code mixing were calculated. The results are presented in Figure 4.5. There was a significant positive correlation ($r=0.839$, $p<.01$). Clearly the children code mixed more with adults who code mixed more themselves. The Nepali strangers had the highest rates of code mixing, and the children code mixed significantly more with them. It is difficult, however, to distinguish between the possible effects of language dominance, as Nepali also happens to be the Nepali-English children's weaker language. BRG code mixed significantly less with the French stranger (her dominant language) than with the English stranger although the strangers' rates of code mixing only differed by 0.01%. Clearly these children must be observed speaking each of their respective languages over multiple

sessions with strangers who vary their code mixing rates in order to disentangle the effects of language dominance and the effects of the input.

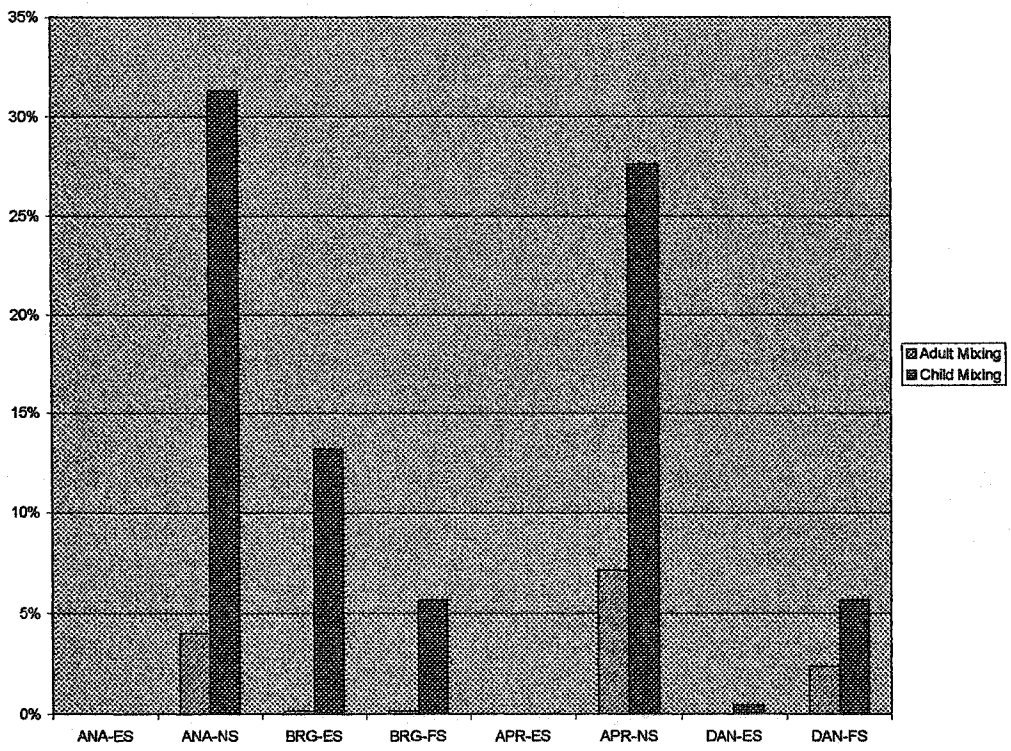


Figure 4.5. Children's rates of code mixing in each play session, as a percentage of total utterances addressed to the English and French/Nepali strangers, and the corresponding strangers' rates of code mixing, as a percentage of the total utterances addressed to that child.

Although one might be tempted to compare the parent-child and stranger-child interactions, it would be impossible to indicate where the role of input and the role of the children's sensitivity to the monolingualism[6] of the strangers diverge. The Nepali stranger code mixed at a higher rate with APR than did her mother, and yet APR's rate of code mixing was 22.88% higher with her mother.

[6] Because the strangers can (and some do occasionally) code mix, they cannot be perceived as completely monolingual. Rather, it is that they insist on a monolingual discourse. It should also be noted that not all code mixing necessarily indicates an understanding of what the child has just said. In the interaction with APR, 75% of the Nepali stranger's code mixed utterances were repetitions of what the child had just said. (APR: "it's a square". STR: "square?")

4.6. Discussion of the Modeling Hypothesis

This study suggests that children may be able to adjust their mixing rates in accordance with those of their interlocutors. When interacting with the strangers, the children code mixed less frequently with the stranger who code mixed less. But, the stranger who code mixed less also happened to be the stranger who spoke the child's dominant language. Thus, it is difficult to separate the effects of input and language dominance. The same holds true for the data from the parent-child interactions.

Interestingly, the Nepali mother and stranger showed the highest rates of code mixing. Code mixing is acceptable when speaking Nepali. In fact, in a play situation in Canada, it is almost necessary as many of the toys and games in Canada have no Nepali counterparts. It is possible that the mother used higher rates of code mixing to fill lexical gaps that she knows her children possess in an effort to make it easier and less frustrating for the children to speak in their weaker language. And yet, the Nepali stranger (who is truly virtually monolingual) code mixed at an even higher rate than the mother. She might have an English vocabulary of only 20 or 30 words, but still mixed them in at every opportunity. Further studies with more play situations would be necessary to determine where the role of the children's language dominance ends and the role of input begins.

Although code mixing seems to be, relatively speaking, acceptable to BRG and DAN's English parent, the English strangers exhibited virtually no code mixing with them at all. Although DAN believed Western Canadian French speakers to be bilingual, he code mixed less frequently with the French stranger (who had a higher rate of code mixing than his French parent, with whom he code mixed more). It would be interesting to examine how the children would respond to English and French/Nepali speaking strangers who varied their rates of code mixing. Further studies of children speaking

both their dominant and non-dominant languages with strangers who code mix to varying degrees could shed light on the capacity of bilingual children to vary their language use according to the input they receive.

4.7. Conclusions

Clearly children do not code mix for one and only one reason. The status of a child's language in society affects his perceptions of and feelings about his language. A child who is not likely to be understood outside the family circle should he speak his language is more likely to perceive that language as being "worthless" than a child who perceives his minority language as a valuable tool for communication within a certain circle of people. When speaking with bilinguals, both APR and ANA showed reluctance to use their non-societal language, as demonstrated by their strikingly high use of inter-utterance code mixes with their Nepali parent. When speaking with a monolingual Nepali stranger, both girls considerably lowered their use of English-only utterances (from the play session with their mother), and used intra-utterance mixes when code mixing was necessary (it was previously argued that intra-utterance mixes are an indication of an effort to keep the amount of code mixed material to a minimum). In addition to a reluctance to speak a non-societal language, a child who is never understood when speaking his minority language outside the home is more likely to be sensitive to the monolinguality of others than the child whose notions of monolinguality are occasionally challenged by having people outside his usual circle understand his minority-language utterances (evidence for this was discussed in chapter three).

Another important factor affecting code mixing is language dominance/ability (i.e. vocabulary size). This clearly has an effect on the ability of a child to avoid code mixing. The younger siblings, who have smaller vocabularies, code mixed at a higher rate than their older siblings. These children also code mixed more when speaking their weaker

language, presumably in an attempt to fill lexical gaps and keep the communicative ball rolling. Language dominance itself is probably closely related to the status of a child's language. APR and ANA are unwilling to speak their non-societal language for the simple reason that it is non-societal, and thus, though their receptive language abilities appear good, their productive language skills are quite weak. It only stands to reason that language status would have an effect over time on language development. Evidence that this is so comes from the greater gap between dominant and non-dominant languages when APR is compared to ANA. Although BRG's non-dominant language is stronger than ANA's (BRG has higher scores on the dominance table), the slight gap between BRG and ANA's scores for their non-dominant languages is not nearly as striking as the gap between DAN and APR's scores. APR's non-dominant language scores hover around the language scores of the two-year-olds, suggesting that perceived language status has exerted a strong influence on APR's language development. However, without studying Nepali-dominant children as well, it is difficult to be more definitive about the effects of language status and ability.

The internal factors discussed above are related to the external factors. Though no support for Lanza's PDH was found, adult norms for code mixing must influence the children because, with age, children are able to code mix according to the norms of the community. The results of this study did support the predictions of the MH. For the most part, the more code mixing in the input, the more the children code mixed. Perhaps volume of code mixing in the input is an easier factor for young children to assess and respond to than are the subtle cues inherent in the adult responses of the PDH. In any case, external cues about language that children receive is sure to affect their internal perceptions, and thus the effects of both are interrelated.

Chapter Five

As discussed in chapter one, adults' code mixing is governed by socio-pragmatic and grammatical rules that require a high level of competence in both of the speaker's languages. Since child bilinguals develop into adult bilinguals whose code switching appears to be highly constrained, the question now being asked is: when do children show evidence of adherence to structural constraints? Are there two stages in grammatical acquisition, as proposed by Meisel (1994; among others), or are young children able to adhere to the same constraints as adults from the point at which multiword utterances emerge? In this chapter, I will first discuss the main components of the Matrix Language Frame model (Myers-Scotton, 1993; Myers-Scotton, 1995; Myers-Scotton & Jake, 2000) and then present the code mixing behaviour of my subjects with respect to it.

5.1. The Matrix Language Frame Model

There are two major assumptions central to the MLF model. The first is the distinction between the matrix and the embedded language. The second is the distinction between content and system morphemes. In a bilingual's code switched utterance, the two languages do not play an equal role. The matrix language (ML) is the more dominant language in production; it is the language that sets the morphosyntactic frame for the utterance; it is the unmarked or expected choice for the situation; and it is often perceived as the language that is being spoken in the stretch of discourse. The embedded language (EL), on the other hand, is the one whose elements are inserted into the morphosyntactic frame set by the ML. In setting the frame for the utterance, the ML selects the system morphemes for the utterance (System Morpheme Principle) as

well as establishing the order in which all the morphemes can occur (Morpheme Order Principle). The EL can only contribute content morphemes (exceptions will be discussed below).

The difference between system and content morphemes is essential to the MLF model. This distinction is similar to the closed-class versus open-class morphemes. (For a full discussion of the distinction between system and content morphemes, see Myers-Scotton, 1993; Myers-Scotton, 1995; Myers-Scotton & Jake, 2000.) The MLF model typically categorizes as content morphemes nouns, adjectives, time adverbs, most verbs and prepositions. System morphemes are typically copulas, *do* matrix verbs, and prepositions that assign only case. Determiners, tense, aspect, verb and noun inflections, and degree adverbs are also system morphemes. According to the SMP, all late system morphemes[7] in a bilingual utterance must come from the ML. Content morphemes can come from either the ML or the EL.

The blocking hypothesis stipulates that a blocking filter prevents the insertion of any EL content morpheme that is not congruent with the ML at either the conceptual (semantic, pragmatic, or sociopragmatic intentions) or functional (morphosyntactic features) level. Congruence is, in essence, a match between the ML and EL at the lemma (entry in the mental lexicon) level with respect to relevant linguistic features. A lack of congruence may be serious enough to rule out the possibility of code switching. For example, French uses a clitic system (system morphemes) whereas English uses (strong) pronouns (content morphemes). This lack of congruence could lead to the

[7] As early system morphemes are indirectly elected by the content morphemes, sometimes one will 'tag along' with a content morpheme from the ML. What appears as an early system morpheme in one language, may well be a late system morpheme in another language. In Arabic, tense and aspect are early system morphemes, and therefore bundled together with the verb, whereas in English, tense and aspect are generally late system morphemes (except with irregular past tense verbs such as 'ran').

blocking of English pronouns in a French ML utterance, even though English pronouns are content morphemes (see Paradis *et al*, 2000).

Sometimes, because of a certain lack of congruence, the use of an EL-island (an entire EL phrase (i.e. NP or VP) inserted into an ML utterance) is called for. All the morphemes in an EL-island come from the EL, however the island itself is under the control of the ML. For example, Myers-Scotton and Jake (1995) argue that, in example (1), *bring up* is used because it captures a lexical-conceptual structure not available in Spanish. However, *bring up* requires a pronominal object before *up*, resulting in an EL-island.

(1) *no va-n* *a* BRING IT UP.
no go-3PL to
'They are not going to bring it up'.

The insertion of bare verb forms accompanied by an inflected dummy verb meaning *do* from the ML is another compromise strategy used when there is not enough congruence to allow free code switching. In other words, the ML verb encoding *do* is inflected with all of the requisite ML system morphemes and appears with an uninflected EL content verb. In example (2), a Turkish ML utterance, a Turkish dummy verb (*yapt* 'do') is called for because Dutch does not have a rich system of verbal morphology whereas Turkish does (Myers-Scotton & Jake, 2000).

(2) o diyor ben UTIMAK-EN yapt_n diyordu...
he say:Prog:3Sg 1Sg finish-Inf do:Pret:1S say:Impf:3S
'He says "I said I broke up..."

When the two lemmas are sufficiently congruent at the conceptual and functional level, code switching is allowed, and a mixed ML + EL constituent results (see the Nepali-English example 3).

(3) I like your *CHURA.*
bangles
'I like your bangles'

An intra-sententially code switched utterance could appear in any of the following three forms: (1) mixed ML + EL constituents (as discussed above), (2) ML islands (constituents consisting entirely of ML morphemes), and (3) EL islands (see above). Mixed constituents and ML islands are subject to both the system morpheme principle (SMP) and the morpheme order principle (MOP). EL islands must be positioned in the utterance according to the MOP, but their internal structure follows the principles of the EL. These principles and constraints will be discussed in more detail in subsequent sections.

5.2. Determining the Matrix Language

As mentioned above, the matrix language (ML) is the language that sets the morphosyntactic frame for the utterance; it is the unmarked or expected choice for the situation; and it is often perceived as the language that is being spoken. In determining the ML for these data, I followed criteria which were delineated by Paradis *et al* (2000). With regard to the expected choice for the language, one would assume that the language mode set by the adult interlocutor would constitute the ML. Though this did prove to be the case in many of the play situations, the Nepali-English children, when playing with their mother, often disregarded her attempts to set Nepali as the language of interaction. Here the children's language dominance seemed to be an important factor. Although they used more Nepali in the play session with their mother than they did with their father, they did use more English than Nepali with their mother. Thus, it seems safe to assume that their dominant language was the ML for that session. The ML in this corpus was determined by the language from which the majority of the child's morphemes came in a play session. This was based solely on the child's single

language utterances. In all play sessions, with the exception of the Nepali children playing with their mother, the ML corresponded to what one would have expected had the sociolinguistic criterion (language mode set by the adult interlocutor) been used to determine the ML[8].

Following the determination of ML for each session, the children's mixed utterances were analyzed for adherence to the SMP and MOP. Also, potential problems with congruency were examined.

5.3. The System Morpheme Principle

According to the SMP, late system morphemes must be in the ML, unless they are part of an EL island. Violations of this constraint would occur if a child inserted an EL late system morpheme into an ML +EL constituent. The insertion of EL early system morphemes into ML + EL constituents or EL islands is acceptable, as is the insertion of an EL late system morpheme into an EL island. ML early or late system morphemes can be inserted anywhere except into EL islands. Late system morphemes include tense and agreement inflections, aspect inflections, case marking, auxiliary verbs, modal verbs, copulas, do-support, degree adverbs, negatives, pronominal clitics, and infinitival "to" in English (but not the infinitival inflection in French, see Paradis *et al*, 2000; Myers-Scotton & Jake, 2000).

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[8] In updated versions of the MLF model, Myers-Scotton (1997) and Myers-Scotton and Jake (2000) have suggested that the ML can be determined on a case-by-case basis for each individual utterance. This, though, could lead to circularity in evaluating the adherence to constraints. If a child's utterance involved only one system morpheme, but this system morpheme came from the EL (according to the aforementioned criterion), one would only have to reverse which language was the ML in order to eliminate the violation. This would also eliminate any predictive power of the analysis. Also, if determining ML on an utterance by utterance basis, no ML could reasonably be chosen for two-morpheme mixed utterances. Though it is possible that children, and even adults, do change their ML within a stretch of discourse, overall, the older criterion (Myers-Scotton, 1993) for determining ML is a preferable tool.(Myers-Scotton & Jake, 2000).

The results of the analysis of SMP violations are presented in Table 5.1. Overall, the rate of violations is quite small, especially in comparison with violation rates presented in Paradis *et al* (2000). Of course, it must be noted that Paradis *et al* studied SMP violations across four periods, the middle two intervals comprising the highest number of violations; it is possible that, had the children in this study been examined at roughly 2;5 and 3;0, similar results would have been obtained. As it stands, clearly the French-English two-year-old has more violations than the four-year-old does. It is possible that, as previous researchers have found, there is a developmental trend in adherence to the SMP. However, taking Brown's (1973) 90-percent-use-in-obligatory-context criterion to indicate mastery in developmental data, even the two-year-old French-English girl is close to mastery. Though the two-year-old Nepali-English girl did not have any violations of the SMP, this is possibly due to the low frequency of intra-sentential code mixing in her data. The data in the present study does support the findings of previous research in this area. However, Paradis *et al*'s (2000) study is more comprehensive, both in terms of the number of subjects and the intervals over which they were studied.

	SMP Violations (EL late system morpheme in ML + EL constituent)
BRG (2 years)	13% (10/78)
ANA (2 years)	0% (0/18)
DAN (4 years)[9]	5% (7/130)
APR (4 years)	4% (2/52)

Table 5.1. Number of each child's incorrect system morpheme mixes as a percentage of the total number of system morpheme mixes for the play session.

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[9] It should be noted that the calculations for DAN's violations of the SMP did not include his insertion of the degree adverb "just" into French ML utterances. This was counted as a single violation, and other violations were left out of the total equation because he always used the word

As did Paradis *et al* (2000), I also examined the data to try to determine whether the dominant language of the children influenced the direction of mixing of system morphemes. It is possible that the children were forced to use system morphemes from their dominant languages in a non-dominant language frame in violation of the SMP, simply for lack of a corresponding system morpheme in the non-dominant language. In other words, the data were examined to determine whether dominance could predict directionality of system morpheme mixing in utterances that violated the SMP. Thus, the SMP violations were labeled as: (1) a dominant language system morpheme in a non-dominant language ML utterance, or (2) a non-dominant language system morpheme in a dominant language ML utterance. Language dominance for each child was discussed in chapter two. Many examples of type (1) might indicate that dominance plays a role in SMP violations for these children. The results are presented in Table 5.2.

Child	EL-Dom +ML-Non-Dom	EL-Non-Dom + ML-Dom
BRG	10	0
ANA	0	0
DAN	6	1
APR	2	0

EL-Dom + ML-Non-Dom = EL system morpheme from the dominant language in an utterance with a non-dominant ML. EL-Non-Dom + ML-Dom= EL system morpheme from the non-dominant language in a dominant ML utterance.

Table 5.2. The directionality of system morpheme mixing in utterances that violated the SMP for each child.

Whereas Paradis *et al* (2000) found that most of their SMP violations were contributed by balanced bilingual children, and therefore directionality could not reliably be established, these results would seem to indicate that SMP violations are driven by individual language dominance. Of all the SMP violations in the data set, only one was an EL system morpheme from the non-dominant language in a dominant ML utterance. However, it is interesting to note that most of the SMP violations came from the French-

"just" (never "juste") throughout the corpus, indicating that it could be a borrowed form for him. To

English children who, though not balanced bilinguals, certainly have less of a gap between their French and English dominance scores (see chapter two) than do the Nepali-English children.

5.4. The Morpheme Order Principle

The second major constraint of the MLF model is the Morpheme Order Principle, which stipulates that, in a code switched utterance, both the ML and EL morphemes are ordered according to the requirements of the matrix language. The only exception to this is in EL islands, in which case the morphemes in the island are ordered according to the EL. The EL island will, however, be inserted in accordance with the requirements of the ML. In languages with the same word order, the MOP is redundant. However, in languages with divergent word orders, the stipulations of the MOP can be tested. For the French-English children, I examined two constituent types of differing word order as identified by Paradis *et al* (2000): namely possessor-possessed constructions, and adjective-noun constructions. Negative marker-thematic verb constructions were not examined because there were no examples in this corpus. For the Nepali-English children, two construction types that would test the MOP were identified: noun-preposition constructions and subject-verb-object constructions. As will be seen, violations of the MOP were infrequent in this data set, with the French-English children showing only slightly more violations than the Nepali-English children.

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count every single insertion of "just" would skew the results.

5.4.1. Possessor-Possessed Constructions

The order of possessor and possessed differs between French and English, with English using a possessor-possessed order, and French using a possessed-possessor order. Thus in English, sentence (4a) is possible, whereas in French a child will use the word order in sentence (4b). While the English possessor-possessed word order is not possible in French (4c), the reverse is not true. (4d) is a possible English sentence, however this construction is rare, and the children in this study, as in previous studies, did not use it when speaking English. In a mixed utterance with English as the ML, one expects children to produce a sentence like (4e). In French, on the other hand, one expects (4f). These divergent word orders should be evident if the children are following the MOP, even if the children omit the possessive marker (a system morpheme).

(4a) the girl's chair

(4b) *la chaise de la fille.*
Det:F chair of Det:F girl
'the chair of the girl'

(4c) **la fille chaise*
Det:F girl chair
*'the girl chair'

(4d) the chair of the girl

(4e) *LA FILLE* chair
Det:F girl
'the girl's chair'

(4f) CHAIR *la fille.*
Det:F girl
'the chair of the girl'

In the data set, there were only two examples of possessor-possessed constructions, both produced by DAN in a French ML context. As can be seen in example (5), DAN code mixes in accordance with the predictions of the MOP, at least in a French context. Examples of code mixing with English as the ML are necessary to

determine whether or not DAN would use the English word order for possessives. Interestingly, apart from mixed possessive determiner constructions, all BRG's possessor-possessed constructions are French (in French ML or inserted as islands into English ML constructions).

(5a). *un* *camion* *de* FARM
a truck of
'farm's truck'

(5b). *le* WINDOW *de* *son* *casque*
the of Det:Poss:M helmet
'his helmet's window'

5.4.2. Adjective-Noun Constructions

In English, adjectives are always located before the noun that they modify. In French, on the other hand, some adjectives occur before the noun and others occur after the noun. Examples are provided in (6). Based on these differences, one would predict that in a mixed adjective-noun construction, with English as the ML, the adjective should always precede the noun, as in (7a) and (7b). When French is the ML, however, the category that the adjective belongs to should determine whether the adjective precedes or follows the noun, as in (7c) and (7d).

(6a). beautiful girl

(6b). fast car

(6c). *belle* *fille.*
beautiful girl
'beautiful girl'

(6d). *voiture rapide*
car fast
'fast car'

(7a). *BELLE* girl
beautiful
'beautiful girl'

(7b). *RAPIDE* car
fast
'fast car'

(7c). BEAUTIFUL *fille*
girl
'beautiful girl'

(7d). CAR *rapide*
fast
'fast car'

In this corpus, a total of twelve utterances with mixed adjective-noun constructions were found. Some examples are presented in (8). The utterances in (8a) and (8b) have French as the ML with an English noun and a French adjective. (8c) has English as the ML, with a French adjective and an English noun. (8d) is the only violation of the MOP found in this corpus. The English adjective and its degree adverb should follow the French noun.

(8a). *les* WRITINGS *rouges*
Det:Pl red:Pl
'the red writing'.

(8b). *vrais* MANS
real:Pl
'real men'

(8c). all *PETITS* dinosaurs
small:M:Pl
'all small dinosaurs'

(8d). **le* VERY FAST *autobus*
Det:M bus
'the very fast bus'

5.4.3. Noun-Preposition Constructions

A potential challenge to the MOP in the Nepali-English data set involves prepositions. English is a head-initial language; thus, in prepositional phrases the preposition precedes the noun, as in example (9a). Nepali, on the other hand, has postpositions, as in (9b). If a mixed noun-preposition construction occurs when English is the ML, the preposition should precede the noun, according to the predictions of the MOP, as in (9c). When Nepali is the ML, on the other hand, the opposite order to that in (9c) should be manifested, as in (9d).

(9a). on the stool

(9b). *tul* *maa*
stool on
'on the stool'

(9c). on the *TUL.*
stool
'on the stool'

(9d). *tul* ON
stool
'on the stool'

In this corpus, there are 8 examples of mixed preposition-noun constructions, all of which follow the principles of the MOP. The Nepali-English children mixed very rarely in English, but there is one example (10a) of an English ML utterance, with an English preposition and a Nepali noun. As in English, the preposition precedes the noun. The other examples, (10b-d), involve a Nepali ML utterance, with the Nepali postposition *maa* 'on/in' and an English noun, with the postposition appropriately following the noun.

(10a). on Apurba *MOJA.*
sock
'on Apurba's sock'

(10b). ENGLISH *maa*?
in
'in English?'

(10c). BOTTOM *maa*
on
'on the bottom'

(10d). PLATE*maa*
on
'on the plate'

5.4.4. Subject-Verb-Object Constructions

Whereas French and English are both SVO languages (11a), Nepali is an SOV language (11b); thus any mixing of verbs or objects would test the Nepali child's adherence to the MOP. According to the predictions of the MOP, therefore, in a mixed utterance with English as the ML, the subject should always precede the verb, and if there is an object in the sentence, it will occur in final position, as shown in example (11c). In a mixed utterance with Nepali as the ML, the verb will occur in sentence- final position, as in (11d).

(11a). The boy hit the dog

(11b). *Keta-le* *kukur-laai* *pit-yo*
Boy-Nom dog- Acc hit-3SgPst
'The boy hit the dog'

(11c). The *KETA* hit the *KUKUR*
boy dog
'The boy hit the dog'

(11d). *Keta-le* DOG-*laai* *pit-yo.*
boy-Nom -Acc hit-3Sg:Pst
'The boy hit the dog'

There were 24 examples of mixed subject-object-verb constructions in this data set, all of which conformed to the principles of the MOP. That is to say, in all the utterances with an English ML, the object occurred after the verb, as in (12a) and (12b). In all the utterances with a Nepali ML, the object occurred before the verb, as in (12c)

and (12d). Both the two-year-old and four-year-old were equally successful in adhering to the MOP.

(12a). I pretending *ANDHA.*
egg
'I pretending egg'

(12b). Mommy put *ANDHA* and *PAK*
egg cook
'Mommy put egg and cook'

(12c). *bholi* SCHOOL *jaan-chhu.*
tomorrow go-1Sg:Pres
'Tomorrow I am going to school'

(12d). *ma* *pani* *haajur-laai* *HELP* *gaar-chhu.*
I also 2Sg:Hon-Acc do-1Sg:Pres
'I am also helping you'

5.5. Congruency

As mentioned previously, a lack of congruence between two languages affects the form that a mixed element takes, resulting in the use of EL islands, dummy verbs, or a block on code mixing. How an EL content morpheme is accommodated by an ML frame is indicative of which features of that morpheme are crucial. This section will examine the congruence between French and English pronominals and Nepali and English verbs.

5.5.1. French and English Pronominals

French and English pronominals are only partially congruent. There are two types of French pronominals: clitics and strong pronouns. Clitics (*je* "I", *tu* "you", etc) act as pronominal subjects. English pronouns behave in much the same way as French strong pronouns. See Paradis *et al* (2000) for a full discussion of these pronominal systems.

According to Paradis *et al* (2000), a strict interpretation of the ML Blocking Hypothesis would predict that English pronouns could not be mixed into a French ML mixed-utterance because of the lack of congruency between the two languages in terms of the status of pronouns. However, because French does have content morpheme pronominals, and because these strong pronouns are used as subjects in child language, one can expect to find English pronouns in a French ML utterance. On the other hand, because the congruency only lies between French strong pronouns and English pronouns, French clitics could not be mixed in an English ML utterance: French clitics are late system morphemes whereas French strong pronouns and English pronouns are content morphemes. Clitics could only occur in mixed utterances with English as the ML if they occurred as part of an EL island. Paradis *et al* (2000) also predicted that they would find no examples of French ML utterances with clitics that included an English verb.

All mixed utterances that included a pronominal subject in the French-English corpus were examined with respect to the predictions made by Paradis *et al* (2000). To reiterate, the researchers predicted that English pronouns could be mixed in a French ML utterance, but only French strong pronouns, and not clitics, could be incorporated into an English ML utterance; that there would be no examples of French ML utterances with clitics that included an English verb. Though there is a slightly different distribution, my results are similar to those of the aforementioned researchers in that most of the mixed utterances with pronominals are acceptable according to the MLF model. (There is a notable exception, though, with respect to the last prediction, which will be discussed in the following paragraph.) Table 5.3. presents the numbers of each mixed utterance type, and (13) gives examples of each acceptable utterance type. There is only one violation (1.75% of the utterances) of the first prediction, (13e), where a French clitic is mixed in an utterance with English as the ML. This clitic appears with a finite

French verb and it is possible to argue that perhaps an EL island was mixed in this case. Paradis *et al* (2000) state that this is a sophisticated compromise strategy based on a knowledge of pronominal status and verb movement rules. BRG and DAN show a much lower percentage of violations (1.75%) than did the children in the Paradis *et al* (2000) study (13%). For the purposes of this study, BRG's pronominal use of "my" was counted as an English subject pronoun.

(13a). *parce qu'* *il* *est* *tout* BLACK.
because 3Sg:M be:3Sg all
'because he is all black'

(13b). *on* *faut* *mettre les* TOYS *dans* *nos* *maisons*
one must put:Inf Det:Pl in Det:1Pl house:Pl
'we must put the toys in our houses'

(13c). MY *fais* *bobo*
do:2Sg booboo
'I made booboo'

(13d). I *CONNAI- ed* him
know
'I knew him'

(13e). *JE* *MET* shoes on baby
1Sg put:1Sg
'I put shoes on baby

Utterance Types	Frequency
ML-Fr + clitic	33
ML-Fr + strong pronoun	7
ML-Fr + pronoun	3
ML-Eng + pronoun	13
ML-Eng + strong pronoun	0
*ML-Eng + clitic	1

Table 5.3. Distribution of mixed utterance types with pronominal subjects

As they had predicted, Paradis *et al* (2000) found no examples of French ML utterances with clitics that included an English verb. In this study, however, 20 examples of this type of utterance were found. Some examples are provided in (14). Of these 20 apparent violations, nine, such as in examples (14g-i) are not true violations. In (14g) and (14h), a French auxilliary verb is used as the finite verb, and the English verb appears in the form of a past participle, with French inflection. In examples such as these, the subject clitics remain syntactically bound to the French auxilliary verb in INFL. (14i) is similar: the clitic remains bound to the French modal verb in INFL and the English verb appears in infinitive form. Only DAN, not BRG, produced French ML utterances with clitics and an English verb. It is unclear whether this is a dominance issue for the child or whether he has misanalyzed French clitics. The 11 "true" violations exemplified in 14a-f represent only a small portion of DAN's use of clitics (291 in all), but it does call for further examination on the part of future researchers: examination of both the MLF model and of more children.

(14a). *pis* *après* *il* *ne* MOVE
then after 3Sg:M Neg
'then after he doesn't move'

(14b). *ils* JUST STAY *à* *Ottawa*
3Pl:M at
'they just stay in Ottawa'

(14c). *ils* GRAB *les* *trains*
3Pl:M Det:Pl train:Pl
'they grab the trains'

(14d). *et* *pis* *on* SLIP
and then one
'and then we slip'

(14e). *pis* *on* GET *les* *parachutes*
then one Det:Pl parachute:Pl
'then we get the parachutes'

(14f). *il* *GO* *ici*
3Sg:M here
'he goes here'

(14g). *pis* *elle* *a* *GROW- é* *DOWN*
then 3Sg:F Aux:3Sg -PstPt
'then she grew down'

(14h). *j'* *ai* *BRING- é* *ça* *à* *mon* *maison*
1Sg Aux:1Sg - PstPt this at Det:1Sg:Poss house
'I brought this to my house'

(14i). *il* *veut* *WRECK- er* *les*
3Sg:M want:3Sg - Inf Det:Pl
'he wants to wreck these'

5.5.2. Nepali Verbs

Nepali verbs and English verbs may be congruent at the conceptual level, but they are not congruent in terms of the predicate-argument structure. Nepali verbs are inflected for person, tense, and aspect, whereas English verbs lack person inflection. The rich inflection/sparse inflection distinction between Nepali and English makes mixing English verbs in Nepali problematic. Because of this incongruency, one might predict that the ML Blocking Hypothesis would prevent the mixing of verbs in either Nepali or English ML utterances. It has been observed, however, that in situations of partial congruency, a "do construction" compromise strategy is possible. This construction involves the ML verb meaning *do* inflected with the requisite ML system morphemes appearing with a bare form of the EL content verb. In fact, Myers-Scotton and Jake (2000) claim that many of the data sets in which the "do construction" is found involve verb-final languages, such as Punjabi (recall that Nepali is also verb final). "No cases of EL verbs inflected with ML morphology, if the ML is verb-final, are reported in the literature" (1006). Since this appears to be such a widespread compromise strategy, it is feasible that when English verbs are incorporated into a Nepali ML utterance, they will be inserted as bare forms with the Nepali verb meaning *do* (*gaar-)* carrying the inflection.

English verbs carry far less inflection than Nepali verbs, and so, when Nepali verbs are used in an English ML utterance, they will be inserted as bare forms, without requiring a "do construction" to carry inflection.

All mixed utterances involving a code mixed verb were examined with respect to the above predictions. Of the 21 Nepali ML utterances with a mixed English verb, 20 involved "do constructions" (15a-e), and only 1 English verb occurred on its own (15f). In (15f), the verb "see" is placed at the beginning of the sentence and could be considered an EL island. There are only 2 examples of English ML utterances with Nepali verbs, and, as predicted, these verbs are inserted as bare forms (15g-h).

(15a). *ani* TRY *gaar-chhau*
then do-Pres:2Sg:Pej
'then try'

(15b). *arko* PIECE TAKE *gaar-ne*
another do-Fut
'take another piece'

(15c). *ma* HELP *gaar-chhu*
1Sg:Nom do-Pres:1Sg
'I'm helping'

(15d). *haajur* START *gaar-chhau*
2Sg:Hon do-Pres:2Sg:Pej
'you start'

(15e) *mai-le* MIX *gaare* *sak-yo*
1Sg-Instr do finish-PstPt
'I finished mixing'

(15f). SEE, *ma* *dherai* *thulou* *chhu*
1Sg:Nom very big Cop:Pres:1Sg
'see, I am very big'

(15g). put adjuda[10] and *PAK* like that
cook
'put water and cook like that'

(15h). Mommy, put adjuda, *ANDHA* and *PAK*
egg cook
'Mommy, put water, egg, and cook'

[10] "adjuda" is a made up word meaning water. It is neither English nor Nepali.

5.6. *Further Issues*

Both sibling pairs were able to obey the constraints of the MLF. Though the differing structures of their languages led to differing code mixed structures, the children resembled each other in that they all obeyed the SMP, MOP, and congruency constraints. No clear difference in ability to adhere to these constraints was apparent between the sibling pairs. It would appear that factors that affect language choice may not affect the ability to adhere to grammatical constraints on code mixing. The minority/majority language distinction does not seem to play a role in the grammar of code mixing. Clearly the decision about whether or not to code mix, and when it is appropriate to code mix, is affected, in part, by the role a child's minority language plays in society and especially by language dominance/ability. This will affect a child's rate of code mixing with different interlocutors. However, once the decision has been made to code mix, grammatical constraints come into play. A potential area for future research could be to examine how the minority/majority language distinction influences what types of elements a child chooses to code mix.

What about the question of how the minority/majority language distinction affects a child's language proficiency? The Nepali children in this study seem to be reluctant to speak their minority language; as a result, they possess a lower language proficiency, as reflected by their language dominance measures. Could one not argue then that the minority language may affect a child's overall proficiency, resulting in lower grammatical abilities, which could be reflected in an inability to adhere to the MLF? Clearly not. Though both APR and ANA have low scores on the dominance measures for Nepali (MLU, word types, etc), their ability to adhere to the constraints of the MLF model clearly indicate an understanding of the grammars of their two languages and the way they must interact for code mixing to occur. It appears that vocabulary/ lexical development

is the vulnerable area in language dominance: the Nepali-English children, though they have small Nepali vocabularies, demonstrate a high level of linguistic control and knowledge of the structure of their languages.

Though there were no real developmental trends in the structural aspects of code mixing, there were such trends for the interlocutor sensitivity measures. This raises the question of whether these are separate forms of knowledge. These children have clearly demonstrated their ability to adhere to adult-like structural constraints, indicating that they possess language-specific syntactic knowledge from an early age. The developmental trend apparent for the interlocutor sensitivity is most likely related to the development of the children's lexicons. Through her use of gestures and her limiting of code mixing to one-word responses, ANA clearly indicated a reluctance to code mix and did so only when repeatedly asked for a response by the Nepali stranger. This seems to indicate a sensitivity to the needs of the stranger, but an inability to meet them, probably because of a limited vocabulary. These children appear to be communicating to the best of their abilities. They speak with the monolingual strangers as much as possible in the strangers' languages, however, they are sometimes constrained to code mix by a lack of lexical items in that language. They do not seem to lack structural knowledge, however, and are thus able to obey structural constraints.

5.7. Conclusions

The question posed at the beginning of this chapter was whether the young children adhere to the same structural constraints on code mixing as adults, or whether children acquire these constraints gradually. As a whole, the data in this study indicate that children start code mixing in an adult-like manner and do not necessarily show a developmental shift. With respect to the three major constraints of the MLF model—the

SMP, the MOP, and ML Blocking—these children showed very few violations. Based on a 90- percent-use–in-obligatory-contexts criterion, they showed a mastery over all three constraints. Paradis *et al* (2000) did find a developmental trend in violations to the SMP, and, although this trend was not apparent in this data, it is possible that because they studied children at 2;0, 2;6, 3;0, and 3;6 (whereas this study only examined children at 2;3 and 4;0), their study provided a more accurate picture of this phenomenon. They do question, however, whether factors other than an awareness of the SMP underlie the developmental trend, citing as one possibility the children's developing lexicons. The results of this study suggested that language dominance may play a role in motivating SMP violations. All children in this study showed a very high adherence to the MOP, and the only violation observed was produced by the four-year-old, seemingly ruling out any developmental trend with respect to the MOP. Similarly, all children showed a sensitivity to the ML blocking, again, with the only unusual behaviour being exhibited by the four-year-old.

The MLF model seems to transcend these children's attitudes towards their societal/non-societal languages. All four children adhered to the SMP and MOP and followed the congruency constraints. This adherence to the constraints of the MLF indicates a structural knowledge of the grammars of their languages that appears at an early age and seems to be present even while lexical knowledge/ability is still developing.

Chapter Six

6.1. Questions Addressed in this Study

In essence, this study sought to address three major issues concerning code mixing: (1) Do children show interlocutor sensitivity, both with their parents and with strangers? (2) What are the effects of internal factors (language status and language dominance) and external factors (parental response and parental modeling) on code mixing? (3) Are there structural constraints that govern the code mixing behaviour of bilingual children?

The impetus for this study was to determine what role the majority/minority language distinction plays in influencing code mixing behaviour (as represented by the three aforementioned questions), an issue that has not yet been addressed in the literature. In addition, children aged 2;3 and 4;0 were studied in an attempt to determine what, if any, developmental trends there are in the "whys" and "hows" of child code mixing.

6.2. Interlocutor Sensitivity

All four children studied were able to differentiate their languages and to use them in contextually appropriate ways. They were all highly interlocutor sensitive, addressing most of their respective language utterances to the appropriate interlocutor (i.e. in the stranger condition, 100% of APR's Nepali utterances were addressed to the Nepali stranger). Not only were these children able to follow the language lead of familiar interlocutors, they could do the same with unfamiliar interlocutors, and they could judge the language proficiency of the unfamiliar adults as well. In other words,

they were able to assess the monolinguality of the strangers and adjust their own language behaviour accordingly.

Though all four children behaved in a manner suggestive of an awareness of the strangers' language proficiencies, the Nepali-English children showed more concessions to the strangers than the French-English children did, indicating a greater sensitivity to their monolinguality. When speaking with the English stranger, neither APR nor ANA code mixed at all. When speaking with the Nepali stranger, though constrained by low proficiency to code mix, the children used many alternate strategies to avoid code mixing, or to keep the amount of code mixed material to a minimum. From the session with their Nepali mother to the session with the Nepali stranger, their code mixing rates dropped by 22.88% and 31.29% respectively. All of APR's intra-utterance mixes had Nepali as the ML, 82% of which involved the insertion of a single English EL item only. In the session with the Nepali stranger, ANA used gestures in an attempt to avoid code mixing: her use of physical responses to questions equaled the total amount of inter- and intra- utterance mixes that she used during that session, and 26 out of 33 of her code mixed utterances were one-word responses. Clearly she was doing her utmost to limit the amount of English used during that play session. DAN did not seem to use any alternate strategies to code mixing. He was able to avoid code mixing with the English stranger, but, though he dropped his code mixing rate by 5% from the session with his father to the session with the French stranger, this shift is less striking than the one exhibited by APR. When speaking her dominant language, BRG code mixed at a higher rate (5.69% in total) than ANA did when speaking her dominant language (0%). Because her dominance scores are similar to those of ANA, she should not have been more constrained by a lack of ability to code mix than ANA was, and thus, her higher rate of mixing is arguably due to a lesser degree of sensitivity to the monolingualism of the stranger than was exhibited by ANA.

6.3. The Interrelation of Internal and External Factors

Although one is able to tease apart the influence of many of these factors, there are also many levels at which the internal and external factors are interrelated.

6.3.1 Internal Factors

When speaking with their parents, the Nepali-English children showed reluctance to use their non-societal language. Their rates of code mixing when speaking with their mother during the Nepali play session were startlingly high: APR's code mixed utterances constituted 50.49% of her utterances, and ANA's 62.5%! Language ability may have played a role in this. Both children are English-dominant, so perhaps lexical gaps constrained them to code mix at this rate. Clearly language ability affects the reasons a child code mixes, but APR and ANA showed themselves able to code mix at much lower rates with the Nepali stranger. At the same time, they were able to keep the code mixing rates low by limiting the subject of their discourse to the concrete play situation at hand. Perhaps the children used more code mixing with their mother because they wanted to communicate at a higher/more abstract level than they did with the stranger. Clearly, both language status and language dominance are interrelated: the Nepali-English children's reluctance to use their non-societal language has so limited their proficiency in that language that code mixing is the only means by which they can achieve meaningful communication. At this point the question is, do they code mix because they do not want to speak their non-societal language, or are they constrained by level of language ability? As discussed in chapter four, the gulf between their dominance scores in their dominant and non-dominant languages widened with age. ANA's Nepali language scores, though lower than her English scores, are more comparable to BRG's set of dominance scores than APR's are to DAN's. At the age of

four, APR's Nepali seems still to be at a two-year-old's level. One cannot wonder at her reluctance to use Nepali, if she can only communicate using a two-year-old's linguistic abilities.

DAN and BRG, on the other hand, have shown little, or no, reluctance to use either of their languages. Though siblings, DAN is English dominant whereas BRG is French dominant, an indication that both children have access to both languages within and outside the home, and that both feel that the two languages are valuable. Their rate of code mixing is higher with their parents than with the strangers, indicating they are aware of their parents' bilinguality. The difference between the two rates is not sufficient, however, to indicate a reluctance to speak one of their languages.

Language dominance plays a large role in children's code mixing. The younger children code mixed at higher rates than their older counterparts. This only makes sense since younger children have smaller vocabularies (as well as less developed language skills), as is shown by their scores on the factors used to determine language dominance (MLU, upper bound, word types, verb types, and volubility). It should be noted as well that all the children in this study code mixed more when using their non-dominant language than when using their dominant language. This was true for both inter- and intra-utterance mixing. When speaking their non-dominant languages, the children with the weaker scores on the five measures listed above code mixed considerably more than did those with the stronger scores. For example, APR's non-dominant language scores (Nepali) are considerably lower than DAN's (French) and, when speaking Nepali, she code mixed at a much higher rate (50.49% with her mother) than DAN did when speaking French (26.47% with his father). The same holds true for ANA (62.5% with her mother) and BRG (27.42% with her mother). As mentioned earlier, the Nepali-English children may initially have been reluctant to use their non-societal language with bilinguals because of its "low" status. Not having used their Nepali has

resulted in poor productive language skills (i.e. small vocabularies) which, in turn, have made code mixing a necessity for meaningful/ abstract conversation. These children may be able to stretch their Nepali skills to cover "small talk" and concrete situations, but for deeper communication, their language abilities (or lack thereof) make code mixing necessary.

Clearly both language status and language dominance have strong, and sometimes separate, effects on code mixing, but, it is difficult to disentangle these effects. Language status appears to have an initial effect on language dominance. However, once a child's reluctance to speak a non-societal language has weakened his ability in that language, then dominance and status appear to feed off each other.

6.3.2. External Factors

Although some articulation of the PDH must be viable because children do learn how to code switch according to the socio-pragmatic norms of the linguistic community in which they live, this study found no support for Lanza's (1992) articulation of the PDH. In fact, whereas the PDH would predict a positive correlation between discourse strategies and rate of code mixing, there was a negative correlation, albeit a non-significant one.

Nicoladis and Genesee (1998) also found a negative correlation between parental strategies and child code mixing rates. One possible reason they presented for their results differing from those of Lanza was the variance in sociolinguistic context between the two studies. They speculated that Siri's English speaking mother may have worried that her child's English was at risk in Norway and, therefore, encouraged more monolingual communication; whereas the parents in Montreal, a bilingual community, may not have had this worry. The results of the present study did not support this

speculation, however. On the one hand, BRG's mother has admitted to encouraging more use of French out of concern that living in Alberta may limit BRG's French abilities, and BRG has become French-dominant. On the other hand, APR and ANA's parents are very worried about their children's Nepali being at risk (I have heard them share this concern with their children), but still APR and ANA continue to code mix when speaking Nepali.

Another possible reason for the negative correlation between discourse strategies and rates of code mixing in this study is that the children may not have grasped the subtle implications of the parental strategies. Interestingly enough, the two younger children responded to the minimal grasp strategy with extremely high levels of code mixing, seeming to interpret it as a request for repetition rather than an indication that their language choice had caused a communicative breakdown! In fact, ANA once repeated herself 19 times, apparently believing repetition would assist her mother in understanding the statement, "pretending cookie". How is a child to know whether their parent is questioning their language choice, pronunciation, or coherence? Further complicating matters, the expressed guess and adult repetition strategies can be virtually identical, apart from intonation, if the adult has correctly guessed what the child intended to say. Also, a move on strategy may not necessarily signal comprehension, as an adult may move the play situation on to something unrelated to what the child has just said.

If a child's cognitive ability plays a role in his ability to respond to the subtle implications of the discourse strategies, then the four-year-olds in this study should, conceivably, have behaved more in keeping with the predictions of the PDH than did the two-year-olds, and yet this was not the case, except perhaps with regard to "appropriate" responses to the minimal grasp strategy. Since the adults used a different minimal grasp strategy with the older children than with the younger children, it is difficult to say

whether the difference in response was due to more developed cognitive abilities on the part of the children or to different tactics on the part of the parents.

Language dominance, and by extension language status, seemed to play a major role in determining code mixing rates with parents, whatever strategy the parent chose. APR code mixed at a rate of 50.49% with her Nepali mother (in her non-dominant language), though her mother used a more monolingual discourse style, and at a rate of 1.02% with her father in English (her dominant language), though her father used a more bilingual style. The children also code mixed less frequently with the strangers than with their parents, whether or not the strangers used more bilingual strategies than did the parents. Some of the strangers used a move on strategy, probably in an attempt to keep communication flowing; thus, by Lanza's standards, they had a more bilingual style than the parents did, and yet, the children were still sensitive to their monolinguality.

Whereas no evidence was found for the first external factor, the PDH, there was evidence for the MH. There was a significant positive correlation between the mixing rates of the adults and children. It was difficult, though, to separate the effects of input and language dominance because it also held true that all the children code mixed less with the adult who spoke their dominant language. It would be necessary to examine children speaking both their dominant and non-dominant languages with strangers who code mix to varying degrees in order to tease apart the effect of language dominance from the capacity of bilingual children to vary their language use according to the input they receive.

In any case, it is clear that external factors must play a role in shaping the code mixing behaviour of children because children are eventually able to code mix according to societal norms. There are still many questions remaining regarding what these factors may be and how they influence the language behaviour of children.

6.4. The MLF Model

The MLF model offers a comprehensive set of constraints for code mixing. Clearly children develop the ability to code mix according to the norms of their socio-linguistic community. The question asked in this study was, when do children show evidence of adherence to structural constraints on code mixing? In other words, how do children code mix? Do they code mix in accordance with a set of constraints as adults do, or do they code mix according to their own constraints, or even none at all?

This study provided evidence that, even at the age of two years, children code mix according to the constraints delineated in the MLF model: the system morpheme principle (SMP), the morpheme order principle (MOP), and matrix language (ML) blocking. In fact, there were very few violations of any of these principles, and based on a 90-percent-use-in-obligatory-contexts criterion, the children showed a mastery over all three constraints. The results of this study support those of Paradis *et al* (2000), except with respect to the SMP. Paradis *et al* found a developmental trend in violations to the SMP, possibly because they studied children at four different ages, whereas this study observed children at only two different ages, jumping from 2;3 to 4;0 and missing the ages in which the developmental trend had been found. Adherence to both the MOP and to ML blocking was high, with the only violations of either constraint being exhibited by the four-year-old, seemingly ruling out any developmental trend.

Although the internal and external constraints appear to be inter-related, the structural constraints appear to be independent. In other words, the "whys" of code mixing are separate from the "hows" of code mixing. Many factors affect why a child code mixes, but once code mixing has been initiated, grammatical knowledge controls the structure of the code mixed utterances, even in children whose small vocabularies cause their language skills to appear weak.

6.5. Developmental Trends

In this study, no developmental trend in the form of code mixing (ability of children to adhere to code mixing constraints) was found, whereas there was a definite trend in the rate of code mixing. Although the children in this study were clearly interlocutor sensitive from a very early age, language dominance and vocabulary size significantly affected their rate of code mixing. Children will use whatever linguistic resources they have at their disposal in order to keep communication going. As they age and their vocabularies grow, their need to code mix diminishes. There may also be a developmental trend in the growth of children's language abilities that is motivated by the status of their languages, as indicated by APR's stunted language development in her non-societal language, in comparison to DAN's development in his.

Children's ability to determine the appropriateness of code mixing may also develop with age; the older children showed themselves more sensitive to the monolinguality of their interlocutors than the younger children. But even here it is nearly impossible to separate the effects of sensitivity and language ability. Did the older children code mix less because they had larger vocabularies or because they were more interlocutor-sensitive? Clearly there were differences in the sensitivities of the children, as exhibited by ANA's greater sensitivity to the English stranger than BRG's to the French stranger, though their language scores were similar. On the other hand, although ANA code mixed more than the four-year-olds, she also seemed to use more alternate strategies in an effort to avoid code mixing, indicating that she knew her code mixing was inappropriate. Can we judge a child's interlocutor sensitivity only by the rate of his code mixing, or must other factors be considered?

Despite the clear developmental trends apparent in language ability, once code mixing has been initiated, code mixing constraints come into play, whatever the age and/or language ability of the child.

6.6. Possible Areas for Further Research

This study has clearly shown the enormous influence of language ability on code mixing, both in terms of vocabulary size and language dominance. Though a great effort was made to distinguish possible influences on the data, it was often difficult to separate the effects of language dominance and vocabulary size from the effects of interlocutor sensitivity, language status, and rates of adult code mixing. Further research designed to isolate the effects of language ability could shed considerable light on the motivations behind children's code mixing.

This was a preliminary study designed to examine the effects of the majority/ minority language distinction on the code mixing behaviour of children. Future studies of children who speak languages at different points along the minority continuum could provide valuable insight. Also of interest would be how children associate physical characteristics with linguistic abilities ("she has a white face so she won't be able to understand").

I found no evidence for Lanza's (1992) formulation of the PDH, and yet, because children come to code mix according to societal norms, parental speech acts must affect children's code mixing. An investigation of children of many different ages may indicate whether only older children are able to respond to the subtle implications of adult responses, or whether responses other than those proposed by Lanza are key in influencing children's code mixing. Future studies exploring how parents affect their bilingual children's choice of language are clearly called for. Also, an examination of the

links between language dominance and the amount of code mixing in the input children receive could provide fertile ground for future researchers. Genesee *et al's* (in press) work is an exciting beginning in the investigation of children's sensitivity to the language input they receive. As an extension to this work, further research into both languages a child speaks could prove fruitful.

The present study has shown that even very young children are highly interlocutor-sensitive, that they code mix primarily out of necessity, and that they are able to adhere to structural constraints that require a sophisticated grammatical awareness even at a very early age (and even with a limited vocabulary). In addition, other factors have been found to motivate bilingual children's code mixing behaviour; these include the child's perception of the status a given language is accorded by society, the child's language dominance, and parental modeling.

Bibliography

Acredolo, L. & Goodwyn, S. (1988). Symbolic gesturing in normal infants. *Child Development*, 1988, 59, 2, 450-466.

Auer, P. (1999). From codeswitching via language mixing to fused lects : toward a dynamic typology of bilingual speech. *International Journal of Bilingualism, ¾,* 309-332.

Barnes, L. & Fedele, E. (1997). Focus on the family: An exploration in bilingualism. *Language Matters*, 28, 214-229.

Becker, K. (1997). Spanish/ English bilingual codeswitching: a syncretic model. *Bilingual Review, 22:1,* 3-30.

Berk-Seligson, S. (1986). Linguistic constraints on intrasentential codeswitching. *Language in Society 15,* 313-348.

Bernsten, J. (1990). *The Integration of English Loans into Shona: Social Correlates and Linguistic Consequences.* Ph.D. dissertation. East Lansing MI: Michigan State University.

Bolonyai, A. (1998). In between languages: Language shift/ maintenance in childhood bilingualism. *The International Journal of Bilingualism, 2, 1, 21-43.*

Blommaert, Jan (1992). Codeswitching and the exclusivity of social identities: some data from Campus Kiswahili. *Journal of Multilingual and Multicultural Development, 13,* 57-70.

Brown, R. (1973). *A first language: the early stages.* Cambridge, MA: Harvard University Press.

Chambers, J.K., (1979) (ed.) *The Languages of Canada.* Montreal: Didier.

Clark, T.W. (1977). *Introduction to Nepali: a first year language course.* London: School of Oriental and African Studies.

Döpke, S. (1986). Discourse structures in bilingual families. *Journal of Multilingual and Multicultural Development,* 7, 6, 493-507.

Döpke, S. (1998). Competing language structures: the acquisition of verb placement by bilingual German-English children. *Journal of Child Language 25,* 555-584.

Deuchar, M. & Quay, S. (2000). *Bilingual Acquisition: Theoretical Implications of a Case Study.* Oxford University Press.

Fasp, W., Jaspaert, K., Kroon, S., (1992). (ed.). *Maintenance and Loss of Minority Languages.* Amsterdam: John Benjamins Publishing Company.

Finlayson, R., Calteaux, K., & Myers-Scotton, C. (1998). Orderly Mixing and accommodation in South African codeswitching. *Journal of Sociolinguistics, 2/3*, 395-420.

Genesee, F. (1989). Early bilingual development: One language or two? *Journal of Child Language, 16,* 161-179.

Genesee, F. (in press). Bilingual first language acquisition: Exploring the limits of the language faculty. *Annual Review of Applied Linguistics, V.21: Language and Psychology.*

Genesee, F., Boivin, I., & Nicoladis, E. (1996). Bilingual children talking with monolingual adults: A study of bilingual competence. *Applied Psycholinguistics*, 17, 427-442.

Genesee, F., Comeau, L., & Baynton, L. (in press). The modeling hypothesis and child bilingual code-mixing.

Genesee, F., Nicoladis, E., & Paradis, J. (1995). Language differentiation in early bilingual development. *Journal of Child Language 22*, 611-631.

Gingras, R. (1974). Problems in the description of Spanish/English intrasentential code-switching. In G.A. Bills (ed.), *Southwest Areal Linguistics.* San Diego: Institute for Cultural Pluralism (pp 167-174).

Goldin-Meadow, S. & Mylander, C. (1984). Gestural communication in deaf children: The effects and noneffects of parental input on early language development. *Monographs of the Society for Research in Child Development*, 1984, 49, 3-4, 1-121.

Goodz, N. (1989). Parental language mixing in bilingual families. *Infant Mental Health Journal* 10, 25-43.

Grosjean, F. (1997). Processing mixed languages: Issues, findings and models. In A. de Groot & J. Kroll (Eds.), *Tutorials in Bilingualism.* Malhwah, NJ: Erlbaum (pp. 225-254)

Gumperz, J.J. (1977). The sociolinguistic significance of code-switching. *RELC Journal, 8*, 1-34.

Hale, A. &Watters, D. (1973). *Clause, Sentence, and Discourse Patterns in Selected Languages of Nepal, part II.* Davis, I. (ed). Kathmandu: Tribhuvan University Press.

Hale, A. (1973). *Clause, Sentence, and Discourse Patterns in Selected Languages of Nepal, part III.* Davis, I. (ed). Kathmandu: Tribhuvan University Press.

Hale, A. (1973). *Clause, Sentence, and Discourse Patterns in Selected Languages of Nepal, part IV.* Davis, I. (ed). Kathmandu: Tribhuvan University Press.

Haugen, E., McLure, J.D., & Thomson, D. (1981). (eds.). *Minority Languages Today.* Edinburgh: Edinburgh University Press.

Heller, M. (1982). Negotiations of language choice in Montreal. In J.J. Gumperz (ed.), *Language and Social Identity* (pp.108-118). Cambridge: Cambridge University Press.

Heller, M. (1992). The politics of codeswitching and language choice. *Journal of Multilingualism and Multicultural Development, 13,* 123-142.

Imedadze, N. (1978). On the psychological nature of child speech formation under conditions of exposure to two languages. In E. Hatch (ed.), *Second Language Acquisition: a book of readings.* Rowley MA: Newbury House.

Juan-Garau, M., & Perez-Vidal, C. (2001). Mixing and pragmatic parental strategies in early bilingual acquisition. *Journal of Child Language, 28, 59-86.*

Kanno, Y. (2000). Bilingualism and identity: The stories of Japanese returnees. *International Journal of Bilingual Education and Bilingualism,* 3, 1, 1-18.

Karki, T. & Shrestha, C. (????). *Basic Course in Spoken Nepali.* Kathmandu: Shanti Offset Press (P.) Ltd.

Koppe, R. & Meisel, J. (1995). Code-switching in bilingual first language acquisition. In L. Milroy & P. Muysken (eds.), *One Speaker, Two Languages,* pp. 276-301. Cambridge: Cambridge University Press.

Labov, W. (1971). The notion of 'system' in creole languages. In D. Hymes (ed.), *Pidginization and Creolization of Languages.* Cambridge: University Press (pp 447-472).

Lance, D. (1975). Spanish-English code-switching. In E. Hernandez-Chavez et al. (eds), *El Lenguaje de los Chicanos.* Arlington: Centre for Applied Linguistics (pp 138-153).

Lanza, E. (1992). Can bilingual two-year-olds code-switch? *Journal of Child Language 19,* 3, 633-658.

Lanza, E. (1997). Language contact in bilingual two-year-olds and code switching: Language encounters of a different kind? *International Journal of Bilingualism 1, 2* 135-162.

Lederberg, A. & Morales, C. (1985). Code switching by bilinguals: Evidence against a third grammar. *Journal of Psycholinguistic Research, 14, 2,* 113-136.

Leopold, W. (1970). *Speech Development of a Bilingual Child, vol. III.* New York: Northwestern University Press.

Li, W. (1994). *Three Generations, Two Languages, One Family.* Clevedon: Multilingual Matters.

Lindholm, K. & Padilla, A. (1978). Language mixing in bilingual children. *Journal of Child Language, 5,* 327-335.

Lo, A. (1999). Codeswitching, speech community membership, and the construction of ethnic identity. *Journal of Sociolinguistics,3/4,* 461-479.

MacWhinney, B., & Snow, C.E., (1990). The child language data exchange system: An update. *Journal of Child Language*, 17, 457-472.

Mayberry, R., Jaques, J., & DeDe, G. (1998). What stuttering reveals about the development of the gesture-speech relationship. *New Directions for Child Development*, 1998, 79, 77-87.

Mayberry, R.I. & Nicoladis, E. (2000). Gesture reflects language development: Evidence from bilingual children. *Current Directions in Psychological Science*, 9, 192-196.

Meisel, J. (1994). Code-switching in young bilingual children: The acquisition of grammatical constraints. *Studies in Second Language Acquisition*, 16, 413-441.

Muller, N. (1998). Transfer in bilingual first language acquisition. *Bilingualism: Language and Cognition 1* (3), 151-171.

Murrell, M. (1966). Language acquisition in a trilingual environment: notes from a case-study. *Studia Linguistica*, 20, 9-35.

Myers-Scotton, C. (1990). Elite closure as boundary maintenance: the case of Africa. In B. Weinstein (ed.) *Language Policy and Political Development.* (pp 25-42.) Norwood NJ: Ablex.

Myers-Scotton, C. (1992). Comparing codeswitching and borrowing. *Journal of Multilingual and Multicultural Development, 13,* 19-39.

Myers-Scotton, C. (1993). *Duelling Languages : Grammatical Structure in Codeswitching.* Oxford: Clarendon (pp47-119)

Myers-Scotton, C. & Jake, J. (1995). Matching lemmas in a bilingual language competence and production model: Evidence from intrasentential code switching. *Linguistics, 33,* 981-1024.

Myers-Scotton, C. & Jake, J. (in press) Explaining aspects of codeswitching and their implications. To appear in J. Nicol (Ed.), *One mind, Two Languages: Bilingual Language Processing.* Oxford: Blackwell.

Nicoladis, E. & Genesee, F. (1996). Bilingual communication strategies and language dominance. In A. Stringfellow, D. Cahana-Amitay, E. Hughes, & A. Zukowski (Eds.), *Proceedings of the 20th Annual Boston University Conference on Language Development* (pp. 518-527). Somerville, MA: Cascadilla Press.

Nicoladis, E., & Genesee, F. (1998) Parental discourse and codemixing in bilingual children. *The International Journal of Bilingualism,* 2,1, 85-99.

Nicoladis, E., Mayberry, R., & Genesee, F. (1999). Gesture and early bilingual development. *Developmental Psychology*, 35, 514-526.

Nicoladis, E. & Secco, G. (2000). The role of a child's productive vocabulary in the language choice of a bilingual family. *First Language 20*, 3-28.

Nortier, J. (1990). *Dutch-Moroccan Arabic Code Switching.* Dordrecht: Foris.

Pan, B. (1995). Code negotiation in bilingual families: 'My body starts speaking english'. *Journal of Multilingual and Multicultural Development,* 16, 4, 315-327

Paradis, J. (in press). Beyond 'one system or two?'. In S. Döpke (ed.) *Cross-Linguistic Structures in Simultaneous Bilingualism.* Amsterdam/Philidelphia: John Benjamins.

Paradis, J., Crago, M., Genesee, F., & Rice, M. (in press). French-English bilingual children with SLI: How do they compare with their monolingual peers? *Journal of Speech Language and Hearing Research.*

Paradis, J.,& Genesee, F. (1996). Syntactic acquisition in bilingual children. *Studies in Second Language Acquisition 18*, 1-25.

Paradis, J., Nicoladis, E., & Genesee, F. (2000). Early emergence of structural constraints on code-mixing: Evidence from French-English bilingual children. *Bilingualism: Language and Cognition, 3, 3,* 245-261.

Pfaff, C. (1979). Constraints on language mixing: intrasentential code-switching and borrowing in Spanish/English. *Language, 55, 2,* 291-318.

Poplack, S. (1980). Sometimes I'll start a sentence in Spanish y termino en espanol: toward a typology of code-switching. *Linguistics*, 18, 581-618.

Poplack, S. (1993). Variation theory and language contact. In Preston, D. (ed) *American Dialect Research.* (pp 251-286.) Amsterdam: John Benjamin Publishing Company.

Pye., C. (1986) One lexicon or two?: An alternative interpretation of early bilingual speech. *Journal of Child Language, 13,* 591-593.

Reyes, R. (1974). *Studies in Chicano Spanish.* Harvard dissertation.

Ronjat, J. (1913). *Le développement de langage observé chez un enfant bilingue.* Paris: Champion.

Sankoff, D. & Poplack, S. (1981). A formal grammar for code-switching. *Papers in Linguistics: International Journal of Human Communications, 14,* 1981.

Sankoff, D., Poplack, S., & Vanniarajan, S. (1990). The case of the nonce loan in Tamil. *Language Variation and Change, 2,* 71-101.

Skutnabb-Kangas, T. (1981). *Bilingualism or Not: The Education of Minorities.* Clevedon: Multilingual Matters.

Swain, M. (1972). Bilingualism as a first language. Unpublished Ph.D. dissertation, University of California, Irvine.

Van Valin, R. & LaPolla, R. (1997). *Syntax: Structure, Meaning, and Function.* U.K.: Cambridge University Press.

Vihman, M. (1982). The acquisition of morphology by a bilingual child: A whole word approach. *Applied Psycholinguistics*, 3,141, 60.

Vihman, M. (1985). Language differentiation by the bilingual infant. *Journal of Child Language,12,* 297-324.

Vihman, M. (1998). A developmental perspective on codeswitching: Conversations between a pair of bilingual siblings. *The International Journal of Bilingualism, 2, 1,* 45-84.

Volterra, V. & Taeschner, T. (1978) The acquisition and development of language by bilingual children. *Journal of Child Language, 5,* 311-326.

Wallace, W. (1981), Object marking in the history of Nepali: a case of syntactic diffusion. *Studies in the Linguistic Sciences, 11*, 2, 107-128.

Wallace, W. (1982). The evolution of ergative syntax in Nepali. *Studies in the Linguistic Sciences*, *12*, 2, 147-211.

Wallace, W. (1987). The government and binding analysis of Nepali equi and subject-raising clauses. *Studies in the Linguistic Sciences*, *17*, 1, 163-179.