A STUDY OF CODE SWITCHING IN NEUROLOGICALLY NORMAL AND APHASIC MALAYALAM - ENGLISH BILINGUALS

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Register No. M2K10

A Dissertation submitted in part fulfillment for the
final year M.Sc, (Speech and Hearing)
University of Mysore, Mysore

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MAY - 2002

CERTIFICATE

This is to certify that the dissertation entitled "A STUDY OF CODE SWITCHING IN NEUROLOGICALLY NORMAL AND APHASIC MALAYALAM - ENGLISH BILINGUALS " is the bonafide work in part fulfillment for the degree of Master of Science (Speech and Hearing) of the student with Register No. M2K10.

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CERTIFICATE

This is to certify that the dissertation entitled "A STUDY OF CODE SWITCHING IN NEUROLOGICALLY NORMAL AND APHASIC MALAYALAM - ENGLISH BILINGUALS " has been prepared under my supervision and guidance. It is also certified that this has not been submitted earlier in any other University for the award of any Diploma or Degree.

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DECLARATION

I hereby declare that this dissertation entitled "A STUDY OF CODE SWITCHING IN NEUROLOGICALLY NORMAL AND APHASIC MALAYALAM - ENGLISH BILINGUALS " is the result of my own study under the guidance of **Dr. Shyamala Chengappa,** Reader and Head, Department of Speech Pathology, All India Institute of Speech and Hearing, Mysore, and has not been submitted earlier at any other University for the award of any Diploma or Degree.

Mysore
May 2002   **Reg. No. M2K10**

ACKNOWLEDGEMENT

My heartfelt thanks to Podimon uncle, Marykutty aunty, Rijo and Ritty for making my stay at Trivandrum most beautiful and memorable. Thanks a lot for all the help and support you gave me for completing my data collection and for making me feel at home.

I would like to acknowledge Rajan uncle, Lillikutty aunty, Rajani, Georgy, Shalini and Anne for all the wonderful times I shared at your place. You will always have a special place in my heart.

My dearest Amma, Daddy, Karuna and Soumya, you make the best family in the world. Thanks for all the special memories that you have given me and for standing by me and believing me even when everything was against me. I couldn't have wished for anything better.

Kiru, you are whom I would point to if anyone asked me to tell what true friendship is all about. We have had our good times and differences of opinions. But through it all we were able to sail through, leaving a heart full of very special memories which I will always treasure. Let me tell you this once again "And friends are friends forever, if the Lord's the Lord of them......and a life time's not too long to live as friends!

Anitha, my roomie, the one who had to put up with the many facets of me. I am really glad to have got you for a friend . Thanks a lot for your love, corrections, caring.... Know thee, that I treasure and value our friendship.

Anupriya, you will always be remembered whenever I look back at my AUSH life. May you get the best that life has to offer.

Anna and Ananthi, I am glad that I have come to know you better though I would have liked to know you a little more longer.

Siddhartha, thanks for being the pillar of support I could lean on in my times of trials and for understanding my joys and fears. You are one of the best things that happened to me *in* AUSH.

Thank you, all those people who have touched me in one way or the other - my classmates, seniors and juniors especially Kanaka, Priya Paul, Sanyu and many more. My life at AUSH was all the more sweeter because of you people.

AUSH, you have made me grow and understand that life is not just a bed of roses. You will always be looked back at, with bitter sweet memories.

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INTRODUCTION

The current approach in linguistic, psychological and neurolingusitic domains is to consider as bilinguals or multilinguals, all those people who use two or more languages or dialects in everyday lives (Grosjean. 1994).

Code switching is the alternative use by bilinguals of two or more languages in the same conversation (Milory and Muysken, 1995). The ability to switch linguistic codes, particularly within single utterances requires a great deal of linguistic competence (Muysken, 1995)

Code switching is a linguistic practice constrained by grammatical principles and shaped by environmental, social and personal influences including age, length of time in a country, educational background and social networks (Milory and Wei, 1995). It is best understood within the context of the role it serves in a speech community (Gumperz and Hernandez-Chavez, 1975; Myers-Scotton, 1993b); some communities accept code switching within a single context as the norm for their communicative interactions, others maintain a strict division between languages (Myers-Scotton, 1993b; Heller, 1995). In either case a bilingual speaker's switch in language can convey meaning which is superimposed on the linguistic content of the utterances, a function at times similar to prosodic and gestural cues in monolingual contexts (Auer, 1995).

When aphasic impairments occur in bilinguals or multilinguals virtually all aphasics show some sort of deficit in each language. Languages have been shown to behave differently or equally with equal or unequal extent of interference and substitution. . Bilingual aphasic speakers, like all speakers of multiple languages are required to identify and use the language or languages appropriate to communicative interactions. Aphasic speakers have reduced linguistic competence and face potential disruption in their ability to alternate linguistic codes (Perecman, 1984).

Code switching in neurologically impaired adults has been indirectly studied via a focus on language mixing, defined as inappropriate switching from one language to another (Perecman, 1984). There is evidence that language switching may involve shift not only from one language to another, but also from one channel of behaviour to another. Language mixing is a frequently observed recovery pattern among bilingual aphasics characterized by alternating language use at the word or sentence level, spontaneous translation, unexpected language switches, and / or linguistic interference (Junque, Vendrell, Vendrell - Brucet and Tobena, 1989; Paradis, 1995).

In the present study, the term code switching will be used to describe the alternative use of two languages in a conversational discourse, by both normals and aphasics.

Need for the Study :

1. Bilingualism is one of the less researched areas but has become an area of interest for present aphasiologists According to de Bot (1992) 50% of the world's population is bilingual. According to Reich (1986), 80% of India's population is bilingual / multilingual. Inspite of such figures bilingualism is still one of the least researched areas in India. Bilingualism as it exists in India, cannot be confused with the situation generally existing in the western world. As noticed by Mahapatra (1990), the bilingualism in the western world is not at a grass root level as in India. Hence, it is difficult to generalize results obtained from western studies, especially in terms of code switching, into the Indian context.

2. Aphasia in bilinguals is also least researched upon, especially in Indian context. It is also important that language variables be studied for intervention purposes. Hence, it is very important to investigate the language switching in bilingual aphasics in comparison with normals. So this study puts a foot forward in investigating and explaining the bilingual phenomena of language mixing in aphasics as well as normals.

3. Language mixing may reflect an extreme example of the inability to separately access languages, and it can be argued that it has not been identified in relation to the distinction with code switching. Grosjean (1985) observed that language mixing and translation are skills which all bilinguals need and that they are not necessarily indicative of a language deficit, and that they can only be understood in the context of language community. He identified factors important in interpreting code switching including language constraints of the test situation, and language knowledge and use of the language by the aphasic speaker before brain injury. He argued that increased code switching following neurological impairment may be a strategy used to compensate for a language deficit, and not a consequence of a brain damage induced language disorder. Thus again, a verification of this is warranted.

Aims of **the study:**

1. A disorder such as aphasia that impairs the use of each language of a bilingual speaker also could be expected to disrupt the interaction between the languages as reflected in code switching. Hence this study was taken up with the purpose of investigating the similarities and differences in the code switching behaviour of aphasic and neurologically normal bilingual speakers. This would lead to a better

understanding of code switching behaviour in normal and aphasic bilinguals.

2. The variation in the amount of code switching across normals and aphasics will also be studied.

REVIEW OF THE LITERATURE

An attempt is made here to review the literature pertaining to language mixing in multilingual aphasics and the related topics. The literature is reviewed under the following headings.

- Defining multilingualism / bilingualism

- Types of bilingualism

- Patterns of recovery

- Code switching in neurologically normal bilingual adults

- Aphasic reactions in multilinguals.

- Code switching in neurologically impaired bilinguals.

Defining Multilingualism

The phenomenon of bilingualism is so widely prevalent and multifaceted that it is, indeed, very difficult to define bilingualism in a manner covering all aspects. One could, however, characterize the phenomenon in a more or less comprehensive manner.

An individual's knowledge of more than one language may be viewed from the point of view of his / her proficiency in each language in terms of various language skills, various linguistic components, uses to which each

language is put and the contexts that control the choice and use of each of these languages. (Thirumalai and Chengappa, 1986).

Bilingualism has been widely viewed as the equal mastery of two languages. Bloomfield (1933) defined it as the native - like control of two languages, Haugen (1953) as the ability to produce complete meaningful utterances in the other language, Diebold (1961) as including simply passive knowledge of the written language or any contact with a second language and the ability to use it in the environment of the native language, and Macnamara (1967) as even the possession, to a minimal degree of one of the language skills (speaking, writing, listening and reading and their various complexities).

Bilingualism is also viewed as including the various stages of incipient bilingualism, such as the ability to give lexical equivalents, the change from one language to the other. It involves also the question of interference: to what extent does a bilingual keep his languages apart or fuse them together, and how does one language influence his use of the other and under what conditions. Thus, bilingualism is defined as a behavioural pattern of mutually modifying linguistic practices, varying in degree, function, alternation and interference (Mackey, 1970).

Fabbro (1997) has described bilinguals as people who speak and understand two languages or two dialects and who are able to avoid mixing the two linguistic systems when writing and speaking.

However, the current approach in linguistic psychological and neurolinguistic domains is to consider as bilingual or multilingual all those people who use two or more languages or dialects in everyday lives (Grosjean, 1994).

Several neuropsychological studies suggest that it is not correct to consider multilingual subjects as 'two monolinguals in one person' (Grosjean, 1989). Indeed it is not necessary for multilinguals to have a perfect knowledge in all the languages they know, to be considered as such. Multilinguals acquire and use their languages for different purposes, in different domains of life and with different people. Irrespective of the degree of knowledge one has of the languages he know, he should definitely be considered a multilingual (Fabbro, 1999).

On the basis of these methodological premises, it was soon found that at present more than half of the world population is multilingual (Grosjean, 1982, 1994). As a direct consequence, multilingual individuals suffering from developmental or acquired disorders of speech and language do not

represent isolated exceptional cases - but probably rather the majority of clinical cases.

There is a great need to further our understanding of aphasia in bilinguals to improve clinical intervention with bilingual patients and to shed light on the nature of bilingualism and of aphasia. Increasingly, there is a recognition that the study of bilingual language is not a separate field of inquiry but is part of research which seeks to understand language per se (de Bot, 1992; Tzelgov, Henic and Leiser, 1990).

Types of Bilingualism

Based on how the languages of a bilingual context are kept separate or fused together, based on the sequence of learning the languages of a bilingual context, based on whether the languages of a bilingual context are acquired in an informal, non-instructional set up, or these languages are acquired under formal instructional conditions, based on an apperception as to which of the languages of a bilingual context is dominant in the individual's use of languages, based on whether there is dialectal or language bilingualism etc., one could identify various types of bilingualism. (Thirumalai and Chengappa, 1986).

i) Compound versus coordinate versus subordinate bilingualism:

One of the earliest discussions on how language is represented in the minds of bilingual speakers is the three fold analysis proposed by Weinreich (1968). The two primary varieties of bilingual representations are type A, later called coordinate, and type B, renamed compound.

Compound bilinguals are thought to be individuals who have learnt both languages in the same context, or learned the second language through translation. Compound bilinguals attribute identical meanings to corresponding words and expression in their two languages. This is achieved generally through learning another language in a school situation, or through acquiring two languages in a home where both are spoken interchangeably by the same people in the same situations.

The coordinate bilinguals are thought to be those who have acquired two languages in different contexts and are thus better able to keep both languages apart. They derive different or partially different meanings from words in the two languages. The distinction in meaning is thought to arise from learning the two languages in different situations where the languages are rarely interchanged.

The third variety of bilingual representation is subordinate. In this case, the meanings for new words refer to words in another language, not to

concepts. The category of subordinate bilingualism was eventually dropped, largely because of refinements to the concept proposed by and Ervin and Osgood(1954).

ii) Dominant versus non —dominant language bilingualism:

Language dominance is defined as the proportional index of frequency of the effective and efficient use of one language with respect to another, (Taeschner, 1976). Here equal mastery of two languages is believed to be only a myth; this view asserts that usually one of the two languages is dominant. Many might even master the other language at the expense of their mother tongue and use it just as we find English used in many urban educated Indian families. Dominant language predominates, according to this view, in most language functions (Rao, 1975).

Patterns of Recovery

Aphasic patients who spoke two or more languages fluently before insult do not necessarily recover both or all of their languages at the same rate or to the same extent. A survey of the world literature on aphasia in bilinguals and polyglots by Paradis (1977) has revealed six basic patterns of recovery, parallel, differential, successive, antagonistic, selective and mixed (blended).

Recovery is said to be parallel when both (or all) languages are similarly impaired and restored at the same rate; differential when impairment is of a different degree in each language relative to premorbid mastery; successive when one language does not begin to reappear until another has been maximally recovered; antagonistic when one language regresses as the other progresses; selective when patients do not regain the use of one or more of their languages; and blended when patients systematically mix or blend features of their languages at any or all levels of linguistic structure (i.e. phonological, morphological, syntactic, lexical and semantic) inappropriately.

Three additional patterns of recovery have been reported over the past two decades, namely, alternating antagonism (Paradis, Goldblum and Abidi, 1982; Nilipour and Ashayeri, 1989); differential aphasia (Albert and Obler, 1978; Silverberg and Gordon, 1979), and selective aphasia (Paradis and Goldblum, 1989).

Alternating antagonism refers to the fact that, for alternating periods of time, patients have access to only one of their languages. Differential aphasia refers to different symptoms in each of the patient's languages so that the clinical picture is of one type of aphasia (eg. Broca's) in one language, and of another type (e.g. Wernicke's) in the other language.

Selective aphasia refers to obvious impairments in one language without any measurable deficit in the other (s).

Code Switching in Neurologically Normal Bilingual Adults

Code switching is a linguistic practice constrained by grammatical principles and shaped by environmental, social and personal influences including age, length of time in a country, educational background and social networks (Milory and Wei, 1995).

Speakers can use code switching to indicate a quote, to target a reference to a specific addresse in a group, to emphasize, focus, elaborate or clarify, to switch topics or modes or to convey emotional content (De Fina, 1989).

A bilingual or multilingual speaker is able to switch rapidly, at will, from one spoken language to another (Meuter and Allport, 1999). While switches of language sometimes occur unintentionally, particularly in movements of emotion or stress (Dornic, 1979, 1980; Grosjean, 1982), fluent bilinguals are generally efficient at language selection and in keeping their languages separate. Thus it is possible to listen to one language while speaking another (Grosjean, 1988). Indeed, skilled simultaneous interpreters temporally overlap speaking one language while listening to another languages by up to 75% of the time (Gerver, 1974).

Meuter and Allport (1999, did a study to find out the cost of language selection in bilingual language switching in naming. In their experimental study of language switching and selection neurologically normal bilinguals named numerals in either their first or second language unpredictably. Response latencies (RTs) on switch trials (where the response language changed from the previous trial) were slower than on nonswitch trials. As predicted, the language - switching cost was consistently larger when switching to the dominant LI from the weaker L2 than vice versa such that, on switch trials, LI responses were slower that L2. This 'paradoxical' asymmetry in the cost of switching languages is explained in terms of difference in relative strength of the bilinguals two languages and the involuntary persistence of the previous language set across an intended switch of language.

Aphasic Reactions in Multilinguals

Some patients present language disorders that seem to be typical of multilingual aphasics only. Subjects may switch from language to language, alternating their verbal expression between one and the other. Other subjects may mix linguistic elements from various languages in a single sentence. Switching and mixing are frequent in normal bilingual speakers too, but they reflect a pathological behaviour when produced during conversation with an interlocutor who is unable to understand both languages. It is not always

possible to draw a clear distinction between mixing and switching, but it seems that pathological switching tends to be related to lesions of frontal lobes (both left and right) and other right - hemisphere structures, whereas mixing tends to be correlated with post - rolandic lesions of the hemisphere (Fabbro, 1999).

Multilingual aphasics may also present disorders of translation (Paradis, 1984; Fabbro and Gran, 1997). One of these phenomena is the inability to translate, which may affect both directions of translation, namely from L1 to L2 and vice versa from L2 into L1 (Aglioti and Fabbro, 1993); another one is spontaneous translation, a compulsive 'need' to translate everything which is being said by the patients themselves and / or by their interlocutors (De Vreese et al., 1988); another still is translation without comprehension occurring when patients do not understand commands that are given to them but can nevertheless correctly translate the sentences uttered by an interlocutor to express these commands   (Fabbro and Paradis, 1995b); and finally paradoxical translation, when a patient can translate only into the language that he / she cannot speak spontaneously (Paradis et al., 1982).

Code Switching in Neurologically Impaired Bilinguals

Code switching in neurologically impaired adults have been indirectly studied via a focus on language mixing, defined as inappropriate switching from one language to another (Perecman, 1984).

Language mixing is found only in 7% of polyglot aphasics (Albert and Obler, 1978), most of whom are sensory aphasics (L' Hermitte, Hecaen, Dubios, Culioli and Tabouret- Keller, 1966).

An early reference to language mixing in a bilingual aphasic appears in Bastian (1875), where it is reported that a native German speaker living in England developed a hemiplegia with aphasia and began to mix English and German in his speech.

Herschemann and Poetzl (1920) report mixing of Czech and German in a Czech "pseudo motor aphasic" who spoke German as his primary language from the age of 14 years. Although subsequent to aphasia Czech dominated the patient's utterances (an observation which the authors relate to the fact that the patient became aphasic during a visit with Czech relatives), both Czech and German words appeared together in spontaneous speech as well as naming. The authors also note that German words were produced as their phonetically similar Czech counter parts.

Pick (1909) refers to two cases of sensory aphasia associated with left posterior damage who presented language mixing in their speech. Both cases spoke perfect Czech in addition to their native German. As the patients deteriorated, they began to answer Czech questions in German and German questions in Czech.

Poetzl (1925) reports that a 52 year old German who had recently studied Czech began to produce Czech words and expressions involuntarily in the midst of his German utterances following inferior parietal trauma. The example given is "Es fehlen mit die *vyrazy* es at, ja *nevim"*, where the italicized words are in Czech and the remaining words in German.

Kauders (1929) describes a German aphasic who had learned French and English perfectly at the age of 16. Following a stroke the pateint began to speak in unintelligble strings of syllables resembling palilalia. As he improved, his spontaneous speech became more recognizable as German but was noted to include French words, English word fragments, word blends of German and English, English affixes on German words, and English phrases. He would also begin to speak in French in the midst of German conversation. It is remarked that while German words were largely distorted by literal paraphasias, French and English words were less likely to include literal paraphasias. The patient seemed to produce more French in formal

test situations than in informal conversation although French and English were both present in the context of German conversational speech.

Hoff and Poetzl (1932) studied a left handed aphasic who was born in Italy for German parents. Presumably the patient spoke German at home, although the authors note that this information is not clear from the history they obtained. Subsequent to the onset of aphasia, the patient produced paraphasic speech consisting of fragments of Italian words, and lacking in coherence. Repetition tests elicited only Italian fragments. The patient answered in Italian even when addressed in German, except when he was responding to his doctor, in which case he produced the German word "besser" (better). This was the extent of his use of the German language.

Stengel and Zelmanowitz (1933) describe a 57 year old motor aphasic whose native language was Czech and who learned German fluently at the age of thirty five. Following a traumatic cerebral hemorrhage in the anterior portion of the hemisphere, the patient began to mix languages on naming tasks. The authors also note the mixing of words from the two languages, the production of German words with Czech plural affixes and the use of vocabulary from one language with the intonation of another. Language mixing was observed to be most pronounced when the patient was not instructed to speak in a specific language.

L'Hermitte et al., (1966) describe a 40 year old English - German. French polyglot right hander who developed a sensory aphasia subsequent to a left temporal lesion. The patient, a native English speaker had served in the military in Italy and then lived in Egypt and Germany before settling in Paris. L' Hermitte et al. report that the patient used English syntax with French vocabulary and produced English names on a French naming task, even through it was not possible for him to name in English upon request.

Schulze (1968) reports on a sensory and idiokinetic motor aphasia associated with a left parieto - temporal abscess, in a fifty five year old right handed Bulgarian man. The patient was a professor of German literature. In addition to Bulgarian and German he also spoke Russian and French and had good knowledge of English and Latin. Schulze describes German sounding paraphasias in the context of Bulgarian speech. In a Russian language examination, the patient produced Bulgarian words as well as Russian words with Bulgarian suffixes. Schulze reports that these errors went unnoticed by the patient although he was usually quite aware of his errors.

Mossner and Pilsch (1971) report the use of English words in predominantly German sentences in a German English motor aphasic, who had been operated for the removal of a tumor in the temporal lobe. The

patient was born in Germany, immigrated to Australia at the age of twenty, and returned to Germany at age thirty two.

Albert and Obler (1978) briefly mention the "linear mixing of elements from each language" in two cases of senile dementia in elderly bilinguals. The sixty year old patient was a native English speaker who had been stationed in Germany during World War II and was married to a native German. His aphasia was associated with a left posterior subdural hematoma.

Perecman (1984) investigated language mixing in a trilingual male with a history of brain trauma who demonstrated language mixing and unsolicited spontaneous translation in conventional speech. Perecman observed that these behaviours were atypical of neurologically intact multilinguals and indicative of a language deficit. However the language mixing was not compared directly to normal code switching nor was the sociolinguistic context in which it occurred considered. It was noted, for example, the "language mixing was particularly pronounced when the investigator shifted from one language to another within the same conversation task". If the subject knew the conversational partner was bilingual, code switching could be interpreted as a facilitatory strategy that enhanced communicative effectiveness rather than a language deficit (Munoz et al., 1999).

Gosjean (1985) commenting on Perecman (1984) argued that both language mixing (including utterance level mixing) and spontaneous translation are also found in normal polyglots, and that they may not therefore always be reflecting language deficits in aphasics. Only a good assessment of the patient's language and speech before and after the injury will determine if these behaviours do indeed reflect deficits.

Code switching as in the French - English example, "Va chercher Marc AND BRIBE HIM avec un chocolat chand with CREAM ON TOP", has received much attention recently from researchers who have studied the psychosocial and communicative factors underlying switching, the grammatical constraints or rules that govern intra and inter-sentential switching, and the developmental aspects of switching (Scotton and Ury, 1977; Pfaff, 1979; Poplack, 1980; Grosjean, 1982). It is now accepted by most researchers that code switching reflects linguistic and communicative strategies in polyglots speaking to one another, that natural switches (produced in relaxed atmosphere) are not marked off by prosodic markers, and that mixed discourses is understood as easily as monolingual discourse. Spontaneous translation, that is switching to the other language to say what has just been said in the first language, is also a well known communicative strategy which is used to emphasize or clarify a point. Thus Grosjean (1985) concluded that, if one takes the types of language mixes that Perecman

(1984) has found in the case studies of polyglot aphasics, one finds that most can also occur in normal polyglot speech.

Grosjean, (1985) also identified factors important to interpreting code switching including language constraints of the test situation (eg; language(s) spoken by the examiner, appropriateness of code switching), and language knowledge and use of the aphasic speaker before brain injury. He argued that increased code switching following neurological impairment may be a strategy used to compensate for a language deficit and not a consequence of a brain damage induced language disorder.

Schwartz (1994) describes a case of involuntary mixing in a 49 year old hexaglot Indian woman whose paroxysmal aphasia was manifested as the intrusion of totally irrelevant phrases and sentences in a language other than the one currently spoken (e.g., Gujarati intrusion while speaking English; English intrusion in Punjabi, Gujarati intrusion in Punjabi, Urdu intrusion in Gujarati, and Punjabi intrusion while speaking in English.) She was unaware of each episode and did not remember that it had occurred.

Junque, Vendrell and Vendrell (1995) present fifty cases of Catalan - Spanish bilingual CVA patients who were fluent in both languages, but whose dominant language before insult was either Catalan or Spanish and who lived in predominantly Catalan, Spanish, or bilingual environment.

They found that 9 of these cases, which amounts to 18% of the sample, mixed their languages in a constant and persistent way.

Lin (1995) reports on 2 cases of dissociation between speech and translation in Cantonese - Mandarin bilingual patients. One patient, who had transcortical sensory aphasia subsequent to focal lesion in the left basal ganglia, spoke both languages fluently but could not translate well. The other patient, who had conduction aphasia, subsequent to a lesion in the left temporoparieto - occipital area, spoke both languages with great difficulty but could translate well. Both patients had the same educational level and were proficient in both languages premorbidly.

Lin (1996) recounts one parallel and one blended and two successive recovery patterns in patients speaking Cantonese continues and Mandarin fluently who could also speak a little English.

Fabbro, Peru and Skrap (1997) investigated three bilingual patients with thalamic lesions. Case 1 is a 44 year old right handed Italian - English bilingual male who had lived in Australia with his Italian family from age three to thirteen and continued to use English after his return to Italy. Subsequent to a thalamic lesion, he exhibited similar paragrammatic symptoms in both language and had difficulty translating from L1 to L2.

Case 2 is a 67 year old right handed Friulian - Italian bilingual woman who, subsequent to left thalamic lesion, exhibited symptoms of paragrammatism and phonemic paraphasias in both languages. She also had greater difficulty translating from L2 to L1- than from L1 to L2, which is akin to paradoxical translation behaviour, as it is generally considered easier than the reverse direction.

Case 3 is a 39 year old right handed Friulian - Italian bilingual male, who, subsequent to the surgical removal of a left thalamic tumor exhibited phonemic paraphasias, paragrammatism and anomia, with frequent mixing involving L2 words in LI utterances. He also had difficulty translating in both directions.

Vilarino, Prieto, Robles, Lema and Noya (1997) explored naming, pointing and translation performance in 49 aphasic patients speaking two closely related languages, Galician and Spanish, with particular attention to patterns of recovery, mixing, and possible change in dominance post - onset. They found that some of the cases showed interference from the dominant language.

Hyltenstam (1995) analyzed the samples of language mixing from thirty one cases reported in the literature using Poplack's syntactic constraints and the MLF model. He concluded that "it is reasonable to

believe that the code switching of aphasic speakers is structured according to the same constraints as code switching in healthy speakers".

However, Munoz et al., (1999) commented that there were several serious methodological shortfalls in the above study that comprised the data interpretation. Information on premorbid language use was limited, bilingual interlocutors were employed which encouraged code switching, sample were limited to single utterance examples, there was no opportunity to compare data from aphasic and normal speakers, and terminological clarity was lacking. These limitations are significant in that they reflect an absence of social, personal, and contextual information needed to analyze code switching.

Competing theoretical frameworks attempt to establish universal rules to explain grammatical constriants for allowable intrasentential (single utterance) code switches (Myers - Scotton, 1993a, Poplack, 1980). Poplack's constraints have been investigated in neurologically impaired adults (De Santi, Obler, Sabo-Abramson, and Goldber, 1995; Hyltenstam, 1995; Hyltenstam and Stroud, 1989). The free morpheme constraint states that a speaker may switch codes after any constituents that is not a bound morpheme.

The equivalency constraint contends that a code switch can occur at any point in discourse where the switch will not violate a grammatical rule of either language. However, the constraints may be applicable to some speech communities but not others (Poplack and Sankoff, 1988), and acceptable code switches that do not conform to the constraints have been identified in a variety of code switching studies.

The interpretation of code switching in neurological impaired adults based on Poplack's constraints is problematic due to the number of exceptions.

De Santi et al., (1995) for example in a study of code switching in four bilingual (English / Yiddish) speakers with probable senile dementia found examples of code switches that did not follow the equivalency constraint because Yiddish allow verb find construction, a construction not equivalent in English. However, switches at points where word order is not equivalent has been identified as possible and appropriate switches between other language pairs (Nishimura, 1986). Violations of the bound morpheme constraint also have been documented (De Fina, 1989; Myers - Scotton, 1993b). Both constraints can be violated in the code switching of Spanish / English bilinguals (De Fina, 1989). Quite obviously appropriate and inappropriate code switching cannot be distinguished if the exceptions are as valid as the rule.

monolingual Spanish and bilingual contexts to identify code switching patterns. Analysis of the samples based on the MLF model (Myers-Scotton, 1992) revealed consistent matching of the language context by the aphasic and normal subjects. The aphasic subjects demonstrated a greater frequency of MLF constituents and code switching patterns not evident in the speech samples of the normal subjects. Results suggest an increased dependence on both languages for communication following neurological impairments.

In literature, there seems to be equivocal reports regarding the nature of code switching exhibited by bilingual aphasic individuals. While many authors suggest that language mixing is pathological in bilingual aphasics, others opine that it is not so. Hence, this study was taken up with the aim of comparing the code switching behaviors exhibited by neurologically normal and aphasic individuals who are Malayalam - English bilinguals.

The matrix language frame (MLF) model is an alternate framework for predicting acceptable intrasentential code switching based on the linguistic function served by each language in a bilingual interaction (Myers - Scotton, 1992). The model identifies grammatical relationships and constraints related to the dominant and subordinate role of each language, rather than specific rules. Although, the model's effectivenss in predicting code switching across speech communities has not been fully established and cannot be used to directly predict the impact of neurological impairment on the communication abilities of bilingual speakers with aphasia, it provides a useful coding scheme to organize a comparison and discussion of code switching patterns.

Munoz, Marquardt and Copeland (1999) further modified MLF, by introducing 3 additional-categories embedded language (EL) insertions, borrowed forms and revisions to account for linguistic characteristics unique to aphasic speakers. The other 4 categories in the actual MLF model are matrix language (ML) islands, ML shifts, embedded language (EL) islands and ML+EL constituents.

Munoz et al., (1999) compared the code switching patterns of aphasic and neurologically normal bilingual speakers of English and Spanish. Conversational samples were obtained from four aphasics and four neurologically normal Hispanic bilinguals in monolingual English,

monolingual Spanish and bilingual contexts to identify code switching patterns. Analysis of the samples based on the MLF model (Myers-Scotton, 1992) revealed consistent matching of the language context by the aphasic and normal subjects. The aphasic subjects demonstrated a greater frequency of MLF constituents and code switching patterns not evident in the speech samples of the normal subjects. Results suggest an increased dependence on both languages for communication following neurological impairments.

In literature, there seems to be equivocal reports regarding the nature of code switching exhibited by bilingual aphasic individuals. While many authors suggest that language mixing is pathological in bilingual aphasics, others opine that it is not so. Hence, this study was taken up with the aim of comparing the code switching behaviors exhibited by neurologically normal and aphasic individuals who are Malayalam - English bilinguals.

METHOD

The present study was taken up with the aim of exploring the code switching exhibited by aphasic subjects at the broad level of conversational discourse in comparison with that of normals.

Subjects:

Two groups of subjects were taken; control group consisting of neurologically normal individuals and experimental group consisting of aphasic subjects.

Criteria for selection of subjects:

Six aphasics and six neurologically normal adults matched on the basis of age, gender, social and educational level and language use participated in the study. The normal and aphasic subjects (based on premorbid skills) were bilinguals with conversational fluency in Malayalam and English.

Experimental group:

The aphasic subjects with a history of left hemisphere cerebro vascular accident (CVA) confirmed by neurological examination and computerized tomography were taken. The aphasic subjects were administered English and Malayalam versions of the Western Aphasic

Battery (Kertez, 1982) for the identification of aphasic subtype. Six of those patients who were identified as Broca's aphasics in both Malayalam and English on the basis of Western Aphasic Battery (WAB; Kertez, 1982) results were taken up for the study.

Control group:

Six neurologically normal adults who matched with the experimental group on the basis of age, gender, social and educational level and language use were selected as subjects in the control group.

Test Materials:

- Western Aphasic Battery (WAB; Kertez, 1982) was used to identify the Broca's aphasic population.

- The presence of code switching was studied using Paradis' Bilingual Aphasia Test (BAT; Malayalam-English, 1996)

- The various sections in BAT was thus used to find out the instances of code switches exhibited by subjects.

Bilingual Aphasia Test is a systematic and effective test for a detailed analysis of the various components of language. The Bilingual Aphasia Test (BAT) is divided into three parts:

Part A is common to both languages and assess the linguistic history of patients and their family (when, how and from whom patients have learnt the languages they know).

Part B assesses the linguistic performance of patients in various linguistic components of one language only; subsequently patients will undergo part B in all the languages they know.

Part C assesses the patient's translation abilities from language to language as well as grammaticality judgments containing grammatical elements of the other language.

During the test administration, the communicative partners were strictly instructed to speak only the assigned language in the monolingual conditions.

Test Environment:

All the tests were administered in a quiet environment where the subjects would not get distracted. They were made to sit comfortably during the administration of test.

Procedure:

- At first, Western Aphasia Battery was administered to the aphasic population in order to identify Broca's aphasics. It was administered in both Malayalam and English to all the subjects in a randomized order.

- Paradis' Bilingual Aphasia Test (BAT) was administered to both the experimental and control group. Breaks were given to the subjects inbetween test administration whenever needed. When it was not possible to administer the entire test in one sitting, the test was completed in subsequent sittings. The tasks in BAT include testing the translation abilities of the subjects in addition to testing their language abilities in monolingual Malayalam and monolingual English contexts. The conversations were audio recorded in a quiet room with only the subject and partner present.

Transcription:

The utterances from each context was transcribed using the International Phonetic Alphabet from the recorded conversational samples.

Analysis:

The recorded and transcribed sample was analyzed for the presence of code switching as well as the nature of code switching using the Matrix

Language Frame model (MLF; Myers - Scotton, 1992) with modification proposed by Munoz et al. (1999). The principles from MLF were used to identify code switching instances. The code switching instances were compared between normals and aphasics.

The MLF model analyzes code switching in terms of two interacting hierarchies, (1) the differential roles of the languages participating in code switching, and (2) the differences in patterns of occurrence of types of morphemes.

These hierarchies are the Matrix Language (ML) vs. Embedded Language (EL) distinction and the content vs. system morpheme distinction. When code switching occurs, the participating languages do not play equal roles. The ML constrains the role of the other languages, called the Embedded Languages (ELs). The distribution of the ML vs. EL morphemes can be predicted using the content vs. system morpheme distinction.

Content morphemes are specified as [+ thematic role assigner/ receiver]. Prototypical thematic role assigners are most verbs and some prepositions. Prototypical role receivers are nouns, although other types of morphemes can also receive thematic roles.

System morphemes neither assign nor receive thematic roles; they are [-thematic role assigner/ receiver]. Prototypical system morphemes are

inflections and most function words. The thematic role criterion applies universally, but not necessarily with uniform results across languages.

All system morphemes in bilingual constituents come from the ML. In contrast, the EL can provide singly occurring content elements or full constituents called EL islands.

Four of the constituents of the MLF model categories have their basis in the hierarchical relationship between the Matrix language (ML) and the Embedded language (EL). The ML is the base language of conversation, contributes the most system morphemes to the interaction, and sets the morphosyntactic structure of the utterance. It is expected that the system morphemes will occur in the ML, while content morphemes can be accessed in either language. The ML can change between utterances or clausal boundaries in single utterances. The EL is the less active language inserted into the structure established by the ML.

The first, category ML islands, consists of utterances or clauses containing only ML lexemes structured around the morphosyntax of the ML. The second category, ML shifts, identifies changes in ML between utterances or clauses. The EL is inserted into the ML to form the constituents of EL islands, and ML+EL. The constituents in the third category, EL islands, are multiword EL elements (comprised of at least two

words exhibiting a hierarchical structure) which follows the syntactic structure of the EL. The fourth category consists of ML+EL constituents which are comprised of single EL elements inserted in the syntactic rules of the ML.

Identification of ML+EL utterances require a distinction between lexical insertion and lexical borrowing. A lexical borrowing is the incorporation of lexical elements from one language in the lexicon of another language (Muysken, 1995) and is not considered a code switch. A lexical insertion refers to single word insertions from the EL which form an ML+EL constituent. The distinction between lexical insertions and borrowings is premised on the frequency of use across speakers. Borrowed forms are more widely used but the frequency limits for each category are somewhat arbitrary (Myers-Scotton, 1993a). Utterances containing borrowed forms are not considered code switches because of the high level of integration in the ML language. EL insertions refer to nonhierarchical multiword EL insertion and the category of revisions include lexical insertions that did not contribute to the meaning of the utterance. This includes speech errors and restatements which can not be accounted for within any category.

The seven categories in the MLF are summarized in the following table.

Table-1: Definition of Matrix Language Frame Model Constituents adopted from Myers - Scotton (1992) and modified by Munoz et al. (1999).

Constituents	Definition
ML Islands	Well - formed constituents consisting entirely of ML morphemes
ML Shifts	Change in the ML in consecutive utterances or clausal structures.
EL Island	Well formed constituents consisting of at least two EL morphemes showing syntactic structure which have been inserted into the ML.
ML + EL	A single EL lexeme (not a borrowed form) inserted into the syntactic frame of any number of ML morphemes
Borrowed form	A lexeme from one language incorporated into the morpho-syntactic structure of a second language and judged by 2/3 raters to be widely accepted by monolingual speakers of the second language.
EL insertions	Multiple EL lexemes demonstrating no syntactic structure inserted into the syntactic frame of any number of ML morphemes.
Revisions	Lexical insertions that do not contribute to the meaning of an utterance, including speech errors, restatements, circumlocutions and indicators of word finding problems

Key: ML ----> Matrix Language ; EL٫»Embedded Language.

RESULTS AND DISCUSSION

In the present study, the data obtained from the administration of Bilingual Aphasia Test (English-Malayalam) was analyzed to study and compare the code switching patterns exhibited by aphasics and neurologically normal individuals. Analysis was done using the Matrix Language Frame model (MLF; Myers - Scotton, 1993a) with the modification proposed by Munoz et al. (1999). The frequency of instances of code switching produced by both normal and aphasic speakers was tabulated for each of the language interaction categories: Matrix Language (ML) islands, ML shifts, Embedded Language (EL) islands, EL insertions, ML+EL constituents, borrowings and revisions.

The MLF model analyses code switching in terms of two interacting hierarchies, (1) the differential roles of the languages participating in code switching, and (2) the differences in patterns of occurrence of types of morphemes. These hierarchies are the Matrix Language (ML) vs. Embedded Language (EL) distinction and the content vs. system morpheme distinction.

Content morphemes consists of the content words and system morphemes consists of function words.

The Matrix Language (ML) is the language used for the conversation, and it contributes the most system morphemes to interaction, and sets the morphosyntactic structure of the utterance. The Embedded Language (EL) is the less active language inserted into the structure established by the ML. The interactions between the ML and EL are discussed below.

Language Choice: Matrix Language Islands.

Matrix Language islands consist of utterances or clauses containing only ML lexemes structured around the morphosyntax of ML. That is, ML islands are constituents with morphemes solely from the ML and they are well formed according to the ML grammar.

It was found that for all normal subjects and three out of six of the aphasic subjects, most of the ML islands were in the language established by the interlocutor.

The other 3 aphasics preferred Malayalam, the dominant language to converse in, even in monolingual English contexts.

The normals and the other aphasic subjects occasionally uttered some Malayalam MLs in the monolingual English condition though they were asked to speak only in English. This use of Malayalam in English context may be a deliberate choice to establish shared group identity regardless of

the language skills of the conversational partner. This notion is supported by Grosjean (1984) and Munoz et al. (1999).

It was also noticed that, in five out of the six aphasics and two of the normals the latency of the utterances were more in English than in Malayalam. That is, the reaction time, though not formally measured, was found to be longer in monolingual English context. This could be because these subjects were less fluent in English than in Malayalam.

On the task of confrontation naming in monolingual Malayalam context, many utterances were made in English by both normal and aphasic subjects, which cannot be explained as borrowed forms. But these words are judged as being used very commonly by Malayalam English bilingual speakers in daily utterances as they are lexically integrated into the language. Eg: /pen/, /book/, /key/

Code Switching: Embedded Language Islands and Insertions.

The embedded language is inserted into the ML to from constituents of EL islands. EL islands are constituents with morphemes solely from EL and they are well formed according to the EL grammar. However, because EL islands are part of larger ML+EL constituents, they are also under ML control in various ways (eg: placement of the EL constituent). Thus, EL islands are multiword EL elements inserted within the syntactic rules of ML.

EL insertions refer to nonhierarchial multiword EL elements insertions. That is, they are multiple EL lexemes demonstrating no syntactic structure inserted into the syntactic frame of any number of ML morphemes.

The normal subjects and one aphasic subject produced no EL insertions. The rest of the aphasic subjects produced some or the other EL insertions.

Eg: nest *idd* went fall *vi.nu*

        nest this went fall fell

The insertions were produced by mostly 3 of the aphasic patients in monolingual English context, due to their difficulty in producing English sentences.

EL islands were produced by two normals and one aphasic subject in monolingual Malayalam context and 3 aphasics in monolingual English context.

eg: **Malayalam context**

 # ña:n eight ninth tenth class/7 *palippikunnu*

   I eighth ninth tenth class teaching in.

   1 am teaching in eight ninth and tenth classes.

\# Father mother *ellam* sixthil *patikumbol maritj u po:ji*

Father mother all sixth in studying while passed away.

Both father and mother passed away while I was studying in sixth

standard.

English context

\# Bus *vannilla*

Bus has not come.

\# The branch *odinu* man and birds ta:rd *vi.nu*

The branch broke man and birds down fell.

The branch broke and the man and birds fell down.

EL islands produced by both the aphasic and normal subjects
confirmed with Myers - Scotton (1992) hypothesis of where code switches
can occur, in that they maintained the grammatical integrity of both
languages

The instances of EL islands and insertions in the utterances occurred
more frequently in apahsic speech than in the speech of normals. It was also
noticed that these EL islands and insertions were more in monolingual
English context than in monolingual Malayalam context. This can be due to
the lexical retrieval problems experienced by aphasics in the non dominant

(English) language, which even premorbidly was less fluent than Malayalam.

Code Switching: Matrix Language + Embedded Language Constituents.

ML+EL constituents comprises of single EL elements inserted within the syntactic rules of the ML. ML + EL constituents have morphemes from two or more languages. The system morphemes as well as the morpheme order will be supplied by the ML whereas the content morphemes can be from the EL.

ML+EL constituents were produced by four of the normal subjects as well as five out of six aphasic subjects. Most of the ML+EL constituents were produced in monolingual Malayalam context and very few were produced in the monolingual English context. Both aphasics and normals inserted items mostly from the lexical categories of nouns and parenthetical remarks (fillers) and sometimes conjunctions.

eg : **Malayalam context**

ñan samsaritj a a:Ia entd teacher *a:nd*

   I to whom spoke person my teacher is

   The person with whom I spoke is my teacher.

a: manu and ut akkd exam *ka.num*

That person afternoon exam may have

That person may have exam in the afternoon.

alintd se: am hospital/7e£d *kondu po.ji*

After that to hospital was taken

After that (I) was taken to the hospital.

vi.til randa brothers *unda*

At house two brothers are there

I have two brothers at home.

English context

pinnd.........no.........wife is there

then..........no.........wife is there

zero..........*alla*..........nine

zero..........no..........nine

One boy and girl standing under the tree, *appam* crow is sitting on the

tree.

One boy and girl are standing under the tree. Then a crow is sitting on

the tree.

It was seen that though most of the lexical insertions in the ML+EL constituents were in the content words, it is not limited to these alone as indicated by the insertion of parenthetical remarks and conjunctions from another language.

Aphasic subjects appeared to be accessing the second language to meet the lexical demands more often than normal subjects, as shown by the increased frequency of insertions.

Revisions and Matrix Language (ML) Shifts.

Revisions include lexical insertions that do not contribute to the meaning of the utterance such as speech errors, restatements circumlocutions and indicators of word finding problems. ML shifts refers to changes in ML between utterances or clauses.

Revisions were evident it the speech of all subjects. Both aphasic and normal subjects were observed to begin an utterance in one language without forming a complete constituent in the first language. This switch may include a restatement of the inserted element.

Four of the six aphasics labeled the target in both English and Malayalam.

eg: pen...*pe.na.* (pen....pen)

book_____*pustakam* (book . . . book)

vala . . . . bangle (bangle . . . . bangle)

Other examples of revisions and ML shifts include the following:

\#   *vipari.tam* oh opposite

      opposite oh opposite

\#   *randd pillard. pinnd* wife is there,

      two children, then wife is there

\#   sciss . . . . sicss . . . . *alia, katrika*

      sciss . . . . sciss . . . . no , scissors

\#   pen . . . . atd . . . . *pe.na* . . . .

      pen …. that is …. Pen

\#   The and . . . . of the box . . . . send of the . . . . sarija:vunilla

      an,otta

      The and …. of the box . . . . . send of the . . . . It is not coming.

Two of the aphasic subjects were able to produce the target word after being given a phonemic cue, indicating a difficulty in accessing the word rather than a lack of knowledge of the word in a particular language. Eg: One of the aphasic subjects when asked to say the days of a week in the monolingual Malayalam context started saying Sunday, Monday etc., but on cueing was able to say the Malayalam of the days of the week.

On the other hand, all the subjects except one aphasic recited the names of the month in English through the question was asked in Malayalam context. On phonemic cueing two more aphasics and one normal subject were able to recite the Malayalam months. But the others were not able to do it indicating that the English months have become a borrowed form in Malayalam. All subjects exhibited circumlocutions, a pattern typical to aphasics and second language learners.

It was also noticed that two of the normals and four of the aphasics, while translating from Malayalam to English used the syntactic structure of Malayalam, though the lexical items were in English.

eg:

\#   Yesterday you saw a boy that was my brother.

   Malayalam equivalent   : *innale ni: kanda a.nkulti enta saho.daranand*

   Correct translation   : The boy whom you saw yesterday is my brother.

\#   One who eating salt, he will drink water.

   Malayalam equivalent   : *uppu tinnunnaven vellam kudikkum*

   Correct translation   :   One who eats salt shall drink water

\#   I was going the house that is in this way.

   Malayalam equivalent   : *ña:n po.ja vidd e: varijila.nd*

   Correct translation   :   The house where I went to is in this way.

In Malayalam, the word order is not as rigid as it is in English. From the examples given above, it is evident that when doing a translation task, the subjects formed the English sentences in the syntactic framework of Malayalam.

The code switching patterns exhibited by both normals and aphasics in monolingual Malayalam and monolingual English contexts are tabulated in the following table.

Table 2: Frequency of code switching instances in aphasics and neurologically normal subjects.

Subjects Exhibiting Code Switches				
Code Switches	Monolingual Malayalam context		Monolingual English context	
ML islands Eng			6	3
Mai	6	6		3
EL islands	2	1	-	3
EL insertions	-	5	-	5
ML + EL constituents	4	5	4	5
ML shifts and revisions	6	6	6	6
Borrowed forms	6	6	6	6

Key: ML   Martix Language ; EL   Embedded Language ; Eng English;   Mal   Malayalam

Language history and code switching behaviour.

It was noticed that the amount of code switching exhibited by normals and aphasic subjects depended on the premorbid language history also. As is evident from the responses of the language questionnaire in part A of Bilingual Aphasia Test (BAT), four of the six aphasic subjects and three of the normals had less exposure to English than Malayalam and hence were more fluent in Malayalam. In these subjects most of the code switching instances were noticed in monolingual Malayalam contexts. These code switches were mostly in the form of ML shifts, EL islands and EL insertions and these types of code switches were rarely noticed in those subjects who were equally proficient in both English and Malayalam.

Those subjects, both aphasics and normals, who are equally proficient in both English and Malayalam exhibited many code switches in the monolingual Malayalam context and a few code switches in monolingual English context. Their code switches mainly included ML+EL constituents, borrowed forms and revisions.

The importance of the information about language knowledge of the subjects and the language behaviours of the aphasics before injury is stressed by Grosjean (1985). Thus, code switching behaviours in normals as well as aphasics cannot be explained without reference to the language

history. So information on this aspect should form a part of any study on code switching.

A consensus is yet to be reached as to whether this language mixing exhibited by bilingual aphasics is a pathological phenomenon or just a natural phenomenon exhibited by even neurologically normal bilingual individuals. While authors like Perecman (1984) argue that language mixing (and especially utterance level mixing) reflects a linguistic deficit and that spontaneous translation indicates a paralinguistic processing deficit, others like Grosjean (1985) and Munoz et al., (1999) opine that language mixing and spontaneous translations are behaviours that are also found among normal polyglots, and that they may not therefore always reflect deficit in aphasics.

The code switches and spontaneous translations in the speech of polyglot aphasics can have many causes. Some reflect the language and conceptual deficits mentioned by Perecman (1984), but others are the results of conscious, deliberate communicative strategies on the part of the patients. This results in increased frequency of occurrence of code switching

The results of this study reveal similarities and differences in how neurologically normal and aphasic bilingual speakers code switch or alternatively use two languages in an interaction. Both aphasic and normal

subjects exhibited code switching patterns consistent with the expectations of the MLF model. Many of these were considered indicative of a language disorder by previous researchers (Junque et al., 1989; Perecman, 1984).

It was noticed that aphasic subjects exhibited more frequent production of embedded language (EL) insertions, revisions and Matrix Language (ML) shifts. Individual differences in the frequency and type of constituents produced and the contexts in which they were produced were evident in the code switching patterns of bilingual aphasics. These similarities and differences may indicate that aphasic speakers are adopting normally occurring code switching patterns to enhance communicative effectiveness.

Normal and aphasic subjects produced code switches that maintained the grammatical integrity of the ML as predicted by the MLF model. Individuals in both groups also exhibited the use of a second language in monolingual contexts and spontaneous translation, behaviours considered inappropriate and thus characteristic of language mixing (Grosjean, 1985; Junque et al., 1989). However, since both patterns were observed in the speech of the normal and aphasic subjects, they are clearly acceptable in the local speech community. The code switching exhibited by aphasics thus, may not be an inappropriate behaivour, but rather an atypical and disruptive

increase in the frequency of use of normally occurring code switching patterns (Munnoz et al., 1999).

Code switching may be a conscious or unconscious strategy used by the bilingual aphasics to access the correct word in either language. A word in one language may function as a "paraphasia" in the second language but does not affect communication as a paraphasia because it is semantically accurate (Paradis, 1993c, 1998). Hence a bilingual aphasic may benefit from learning strategies which develop code switching into a means of enhancing functional communication, particularly for a patient who resides in a bilingual community.

As stated earlier it was noticed that in monolingual Malayalam contexts two of the aphasic subjects started reciting the days of the week in English but reverted to Malayalam on giving a phonemic cue. This indicates a. difficulty in lexical retrieval rather than lack of knowledge of the word in Malayalam, a conclusion supported by there language history. It appears that aphasia can be selectively disrupt access to a lexical item in one language while sparing access to the item in the other language resulting in an inability to match the language of the context. Hence, aphasic subjects may be "forced" to code switch because of the effects of the linguistic impairment. (Munoz et al., 1999).

The code switches which are seen during the testing can simply be the reflection of the patient's normal interference behaviour before injury since language knowledge and language behaviour of the aphasic subject before injury also plays a significant role in the pattern of code switching exhibited by the aphasic patients. This is evident from the fact that similar kinds of code switches, that is: ML shifts, EL islands and EL insertions were exhibited by both normal and aphasic subjects who were less proficient in English than Malayalam. Similarly, those aphasic and normal subjects who are equally proficient in both English and Malayalam mostly have revisions, borrowed forms and ML+EL constituents in their utterances

This comparison of code switching patterns in normals and aphasic subjects thus reveals a pattern which reflects similar types of code switching abilities in both the groups. However, the aphasic patients code switch, borrow and translate more after the injury than before, and this increase in mixing of the languages may be shown as a deficit. Such a notion is supported by Grosjean (1984) and Munoz et al., (1999) who stated that disruption in the code switching of bilingual aphasics is not limited to language mixing and is more complex than a dichotomous decisions regarding appropriateness. Thus, the behaviour of code switching itself is not abnormal but the increased frequency of the behaviour makes it appear

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abnormal. In fact, code switching may actually be a compensatory mechanism in lexical accessing in the deficient language.

As evidenced from the analysis. Matrix Language Framework (MLF) model (Myers-Scotton, 1992) with the modification suggested by Munoz et al., (1999) is able to identify all the pertinent aspects of code switching. Hence, MLF forms a good clinical tool in code switching analysis even in Dravidian languages such as Malayalam.

It is only by means of careful assessment that we will better understand, and therefore better treat, polyglot aphasia. This in turn, will improve our understanding of normal polyglots; their language competencies, their language use, and the mechanisms that allow them to maintain their languages separate in a monolingual speech mode but let them interact in a bilingual speech mode.

SUMMARY AND CONCLUSIONS

Bilingualism is no longer a situation found in only a few countries but has become a world reality. As a direct consequence, multilingual individuals suffering from developmental or acquired disorders of speech or language represent probably the majority of clinical cases.

Though many studies have targeted code switching in normal bilingual individuals (Singh, 1985; Pandit, 1986; Disciullo, Muysken and Singh, 1986; Pathak, 1982) in the Indian context, such studies in bilingual aphasic population in scarce. Hence, this study was taken up with the aim of comparing the code switching behaviours exhibited by Malayalam - English bilingual aphasics and neurologically normal adults.

Both the experimental and control group consisted of six Malayalam - English bilingual adults. They were matched in terms of age, gender, social and educational level and language proficiency in both Malayalam and English.

All the individuals in the experimental group were diagnosed as having Broca's aphasia in both Malayalam and English using the Western Aphasia Battery. All the six subjects had a history of left hemisphere

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cerebro vascular accident confirmed by neurological examination and computerized tomography.

Bilingual Aphasia Test was administered on both the experiemtnal and control group in order to find out their language history (premorbid language use and proficiency), present use of language in both monolingual English and monolingual Malayalam contexts and their translation abilities. The results obtained were analysed using the Matrix Language Frame model (Myers - Scotton, 1992) with modifications proposed by Munoz et al. (1999).

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• For all normal subjects and three of the six aphasic subjects, most of the ML islands were in the language established by the interlocutor. They conversed mostly in English in the monolingual English context and most of the sentences were in Malayalam in the monolingual Malayalam context.

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• For all normal subjects and three of the six aphasic subjects, most of the ML islands were in the language established by the interlocutor. They conversed mostly in English in the monolingual English context and most of the sentences were in Malayalam in the monolingual Malayalam context.

- For those subjects who were less proficient in English than in Malayalam, the latency / reaction time of the responses was observe to be more in monolingual English contexts, though it was not formally measured.

- The normal subjects and one aphasic subject produced no EL insertions. The rest of the apahsic subjects produced some or the other EL insertions. EL insertions are a string of words in the EL, including both system and content morphemes, with no syntactic structure, inserted into the syntactic frame of ML morphemes.

- EL islands were produced by two normals and one aphasic subject in monolingual Malayalam context and three aphasics in monolingual English context. EL islands have morphemes solely from the EL and they are well formed according to the EL grammar. However, since they occur in the ML, they are also under ML control in many ways.

- ML+EL constituents were produced by four of the normal subjects and five of the aphasics. Insertions were mostly from the lexical categories of nouns and parenthetical remarks (fillers) and sometimes conjunctions. ML+EL constituents are content morphemes from the EL inserted into the syntactic framework of ML.

- Revisions and ML shifts were evident in the speech of all subjects. Revisions are restatements or circumlocutions whereas ML shifts are shift or change in the ML between utterances or clauses.

- Two of the normals and four of the aphasics, while translating from Malayalam to English used the syntactic structure of Malayalam, though the lexical items were in English.

- The amount of code switching exhibited by normals and aphasics depended on the premorbid language history also.

The results of this study reveal similarities and differences in how neurologically normal and aphasic bilingual speakers code switch or alternatively use two languages in an interaction. It was noticed that aphasic subjects exhibited more frequent production of embedded language (EL) insertions, revisions and Matrix Language (ML) shifts. Individual differences in the frequency and type of constituents produced and the contexts in which they were produced were evident in the code switching patterns of bilingual aphasics. These similarities and differences may indicate that aphasic speakers are adopting normally occurring code switching patterns to enhance communicative effectiveness.

Thus, this study of code switching in bilingual aphasics using normal subjects as a sample of the speech community and the aphasic speaker's

own language backgrounds to interpret the code switching of the apahsic speaker resulted in findings which contradict the belief that code switching remains unaffected by aphasia. Neither does it support the notion that language mixing is pathological.

The code switches and spontaneous translations in the speech of polyglot aphasics can have many causes. While some reflect the language and conceptual deficits, others may be the result of conscious, deliberate communicative strategies on the part of the patients. This results in increased frequency of occurrence of code switching instances in the aphasic speech.

Limitations of the study:

- Only a limited number of subjects were studied among the normals and the clinical population.

- This study of code switching was limited to one specific subtype of aphasia, namely, Broca's aphasia.

1. Suggestions for future research:

1. A larger group of subjects can be included in both the normal and pathological group.

2. The study can be carried out across various types of aphasia.

3. Since the bilingual apahsic speaker's functional communication may in part be determined by the conversational constraints imposed by the conversational partner, the study can be carried out in bilingual contexts, in addition to monolingual English and monolingual Malayalam contexts.

4. Similar studies can be conducted in other Indian languages and their combinations. This would throw more light on the language specific issues related to the nature, degree and extent of code switching.

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