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Volume 22-23 1996-1997

Editor
D.VASANTA

DEPARTMENT OF LINGUISTICS
OSMANIA UNIVERSITY
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Volumes 22 and 23, 1996-97 on

APPLIED PSYCHOLINGUISTICS

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OPiL 22-23 (1996-97)

APPLIED PSYCHOLINGUISTICS : AN INTRODUCTION AND OVERVIEW

D. Vasanta
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It may seem unreasonable to talk about applied psycholinguistics so long as controversial discussions still take place concerning the theoretical foundations of psycholinguistics, its object, problems and goals--all of which are signs of a still immature field.

Slama-Cazacu 1976:27

Controversial discussions are still taking place within the field of psycholinguistics and psycholinguistic theories and models of language production and processing are still in the making. What is the need for this special volume on Applied psycholinguistics? why is it being brought out now? I searched through the debates that framed the developments in the sub-fields of linguistics, particularly Psycholinguistics (PL) and Applied linguistics (AL) to try and understand the scope, objectives and goals of Applied Psycholinguistics (APL) in the Western context with a hope to articulate its relevance in our context, and thus offer justification to the present special volume of Osmania Papers in Linguistics (OPiL) on APL.

The focus of PL has been, psychological reality of grammatical models of language competence and of theories of performance. Eventhough the term 'psycholinguistics' was coined as far back as 1946, it was not until the publication of Miller's pioneering study on *Language and Communication* in 1951 that PL emerged as an interdisciplinary mode of thought. In 1953 a conference on PL was organized by the

Indiana University in U.S.A. and the proceedings of this conference were edited and published by Osgood and Sebeok in 1954. Soon after this publication, this fledgling science established itself as an autonomous branch of both linguistics and psychology. Information theory has had an important influence on the psycholinguistic study of verbal communicational processes. This is reflected in the definition given by Osgood and Sebeok (1954), viz., PL is the scientific study of the processes of encoding and decoding in the act of communication as they relate states of messages to states of communicators. That PL's main goal is establishing psychological reality of grammatical constructs becomes clear if one looks at the contents of yet another path-breaking publication, *Psycholinguistics: A Book of Readings* edited by Sol Saporta (1961). The most important initial input from linguistics came from Chomsky's (1957) postulations concerning Transformational Grammar.

There is a general recognition that the major thrusts of basic research and theory in PL are first language acquisition and performance, and the variables that influence them in normal individuals. However, in much of the PL work published todate, assessment of language competence developmentally took precedence over identifying the variables that influence language performance, variables other than the language user's knowledge about linguistic structures. While commenting on the limited studies dealing with the assessment of linguistic maturity longitudinally, Rosenberg (1982:10) stated thus: the fact that a given structure in the adult grammar is used by children or not used tells us nothing about the course of mastery of that structure. However, It must be noted that theoretical research in PL has made a significant contribution to the area of assessment of language in the older children, as evident by the development of tests such as the *Illinois Test of Psycholinguistic Abilities (ITPA)* in 1961 by Samuel Kirk which was used extensively

not only in schools but in the clinical situations as well. The other area which benefitted most from PL research and theory is adult aphasia (see Rosenberg and Koplin 1968).

Let us now look at the parallel developments in AL. The first international colloquium on AL was held in Nancy, France in the year 1964. The central theme of this colloquium was language teaching. Newmark (1966) took issue with the behaviourist models of learning which he said were isolating and abstracting the individual from the natural contexts in which the language is used. He was one of the earliest researchers to underscore the importance of paying attention to utterances and not sentences. Dell Hymes's (1971) paper, *On communicative Competence* delivered at a conference on language development among the disadvantaged children with its critique of Chomsky's notion of competence is yet another landmark papers that made a significant impact on the field of AL. Widdowson (1973) stressed the importance of teaching language as communication, for this to happen, he argued, we should no longer think of language in terms of sentences. He talked about the ways of developing the knowledge of grammatical cohesion and emphasized that applied linguists should be concerned with the teaching of discourse rather than isolated sentences. In the decade that followed, a general consensus emerged among applied linguists who felt that since language competence is not amenable to direct intervention, the role of the teacher is to provide the right environment in which competence grows on its own (Krashen 1985). Allen and Corder (1975:34) commented that one of the goals of AL is to use linguistic knowledge to solve some of the problems which arise in the planning and implementation of language teaching programmes. Others felt that within AL, sufficient attention has not been paid to the psychological mechanisms underlying language learning such that their implications for language teaching become apparent (see for instance, Titone

and Danesi 1985). There was a general dissatisfaction among applied linguists in the West, about the capability of mainstream linguistic theory in handling notions like transitional competence of the learner or even differential competence for production vs. comprehension. A call for evolving a broader view of AL especially in relation to language teaching was given by Pennycook (1990) in the inaugural issue of the journal, *Issues in Applied Linguistics* published in the U.S.A. Recently, Jayaseelan (1996) putforward a bold new proposal that what is involved in learning a language is learning the meanings of words and that there is no need to postulate learning of linguistic structures or rules governing those structures because the universal principles are already available with the learner and hence do not have to be learnt afresh.

More than two decades ago, Slama-Cazacu argued that APL is required because certain directions of research in PL strayed from practical reality and that APL deals with topics such as educational activity for developing language behaviour, language disorders and therapeutics, improving communication in the teaching of L1, L2 or foreign languages, promoting transmission of information through mass-media, problems of translation etc. The inaugural issue of the Journal of APL which came out in 1980 listed a variety of other practical problems that needed to be investigated from the point of view of basic research in PL and cognitive psychology. At present, this journal invites original articles dealing with the psychological processes involved in language with respect to development, use and impairment of language in all its modalities including spoken, signed and written. In his exhaustive introduction to the field of APL, Rosenberg (1982) argued that applied psycholinguists are particularly concerned with work in the domains of reading, writing and second language learning both in the normal and disordered populations. The two volumes that he edited under

the title *Advances in Applied Psycholinguistics* in 1987 traced the developments in the areas of disorders of first language development, reading, writing and language learning. During the past couple of decades several hundred books and journal articles have been published that dealt with the developments in the field of APL. Most of these publications basically surveyed the impact of PL concepts on our understanding of language learning and teaching practices and spelt out the pedagogic implications of APL research (see Rosenberg 1982 for a list of books on APL that dealt with issues like reading, discourse learning, second-language learning and language disorders). For a thoughtful analysis of the role played by generative grammar in psycholinguistic theory construction, see Spencer (1988). Many of these debates and discussions, however, are based on English language. It is only since the past decade that concerted efforts are being made to rethink anglocentric theories and models in the light of observations made on linguistic analyses of languages which are very different from English.

It is clear then that AL and APL meet on the ground of some concrete reality to the extent that they are concerned with the act of communication which consists in creating, acquiring, and using components of the various codes in human beings. Slama-Cazacu (1976) asserts that it is the dissatisfaction and disappointments with AL and PL in the teaching of native or foreign languages that forced researchers to rethink methodologies which eventually resulted in APL. The limitations of applying theories and methods of mainstream linguistics (the so-called unidirectional model of AL) have been subjected to much criticism even in our context (Sridhar 1993; Lakshmi Bai 1995; Vasanta 1996). Others have cautioned about the ideological bias prevalent in AL research which presupposes that monolingualism is the norm for assessing language ability and use and that there is an urgent need to rethink assessment in multilingual contexts

(Tharu 1995).

I would like to trace the developments in the field of linguistics in India by drawing on the recent "Dialogue" on the `Future of Linguistics in India' held at the Central Institute of Indian Languages, Mysore a couple of years ago. In this connection, Annamalai (1995) stated that linguistics as an independent discipline of study came into being in the early 50's after a meeting organized by the Deccan College in Pune in 1951. The Linguistic Society of India was established in the year 1954. The other landmarks in the history of Indian linguistics according to some other participants in this meeting are; the establishment of the Central Institute of Indian Languages in 1969 and formation of Dravidian Linguistics Association in 1971 in addition to other Institutions of higher learning concerned with languages such as, the Central Institute of Hindi, CIEFL, ISDL and so on. Dialect studies, preperation of etymological dictionaries and research into Modern Indian languages to improve the language teaching practices in schools were the major concerns in the post-independence India (Annamalai 1995). It is no wonder then that the AL courses offered at the post-graduate level in the University Departments of Linguistics in our country have remained for the most part, Language Teaching methods, Lexicography, and Translation. Psycholinguistics, Neurolinguistics, Clinical linguistics and Computational linguistics appeared on the scene (if at all they did) much later.

The major academic journals such as *Indian Linguistics* (brought out by LSI), *International Journal of Dravidian Linguistics* (brought out by DLA) and the recent newcomer, *South Asian Language Review* publish research work of both theoretical and applied nature. There are very few journals which provide a forum for exchange of views exclusively on the applications of theories and methodolgies

of linguitics and psychology. Journals like the *Indian Journal of Applied Linguistics* and *Psycholingua* have been providing fora for exchange of views on applied issues, but they have not adequately captured the interdisciplinary research endeavors taking place in various universitities and institutions nor have they attempted to promote an interaction and debate among scholars interested in applying theories and methodologies of mainstream disciplines. The Centre of Advanced Study in Linguistics at Osmania University has been bringing out a research journal. The first volume of *Osmania Papers in Linguistics (OPiL)* came out in February 1975. The twenty one volumes that have been published subsequently had hundreds of articles, but only ten articles dealt with the subject matter of PL or APL. Since 'psycholinguistics: theoretical and applied' has been one of our Certre's thrust areas, it was decided to devote volumes 22 and 23 of OPiL to the theme, Applied Psycholinguistics.

The primary aim of this volume is consolidation of the research efforts of those who are involved in examining the pedagogic implications of language learning / language teaching programmes in a bi / multilingual context. I was also interested in putting together works that dealt with applications of theories and methods of linguistics and psychology on normal and clinical populations speaking languages very different from English, so that, it becomes possible to develop an informed critique of anglocentric theories and models, identify their inadequacies in dealing with 'data' from our languages and envision new theories/ models that are particularly relevant to our context. While some contributors addressed this issue directly and pointed out the relevance of cross-linguistic data to large-scale theorizing, others did not explore either the theoretical or pedagogic implications of their observations.

The dominant theme running through most of the papers included in this volume is, bi / multilingualism. There

has been a considerable debate on the limitations of monolingual education for bilingual populations in the Northern European countries (see Tosi 1984 for a survey of literature on this topic). Language pluralism and minority group's language rights constitute the central arguments for mothertongue teaching. Geetha Durairajan's paper provides a summary of the major bilingual education programmes around the world and discusses their implications to language assessment in the Indian context. B. Lakshmi Bai presents evidence from both monolingual and bilingual Telugu and Tamil children which refutes the hypothesis (of Pollock 1989) that inflection is a split category with tense and agreement, each having its own projection. The rest of the papers pertain to individuals with speech, language or hearing disorders.

Drawing on their own clincial experience, Mani Rao and Geetha Mukundan argued that the speech-language assessment procedures based on norms collected from monolingual populations are grossly inadequate for assessing children with communication disorders, especially those coming from multilingual backgrounds in cities like Mumbai. Some of the questions they raised echo the concerns expressed by Geetha Durairajan about the objectives of laguage assessment in multilingual set-ups. In the next paper, Holm et al provided an indepth analyses of the phonological errors exhibited by four different bilingual children undergoing speech-language therapy in a clinic in U.K. Their study underscored the need to collect more data on acquisition patterns of minority language speakers in the U.K They also made valuable diagnostic and therapeutic implications based on the anayses at the phonetic / phonological level. Yasmeen Faroqi and Shyamala Chengappa's paper illustrates the clinical utility of a theoretical construct from linguistics, specifically, the trace deletion hypothesis, part of the Government and Binding (GB) Theory to the treatment of a multilingual aphasic patient (for a tutorial on applications of

GB theory, see Leonard and Loeb 1988). In the next paper, Apoorva Pauranik, offers a typology of paraphasias (naming errors) he noted in a group of forty Hindi speaking aphasic patients belonging to different clinical categories. I hope that the rich data-base provided by these patients and discussed in the paper will stimulate more neurolinguistic investigations which will permit us to come up with more language specific typologies. Though, the empirical data presented in Usha Rani's paper is limited, the theoretical arguments she summarised call for fresh investigations that can challenge existing notions on lexical representations and processes. Prathibha Karanth summarises the findings of some of the studies undertaken in India on reading and reading disorders, most of which being based on syllabic or semi-syllabic orthographies, pose a challenge to the existing theories and models of reading acquisition and disorders based on languages with alphabetic scripts. The last paper by Medha Karbhari also deals with reading, in particular with the assessment of reading comprehension in Marathi, of a group of normal hearing and hearing impaired school children. Although, not spelt out clearly, Medha Karbhari's findings do have considerable implictions to teaching writing skills to hearing impaired students. Taken together, the papers in this volume have covered two major areas of APL, language learning in bi / multilingual populations and aspects of reading acquisition and reading disorders. The two books reviewed in the *reviews* section and the report on the Major research project underway at our centre also present current views on applications of linguistic theories and pose many questions that await further research.

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OPiL 22-23 (1996-97)

BILINGUAL EDUCATION PROJECTS AND LANGUAGE ASSESSMENT: A HUMAN RIGHTS PERSPECTIVE

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ABSTRACT

Bilingual education programmes aim to develop the second language proficiency of learners. The nature of bilingualism attempted in most of these programmes is usually transitional and rarely additive. The learners belong typically to a subordinate language group, from either migrant or indigenous communities. Projects situated within these programmes aim to evaluate the language proficiency of these learners. Their proficiency is often, however, compared to the language proficiency of majority language speakers from the community. Such a comparison is unfair to the second language learner and is perceived as a deprivation of an essential linguistic human right. This paper makes an attempt to scrutinize a variety of language education projects across the world. These projects are located in Canada, USA, Australia, and Scotland. Attention will be focused on the nature of the research population (migrant vs.indigenous, superordinate vs. subordinate communities) and the nature of bilingualism aimed at in these programmes i.e., subtractive vs. transitional; additive vs. full. The nature of the norming sample; native/non-native, bilingual / monolingual speaker will also be examined. Based on this critique, implications will be drawn for Indian bilingual education programmes.

INTRODUCTION

Most bilingual education programmes aim to develop the proficiency of language learners. The nature of bilingual education in these programmes is one of immersion, submersion, or maintenance. The reasons vary from enrichment to need-based teaching/learning of a second or a foreign language. Projects that are placed within these

programmes aim to examine the language development of such learners, both adults/children. The research populations in such projects could be from migrant or indigenous communities.

In these programmes, it is felt that the assessment of the target language(s) is based on native speaker norms, and that these "native speakers" are more often than not, monolinguals. Monolinguals will naturally perform all language functions with the one language available in their repertoire. By contrast, a bi/multilingual need not and will not do so, because more than one language is available and all functions need not be performed through both or all languages. The comparison therefore of a bi/multilingual's language performance with a monolingual's language use is an unfair one. It is a non-recognition of the existence of other languages that exist in the language user's repertoire. This non-recognition is a basic issue of linguistic human rights. (hereafter referred to as LHR) argued Phillipson, Rannut and Skutnabb-Kangas (1994).

LHRs refer among other things to the nonacceptance of a mother tongue in language policy decisions in officially monolingual nation-states. The bi/multilingualism in such states is usually caused by groups of people who speak a minority language and not the official language of that nation state as their mother tongue; these groups could be migrant or indigenous populations. Violation of LHRs is also possible in bi/multilingual states where education and language policies do not acknowledge the happy co-existence of two or more languages. In such situations, language classrooms do not reflect societal reality but are expected to become artificial monolingual islands.

An attempt is made in this paper to critically examine the nature of language assessment in a sample of bilingual education projects across the world, from an LHR

perspective. Special attention will be paid to satements made about assessment, particularly monolingual norms of assessment in bi/multilingual contexts. It must however be pointed out that these are not always explicitly stated; in many cases, they need to be inferred from statements made in the project discussions about the nature of the norming sample, the way in which errors in the second language are perceived, etc. The focus of the paper is on bilingual and not English education, but the projects deal with the learning of English as a second or a foreign language.

FRAMEWORK FOR THE PAPER

The projects are examined on the basis of three criteria:

(1). ***The model of bilingualism:*** assimilative, transitional, full, enrichment (Skutnabb-Kangas 1981).
(2). ***The nature of linguistic communities involved:*** migrant or indigenous populations, super-ordinate or subordinate (Lieberson 1981).
(3). ***Nature of the norming sample, native or non-native speakers*** *(Mohanan 1992;* Singh, D'souza, Mohanan and Prabhu 1995).

Based on the variations in the projects of the three criteria used, statements about the recognition or the denial of LHRs are made.

The projects are examined in clusters, across three countries, Canada, United States, and Australia, all dealing with migrant subordinate populations. One additive, enrichment oriented programme from Canada is also included. A comparison is then made with two education programmes, one in Australia and one in Scotland that deal with indigenous but subordinate populations. Based on these analyses, implications for Indian bilingual education programmes are made.

Projects in Canada

The Development of Bilingual Proficiency programme was a five year research programme in Canada that aimed "to examine educationally relevant issues concerning the language development of school-age children who are learning a second language. The research population consisted of a variety of majority and minority language students, Japanese, Spanish and Portuguese speaking home backgrounds, students attending a French language school and students of English speaking home background learning French as a second language." (Harley, Cummins, Swain and Allen 1990: 7).

One of the main purposes of this study was to evaluate the target language proficiency of the second language learners in relation to that of native speakers; for this purpose, Anglophone immersion French students were compared with francophone French native speakers. Due to the shared mother tongue of the immersion students, the dominance of English in the wider school and outside environment, mother tongue transfer was expected to be a continuing factor in the students' written production. It was felt that mother tongue transfer would be manifested in the way in which the learners were distributing semantic information across syntactic elements in the second language (expressions of location, direction, prepositions of place) without necessarily making outright errors (Harley 1989).

This perspective of perceiving the first language as a deterrent and as interference needs to be questioned. The underlying assumption behind the interference perspective is that the two languages reside separately in the brain, invoking an implied Separate Underlying Proficiency (SUP) for the two languages (Cummins 1986). This is contradictory to ELT theory practiced even in the eighties (Stern 1983). Moreover, all the work done in the Canadian immersion studies on Basic

Interpersonal Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP) assumes a Common Underlying Proficiency (CUP) as prevalent. The decision to use Francophone speakers as a point of comparison for Anglophone speakers seems to go against prevalent theory and invoke an already disproved SUP standpoint. More importantly, the assumption that bi/ multilingual speakers use two languages in separate water-tight compartments is a denial of the existence of bilingualism and therefore a denial of an LHR. It ought to be assumed that a bilingual uses two languages the way a monolingual uses one language; language transfer should not be dismissed as mere interlingual interference.

A similar, yet slightly variant perspective is seen in the Toronto study, (Cummins, Harley, Swain and Allen 1990). Here the development of bilingual proficiency in majority and minority language learning contexts was examined. The cross-lingual dimensions of language proficiency indicated by the pattern of relationships across languages, in other words, a common underlying proficiency that accounts for variance in both the bilingual's two languages were focused on.

In spite of this attempt to look at common variations and changes in the two languages, comparisons were made with native speakers. Portuguese native speakers in the San Migual Island in the Azores were the point of comparison. The authors acknowledged that the large differences between the Canadian and the Azorean students demonstrated the formidable nature of the task -- that of maintaining a first language in a minority context.. The sample according to them, consists of native speakers of Portuguese, quite fluent in oral Portuguese in context embedded situations. However, their explicit knowledge of the formal structure of the language they feel, is relatively limited in comparison to the

Azorean native speakers. These Portuguese speakers are also commended for their native like competence in oral English. It is therefore felt that they are not in any sense "linguistically disadvantaged." (ibid. :126)

This perspective of a migrant minority population expected to use their L1 in a manner similar to a majority, indigenous population is a basic denial of a linguistic human right. It does not take the existence of the other language into account at all. In this case, ironically, the existence of the *other* language has been taken into account, but in a negative manner; first of all, the students are seen as linguistically disadvantaged, because they do not have native speaker competence in their own L1. Secondly, the disadvantage is supposedly removed because they appraoch monolingual native speakers of English in their proficiency.

Let us assume for a moment that very recent Portuguese immigrants, less than three years residence had been included in the study as another target group. It is possible that the study would have shown that these students have native-like proficiency in Portuguese but have problems with their Engish proficiency. One wonders whether the same statement, "not linguistically disadvantaged" would have been made about this sample; theoretically possible, for as bilinguals they communicative needs are met by one or the other of their languages!

Projects in the USA.

The primary aim of bilingual education programmes for minority students in the United States of America is to "enable children of limited English speaking ability to participate fully in the regular English language school program. By learning concepts and skills in their first language while they are mastering the skills in the English language and until they are able to function fully in the regular

school program, the children should be able to achieve at a normal rate. " (Pena 1984: 112).

This argument is based on the Lau vs. Nicholas judgement that "basic English skills are at the core of what these public schools teach. Imposition of a requirement that, before a child can effectively participate fully in the regular English language program he or she must already have acquired those skills is to make a mockery of public education" (Brown 1984:42).

The assumption here is one of assimilationist bilingualism and therefore the monolingual majority language user of English in the United States is always used as a point of reference. Minority children are expected to stay with bilingual programmes only until adequate language proficiency, by implication in English, is achieved and after that, they exit these programmes and attend "normal" monolingual classes. (Mackey and Von Nieda 1977). Here again, as in the Canadian programmes, minority and majority students, indigenous and migrant populations are all put together into one programme, discriminating automatically against certain groups.

Projects in Australia

There are two kinds of bilingual education programmes in Australia, one for the migrant population, the Australian Migration Education Programme, (AMEP) and the other for the indigenous but subordinate population, the Aboriginal and Torres Strait Islander people. In the AMEP programme, the focus is not, unlike the Portuguese students' study in Canada, on the quality of German for the immigrant German and Macedonian population. The focus, like in the United States, is on "linguistic assimilation or integration through the learning of English ...and community language learning programs for non-English speaking background

children, seen as educationally disadvantaged." (Kalantzis, Slade and Cope 1990:198)

The English language in Australia is perceived not "just as a means of cultural-linguistic dominance and assimilation. It is a common language of social understanding and effective participation." (ibid. 202.) The authors concede that the particular geographical origin of this language in Australia is a historical accident and therefore ought not to have any special virtue as a language. However they point out that "today, it is more than just one piece in the Australian mosaic of community languages" and that it is a crucial means to social power and determination (ibid.).

A very strong statement is made by the authors about the status of English in that country and more important, the norms of assessment to be attempted. They state that "some proponents of pluralist multilingualism may well denounce the possible assimilationist intent in ESL or transitional bilingual programmes. But the pedagogical, evaluative and final social consequences, even in the teaching of languages other then English, can be very different according to policy rationales which view language as a tool for self-determination and social access against those which view language mainly as a symbol and as a means of maintaining cultural diversity."(ibid). A pluralist position in language programs, according to the authors, which would imply teaching and assessing children only in the form in which it is used in the community is perceived by the authors as emanating from "a poorly thought out... short-term, poorly funded exercise in community relations"(ibid). The authors concede that "old standardised tests in a common national language were incapable of recognising the complex dynamics of linguistic and cognitive proficiency in which L1 and L2 are integrally related for students of minority language background." (ibid, 203). But they feel that this should not be

at the expense of other important elements that require measurement. A radical relativising of pedagogy and assessment, measured according to relevance to individual background, can neglect, according to the authors, the role of languages as a means of participation and access in a wider social context.

This is a very strong position to take and a very clear case of a denial of LHRs to certain populations in the country. The denial of rights, is however at the level of language policy at a national level and not necessarily within one specific bilingual education programme. Australians who claim that "English for All' is a national level language policy (Lo Bianco, 1990:59) seem to forget that they too were originally a migrant population, like the Germans and Turks and Greeks, who are now considered as migrant and subordinate. The difference is that they were a superordinate group to the indigenous aborigines who were made subordinates in their own land.

By contrast, bilingual education was seen as essential for the aboriginal and Torres Strait Islander population. This was done for socio-cultural and political reasons, to "support the integrity of minority culture, and foster cultural identity and self-respect in the minority groups" (Gale, McClay, Christie and Harris 1981:308). language arts and aboriginal culture was taught in the primary school in the aborigina languages, but slowly the transition was made to English Here again, as with the Portuguese-canadian population comparisons were made to monolingual 'English only students' . It was found that the bilingual children performed better than their English counterparts in the oral English tests. This was attributed to their experience in story telling in their own languages and therefore these children exhibited better developed skills in story analysis, retention, and oral production. In spite of this finding, based on statistical

comparisons, bilingual students were perceived as 'lower than national average standards'. The fact that the national average was made up largely of monolingual students was not considered at all.

Projects in Scotland

A situation similar to the one faced by the Torres Strait Islanders in Australia is seen in Scotland, with the native speakers of Gaelic. These Western Isles Islanders are now a minority, subordinate group in their own native land. Mitchell (1992:103) commented that in a context of perceived potential shift, a commitment to the maintenance of Gaelic as a community language is therefore seen as crucial. One of the aims of the Stirling project was to instil in the pupils, a much-needed sense of identity and confidence in themselves as people, and help foster in them an interest and a sympathy with the affairs of their own locality (Murray and Morrison 1984:91).

Monolingual English speakers were not used as a basis for comparison; however it is obvious that massive deprivation of linguistic rights must have taken place in the past. Otherwise there ought not to be a need to deliberately promote the teaching of the mother tongue as a maintenance language.

The Situation In India.

There are two streams of education in India, the regional language medium of instruction and the English medium stream. In the mother tongue medium schools, the question of non-recognition of linguistic human rights does not arise, because all subjects are taught through the regional language and English is taught only as a language subject. Also, even in the English classes, commented Prabhu (1987:60) "the learners' first language was neither disallowed nor excluded. Learners use of the mother tongue ..revealed a

shared notion of what may be called 'public' and 'private' discourse... Learners refrained from using the mother tongue except as a last resort and with considerable reluctance in a whole class activity but felt much freer to do so at the individual task stage when the teacher was going round the class and the learner was therefore consulting the teacher 'privately".

Prabhu feels that it is necessary at some point, to recognise that standards of adequacy for a world language are those that arise from its operation as such, not those which arise from its operation in exclusively native speaking contexts. He feels that developing perceptions of the nature of language learning must be accommodated. This for him, will include local standards.

English medium schools across the country use English as the medium of instruction across the curriculum. The respective first languages or mother tongues, exist only in the second language classrooms. There are variations in the choice of second languages studied, but the details are not given, since they are not relevant for this paper. The CBSE Course A schools, ICSE schools, state board English medium schools, etc. are the English medium schools across the country. Most of these schools have shifted their focus from the teaching of language as a subject to the teaching of language as and for communication.

In spite of this focus on language as and for communication, no attempt has been made to visualise the reality of bi/multilingual communication. It is assumed that all functions of language will be performed through English; all English responses to supposedly 'real' communicative tasks are perceived as the norm and not the exception. This should be seen as a denial of a baisc linguistic human right. English medium schools in India take no cognisance of the first language of the students. The students are perceived as

part of a minority population in a subordinate situation. Such a situation existed in the pre-independence days in colonial India., where, although Indians were in the majority, they were in a subordinate position to the English rulers. The curriculum planners, syllabus makers and text book writers of these schools, seem to be still 'looking up' to the non-existent migrant but superordinate population, the Englishman! The current social reality of Indian multilingualism does not seem to be recognised at all.

CONCLUSIONS & IMPLICATIONS

The main conclusion that can be drawn from the above discussion is that the planners of educational programmes for bi/multilingual populations should pay more attention to a variety of questions concerning the nature of bi/multilingualism; the nature of research population, the status of the language within the community and other such sociolinguistic and political factors. There is an urgent need for undertaking systematic psycholinguistic studies involving bi/multilingual populations in the Indian context to support or refute received notions about communicative competencies and other issues of significance to language assessment.

There are many kinds of questions that can be raised based on the analysis of these bilngual education projects. Since all the studies, have assessed language performance in some form or the other, directly or otherwise, attention will be restricted to examining their implications for language testing in general. The relevant questions that came to my mind are:

1. Is knowledge of the language system to be seen as an end in itself and therefore evaluated as a prescriptive given, or will the focus be on language as communication?

2. In the testing of language as communication in a multilingual society, will mixed code use be accepted as

normal? a descriptive data base that may reflect a mixed code use be accepted ?

3. Similarly, will evaluation programmes accept descriptive data base as a point of reference and therefore incorporate language variation in it?

4. In language education, will the natural urge to explore and learn be recognised? Will this become a part of the evaluation frameworks?

5. Who is being evaluated? the individual learner or the speech community? If this community is definable only through 'formal competence' then can language as a communicative tool ever be evaluated?

6. In India, if English is not seen as an alien tongue and therefore local norms are acceptable, will there be different norms for different parts of the country?

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INFLECTION, SPLIT OR NOT? EVIDENCE FROM TAMIL-TELUGU CHILDREN

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ABSTRACT

Chomsky in his book, *Barriers* (1986) treats tense and agreement as properties of one and the same category, viz.,'inflection (I). Post Barriers research (Chomsky 1988; Pollock 1989), on the other hand, has led to the claim that the two categories are disparate, each having its own projection. The present study examined a wide range of speech acquisition data of both monolingual and bilingual Tamil and Telugu children with a view to find out which one of the two theoretical views is tenable. The results revealed that neither the monolingual children's speech development nor the bilingual children's data pertaining to the use of inflections to separate the codes supported the split hypothesis. It appears that the structure of a particular language may influence the way these categories are viewed by children suggesting thereby the need for gathering of broad based empirical data before conclusive statements can be made in this regard.

INTRODUCTION

Indian languages with their varied structures and inter-relations obtaining between these structures at different levels of language organization can be exploited fruitfully for testing the empirical validity of linguistic generalisations both theoretical and applied. It is a well known fact that many of these generalisations are made based on the data from English and a few other well known European languages. It is pertinent to cite Srivastava (1992), who once commented that linguistic scholarship is caught in the web of linguistic argumentation with a stunning variety of theories and a disparity of clashing doctrines. Unfortunately, however, his

observation that one of the major trends of modern Indian linguistics has been the application of linguistic theories and models developed in the West to the description of Indian vernaculars, still holds today, to a large extent. Needless to state that such a dependence on theories and models developed in the contexts of languages other than our own cannot help us in building up the much needed linguistic data base for different applicational purposes such as translation, language teaching, language assessment, therapy etc.

Our own limited research on language acquisition, especially that of Tamil and Telugu children has shown that many of the generalisations made on the strength of the non-Indian languages and the explanations offered for them are not borne out by findings from our languages. I am making this statement based on the empirical data I have gathered over the years from Tamil and Telugu children on the acquisition of a variety of structural details, e.g., phonology (Lakshmi Bai and Nirmala 1978), case relations and case forms (Lakshmi Bai 1984), null subject phenomena (Lakshmi Bai and Sailaja 1994) and coordination (Lakshmi Bai 1994).

The objective of the present paper is to examine Tamil and Telugu children's acquisitional data with a view to finding out what bearing they have on the question of whether or not tense and agreement are a unitary property of the category, Inflection (I), as proposed by Chomsky in his book, *Barriers* or whether they belong to two different projections in consonance with the theoretical claim of some post-Barriers research (e.g. Chomsky 1988; Pollock 1988, 1989).

Chomsky (1986) treats tense and agreement as properties of one and the same category, namely, inflection. Post-Barriers research, as already mentioned has led to the claim that the two categories are disparate, each having its own projection. Radford (1997) points out that these two different theoretical stands would imply distinct predictions

about how tense and agreement will be acquired by children once they reach the stage where morpho-syntactic aspects of inflections are visible in their speech. What these predicitons are for children learning two or more languages simultaneously is something that needs to be tested out empirically.

Existing evidences supporting the split inflection position are as follows: Firstly, studies relating to the developing speech of young English speaking children (Brown 1973; Cazden 1968) show that these children master tense inflection (e.g. past tense morpheme, -ed) before agreement inflection (e.g. 3rd person present tense forms like goes, sees etc.). Further, Radford and Alridge (1987 cited in Radford 1996) point out that for many children, the earliest manifestation of an inflection or (I) - system is the emergence of a restricted set of modals base generated in the I - system. Secondly, Friedmann and Grodzinsky (1997) reported, based on an experimental task, that the data elicited from an agrammatic Hebrew aphasic patient show selective impairment of agreement and tense features in the sense that while agreement inflection was intact, tense inflection was severely impaired, supporting the split hypothesis.

SOURCES OF DATA

The observations reported in the present study are based on the following sources of data;

(1) detailed diaries of speech development of two Tamil-Telugu bilingual children; Chetan (C), my son, and Deepa (D), his sister from the time they uttered their first words (2) doctoral dissertation of Nirmala (1981) covering the speech development of four Telugu monolingual children in the age range, 1;6 to 3;6 years, (3) extensive recordings of speech development of Vanita (V), a Tamil child in interaction with her parents from the time she was nine months old to 33

months (Narasimhan and Vaidyanathan 1984), (4) speech recordings of a Tamil child Ramya (R) from 0:9 to 3:9 years (unpublished data of Vaidyanathan), and (5) recordings of a Telugu speaking child Amogh (A) at 1;6 years of age.

INFLECTIONS IN TAMIL AND TELUGU

Before presenting the relevant data, it will be helpful to give a brief description of how tense and agreement inflections are encoded in the verbal structures of Tamil and Telugu.

Tamil has both positive and negative indicative verb forms. Positive verbs carry markers for the categories of tense / aspect, person, number, gender and status. Negative verbs are not marked in the same manner in the sense that some of the categories marked in the positive verbs may be left unmarked in the negative or they may get neutralized. This will become obvious from the following example of past tense forms of the verb *paDi* 'read':

	past positive	**past negative**
1st p. sg.:	*paDi-cc-een*	*paDikala*
2nd p.sg.:	*paDi-cc-a*	-do-
3rd p. sg.:	*paDi-cc-aaL / -aan*	-do-

As suggested by Lehmann (1989), one way of analysing the Tamil verb inflection will be to consider it as consisting of verb stem + tense + pronominal. The pronominal morpheme contains the features of person, number and gender. Not considering the irregular verbs, the verb stems in the variety of Tamil to which both the monolingual and bilingual children of this study were exposed, can be classified into a number of classes to which the following tense suffixes are attached:

present tense	**past tense**	**future tense**
--- ar	*--tt, --cc, --i, --in*	*--pp, --v*

The person, number, gender (PNG) markers of Tamil are as follows:

	Singular	**Plural**
1st p.	*--een*	*--oom*
2nd p.	*--a*	*--eeL*
3rd masc.	--aan	--aaL
3rd fem.	*--aaL*	*--aaL*
3rd neut.	*--du,*	*--um*

Like Tamil, Telugu finite verbs are also analysable into verb stem + tense / aspect suffix + person, number, gender and status. For e.g., cuus + EE + nu 'I saw it'. Krishnamurti and Gwenn (1985) recognized the following inflctional types of the finite verbs involving tense - mode distinctions, past, habitual, imperative and hortative in the affirmative and future, habitual and imperative in the negative. The major tense / mode suffixes of the finite verbs in the variety of Telugu to which the children of the present study were exposed are:

Past	**future / habitual**	**Durative**
--EE / --in	*--NTaa / --NTuu*	*--t / T + un*
--naa / -na	*--taa*	
--ND / --in		
--Daa / --Da / --in		

The following are the PNG suffixes of Telugu:

	Singular	**Plural**
1st p.	*---nu*	*-- m(u)*
2nd p.	*--vu*	*-- ru*
3rd p. masc.	*-- Du*	*---ru*
3rd p. fem./neut.	*-- di*	*-- yi*

DATA AND DISCUSSION

A. Monolingual children

S (wati), the youngest child studied by Nirmala had in her speech at 1;6 years, a few imperative verb forms. Imperative verb forms in Tamil and Telugu are bare stems and do not call for any inflection except, however, that an honorific form of the imperative takes the honorific marker --*anDi* as in, *peTTaNDi* 'please put it'. Besides these, Nirmala pointed out that S in the initial stages, often omitted the verbal stem itself and used the tense + PNG inflection, especially the 1st person present tense inflection as a substitute for a number of verbs. For instance, she used *tunnaa* as a replacement for *ostunnaa* 'I am coming'; *tinTunnaa* 'Iam eating'; *winTunnaa* 'I am listening'; *ceptunnaa* 'I am saying' and so on. Nirmala argued that the tense / aspect marker figuring in the child's speech ought to be interpreted as a consequence of phonetic imitation and not as the tense suffix. What is interesting in the present context is the fact that the part of the verb form retained in the child's imitation is a combination of the tense/ aspect suffix followed by the PNG marker.

Nirmala pointed out further that from 1:6 onwards, S started using also a few verbs in the past tense form in the place of non-past verbs. For example, *tinnaa* 'I ate'; *tuutonni* for *kuucundi* 'she/it sat down'; *tiltaa* for *pilustaa* 'I will call' etc. It should be noted that in the youngest child studied by Nirmala (1981), there were only two types of verb forms; (1) the uninflected imperative form, (2) verbs with tense / aspect and PNG inflection.

Let us now consider the speech data of yet another monolingual Telugu child, Amogh (A) whose speech was recorded by V. Sailaja. Recording of one session of interaction between the child and the observer shows that, of the fifteen verbs used by this child, all of them were inflected

for tense and agreement features. For example, *tinTundi* 'is eating'; *kotta* for *koDtaa* 'I will beat'; *unnaalu* for *unnaaru* 'there are present'; *ottindi* 'has come' and so on.

If we now consider the speech samples of slightly older children, viz., the other three children in Nirmala's (1981) study, we notice that even the youngest of them, i.e., K at 2;0 had all the tense suffixes and PNG markers included in her verb forms.

I will now turn to the speech data of V(anita) and R(amya), the two monolingual Tamil children. Unlike the Telugu children, for these Tamil children, we have access to their longitudinal speech data ranging over a period of three and a half years. Discerning a stage by stage development of the verbal forms and their inflections in these children's speech hence was more plausible.

In V's speech from ten to thirteen months, there occured only the imperative forms of a few verbs like *taa* 'give; *vaa* 'come'; etc. Between fourteen and sixteen months, there was an addition of such verb forms as *acc* 'beat'; *taac* 'sleep'; *aac* 'finished' etc. These forms are relatable respectively to the adult forms, *accu, taacu and aacu.* Adults do use the child forms in their interaction with babies (baby-talk forms). The forms in question, though built on a past tense stem are bereft of tense / aspect and PNG inflections and are used by adults in the imperative, past tense and other contexts as will be clear from the following examples: *poocu* 'It's gone'; *aacu* 'It's over'; *taacu paNNu* 'pretend to sleep' etc.

From the age of 17 months onwards, V started using fully inflected verb forms, inflected both for tense / aspect and agreement categories. For e.g., *pannanaa* for *paNNaraa* 'he / she is doing it'; *ettaa* for *eDuttaa* 'he / she took it'; *ikkaa* for *irukaa* 'it is there' etc. However, there was a period in her speech during which the uninflected verb forms, especially

the participial verbs, overlapped with those with inflections. For example, *tuuki enju* for *tuuki erinju* 'having thrown away' when she was 1;8 years old.

In R(amya's) speech, verb forms appeared when she was 1;6.15. In the initial stages, the verbs used by her were bare stems, either in the shape of an imperative or past participial form, for e.g., *naandko* for *nakandko* 'move away'; *koTTi* 'having spilled' (uttered after she spilled something); *piccu* 'having pulled out' (after she pulls out the hair of the doll) etc. However, at this stage, she could repeat an inflected verb form available in the input, for e.g., *sikkadu* (as a repetition for the adult form, *sirikkardu* 'it is laughing').

The next stage in her speech was characterized by sporadic occurence of inflected verb forms, for e.g., *maamaa kattaa* for *maamaa kattaraa* 'uncle is shouting' when she was 1;6 months old. Between 1;6 to 1;9, inflected forms of verbs kept increasing in her speech, but imperatives and past participial forms of different verbs outnumbered the inflected forms and were used for different tense and person, number and agreement contexts. During this period, to be more precise, her speech showed sixteen different verb forms which were either imperatives or participials and eight which were inflected. A few examples of both types follow:

tiTTu for *tiTTuvaan* 'he will scold'
vinood kuupu for *vinood kuupaDraa*
'someone is calling Vinod'
velayaaDii for *veLayaaDraan* 'he is playing'
kolaykkudu 'it is shouting'
kacceen for *kaDicceen* 'I have bitten' (after the child bit her father's hand).

The Telugu and Tamil data presented so far of the Telugu and Tamil monolingual children show clearly two distinct stages in the development of verb forms. A stage of

non-inflections followed by that of verbal inflections. What is important to note is that when children inflect their verbs, they do so simultaneously for the tense / aspectual category as well as for agreement. There were no examples of verb forms inflected for tense /aspect features alone with the agreement features missing. This observation can be taken as indicating that the tense and agreement categories are not separated by the children in their early speech and are thus treated as a unified phenomena although linguistic analyses of the languages in question calls for setting up the two as disparate categories.

B. Bilingual children

An examination of the developmental data of the two bilingual children of this study, viz., Chetan (C) and Deepa (D) lends further support to our claim that children acquiring Tamil and Telugu do not treat the inflectional categories of tense and agreement as two distinct projections of inflection. Let us consider the relevant speech data of these two children. A careful analyses of C and D's speech data shows clearly that as was the case with the monolingual children, the early speech of these children also had bare stems consisting of the imperative and participial verb forms. These forms were used also in contexts where an inflected verb form is required. To illustrate with examples from C's speech recorded during 1;6 to 1;8.20 (read the abbreviations Te. as Telugu and Ta. as Tamil): *tii* 'take out' (Te.); *poo* 'go' (Te. and Ta); *akkaa* for *okkaaru* 'sit' (Ta.); *vey* 'keep' (Ta.); *tuuki* 'having lifted' (Ta) etc. This stage was followed by the one in which inflected forms of verbs emerged though the use of bare stems in the place of inflected verbs continued side by side for a brief period. For instance, for about a month starting from 1;10, C's speech had inflected verb forms such as *tuungaraa* 'he / she is sleeping'; *pinjudu* 'it got torn'; and bare stems such as *vaangi* 'having bought' and *tolenju* 'having been lost', all Tamil

forms used for different tense and aspectual contexts. In the next stage of development, like the other children, C stopped using the bare stems for the inflected ones as the latter became more and more productive.

In D's speech also these three stages of development were clearly discernable. From 1;2 to 1;4, all her verb forms were either imperative forms or participial forms. For e.g., *poo* 'go (Ta./Te.); *etkoo* 'lift' (Te.); *tii* 'take it out' (Ta.); *aandko* for *naakandko* 'move' (Ta.); *etti* for *eduttu* 'having opened' (Ta.) etc.

From 1;5, she started using inflected verb forms for e.g. kuututaa for *kuucuNTaa* 'I will sit' (Te.); *kaDutaa* for *kaDugutaa* 'I will wash' (Te.). But, like the other children, even after she started inflecting her verbs, she continued to use the imperative and participial verb forms in contexts where an uninflected verb form would be required. For instance, at 1;5.6, she used expressions like *neenee pootukoo* 'I will wear' *(pooTukoo* is the reflexive imperative verb form); *ankul kaal kutti* 'uncle having pierced the ear' (to convey that it was uncle who pierced her ear).

So far, we have seen that in the early speech of both monolingual and bilingual children of Tamil and Telugu, there is evidence for only two types of verb forms; the uninflected stems and the inflected verbs, inflected for both tense, aspect and agreement categories.

The more interesting data bearing on the question of whether or not tense and agreement constitute an unitary phenomenon, however, come from the later stages of speech development of the two bilingual children of this study. Bilingual children acquiring two languages simultaneously are required sooner or later to separate the linguistic elements of the two codes in question to suit the speech situation. Such a code separation may consist in the use of not only the lexical

items of the two codes, but other featuers such as sounds, morpho-phonemic processes, inflectional markers and syntactic rules.

One of the strategies adopted by C and D in their attempts to separate the two codes, viz., Tamil and Telugu was to append the inflections of the intended language to the unseparated set of verb forms of their bilingual repertoire. For several months, both C and D exhibited the tendency to extend Telugu and Tamil inflections to a common set of verb stems drawn from the two languages. Few examples follow from the speech of both the children:

Deepa (A): Tamil stem with Telugu inflections

1;8.16 *kuDanu* 'I will not give'; *saappanu* 'I will not eat'; *collanu* 'I will not say'
1;9.8 *tuungutaa* 'I will sleep'; *eedutaa* for *eZudataa* 'I will write'
2;4.3 *tallesindi* 'it pushed'

,(B) Telugu stem with Tamil inflection

1;8.16 *koTTaraan* 'he is beating'
1;11 *paNDukaalaa* 'Is he sleeping'?
1;11.15 *paDesaan* 'he dropped it'
1;11.18 *unDareen* 'I will stay'

Chetan (A) Tamil stem with Telugu inflections

2;3.21 *eZudutaa* 'I will write'
2;3.22 *toDaku* 'do not touch it'
3;0.6 *koTtunnay* 'they are falling'

(B) Telugu stem with Tamil inflections

2;1.13 *tiiyareen* 'I wil take it out'
2;3.7 *koosiTaan* 'he cut it'
2;8.17 *ekkareen* 'I will climb'
2;10.9 *jaarardu* 'It is moving'

A very clear illustration of a bilingual child's using inflection alone as a marker for demarcating the intended code can be seen in the following conversation which took place when C was 2;3.21 between him and his parents. Chetan's father used Telugu during his interactions with him, while his mother spoke to him in Tamil.

F. *amma kaaleejki pooyi eemi ceestaavu* ?
mother college to having gone what will do you
'What will you do going to mother's college ?'

C. *amma kaaleejki pooyi ezudutaa*
'Having gone to mother's college, I will write'.

M. *amma kaaleejki pooyi nii enna paNNuvaa* ?
mother college to having gone you what will do you
'What will you do going to mother's college ?'

C. *eZuduveen*
'I will write'.

A close examination of the acquisitional data of both monolingual and bilingual children of the present study shows clearly that the Tamil and Telugu children treat the tense and agreement inflections as a unitary phenomenon though the agglutinative structure of the languages in question encodes the two meaning relations quite often by distinct affixes. In this respect, the bilingual children's data seem to be quite revealing. Separation of the two intended codes to suit the interlocutors and the speech situation is a task which the bilingual children are required to address themselves sooner or later in the process of their bilingual language acquisition. Selection of specific linguistic elements to mark the code in question in the speech interaction thus is a conscious process in the speech development of bilingual children. The data of the present study show that both the bilingual children used inflections alone to indicate whether the intended speech was to be taken as Tamil or Telugu. But, in all such mixing of stems of one language and inflections of the other language,

neither of the children resorted to analysing the tense and personal suffixes as separate units even in their later stages of speech development.

CONCLUSION

The data presented here supports the unsplit inflection of the Barriers framework rather than the alternative approach of the post-Barriers proposals. More importantly, the data of the present study raises an interesting question. If as shown above, the children do not separate the two inflectional systems, viz., tense and agreeement, can this be taken as an evidence to infer that the linguistic analysis of verb forms as consisting of two separate categories of tense / aspect and agreement has no psychological reality? A clearer answer to this question may be sought by carefully examining the way inflectional categories of tense and agreement figure in the agrammatic aphasic subjects of these two languages. Certain morphological details to which the children do not pay attention to at early stages of language development may be sorted out at a later stage. Preservation of one of the two categories to the preference of the other by agrammatic aphasics may throw more light on this question.

A second point to consider is that a cross-linguistic comparison of both the children's developing speech data and agrammatic aphasic speech in different morphological types of languages (i.e., agglutinative, fusional and infixing) may be necessary to understand how far the nature of the language type itself may be responsible in determining the way these categories are acquired by children and either lost or recovered by agrammatic aphasic patients in the context of a particular language. In the absence of empirical data of a broad nature, nothing much can be stated conclusively regarding the question of whether or not inflection is a split category in natural languages.

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SPEECH DISORDERS IN BILINGUAL CHILDREN: FOUR CASE STUDIES

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ABSTRACT

Diagnosis of speech disorder in children acquiring two languages is problematic. There are few norms for bilingual language acquisition and speech-language therapists are unlikely to speak both languages of the bilingual populations they serve. Further, knowledge concerning the phonological structure of many languages (e.g., Mirpuri, a dialect of Punjabi) is limited. This paper describes the errors made by four children suspected of speech disorder. The children were referred to the Rochdale Healthcare NHS Trust Speech and Language Therapy Department for assessment of their speech. The children spoke either Mirpuri, Punjabi or Urdu at home but were exposed to English at nursery or school. The four cases illustrate a range of speech difficulties: SA incorrectly articulated /s/ and /z/; UT's phonological acquisition was delayed; HK exhibited a consistent error pattern in English that is atypical of normal development; and, NF's speech was characterised by inconsistent errors. These four error patterns reflect research evidence concerning subgroups of speech disorder in monolingual children in English, Cantonese, Turkish and German as well as children who were bilingual in Cantonese-English and Italian-English. The findings provide further support for the hypothesis that symptoms (surface error patterns) of speech disorder are language independent. The clinical implications for assessment and treatment of speech disorder in children exposed to more than one language are discussed.

INTRODUCTION

Research in child language development and disorder has focused primarily on monolingual children. Yet as many as half the world's children are expected to acquire two languages in the pre-school years (Grosjean 1982; de Houwer 1995). Given that speech disorder affects at least ten percent of otherwise normal children entering school (Harasty and Reed 1994), a significant number of children exposed to two languages in the pre-school years might be referred to speech-language therapy for clinical management of a speech disorder. There is, however, information concerning bilingual children's phonological acquisition (Watson 1991). This reflects an important gap in the knowledge base of speech-language therapists since speech disorder is the most common developmental communication disorder (Weiss, Gordon and Lillywhite 1987).

The assessment of the speech of bilingual children involves a range of difficulties. For example, the speech-language therapist might have little knowledge of one of the child's languages. As well, few norms exist for children acquiring various combinations of languages. Preliminary evidence suggests that the course of phonological acquisition by bilingual children, initially exposed to Cantonese as a first language and then to English at pre-school, might be different to that of Cantonese-speaking and English-speaking monolingual children (Dodd, So and Li 1996). Their rate of acquisition of some aspects of each phonological system was delayed (e.g., use of assimilation or final consonant deletion well past the age expected for monolingual children). They also consistently used some atypical phonological error patterns in both languages (e.g., backing of alveolars or initial consonant deletion). Individual children used different sets of patterns, and few atypical patterns were used in both languages simultaneously. Consequently, without bilingual

norms, it is very difficult to identify children with phonological disorders (Dodd, Holm and Li 1997).

However, recent clinical research investigating the nature of developmental speech disorders in a range of languages has provided support for the hypothesis that symptomatology of speech disorder, in terms of surface error patterns, may be language independent. Dodd and McCormack (1995) classified monolingual English-speaking speech disordered children into four subgroups in terms of their surface speech errors and associated performance on a range of tasks that identified deficits in the speech processing chain. The four subgroups are:

1. **Articulation impairment :** an inability to produce a perceptually acceptable version of particular phonemes, either in isolation or in any phonetic context. Children may consistently produce a specific distortion (e.g., lateral lisp) or substitute another phoneme (e.g., [w] for /r/). Articulation errors are due to a peripheral problem where the wrong motor program for the production of specific speech sounds has been learned (Fey 1992).

2. **Delayed phonological skills:** a phonological system similar to younger, normally developing children. Most phonemes can be articulated, however, there is a discrepancy between the phonological processes observed and the child's chronological age. The reasons for delayed phonological development include an impoverished language learning environment, slower neurological maturation, or general cognitive delay (Powers 1971).

3. **Consistent deviant disorder:** systematic use of deviant phonological rules, i.e. error patterns that are atypical of normal phonological development (e.g., deleting all syllable initial consonants). These errors are thought to be caused by an impaired ability to abstract knowledge about the nature of

the phonological system (Dodd and McCormack 1995).

4. **Inconsistent speech disorder:** variable production of the same words or phonological features in the same contexts. Children who make inconsistent errors have intact knowledge of the phonological system but find it difficult to plan motor sequences (Bradford & Dodd 1996). Children who make inconsistent errors perform poorly on tasks assessing phonological working memory and vocabulary measures (Dodd and Horsley, submitted) and phonological planning (Bradford-Heit 1996).

These same four subgroups have now been observed in languages other than English. For example, So and Dodd (1994) assessed 17 consecutive referrals of Cantonese-speaking monolingual children with suspected speech disorder. The children fell into four groups: two were unable to articulate perceptually acceptable productions of specific phonemes; 8 had delayed acquisition of phonology (according to established normative data), 5 consistently produced error patterns that were atypical of normal phonological development and two exhibited speech errors characterised by inconsistency. Similarly, Fox (1997) described the speech errors of monolingual German-speaking children on waiting lists for therapy. All four subgroups of speech disorder were identified. Further, Topbas and Konrat (1996) described cases of a monolingual Turkish-speaking children with speech disorder whose errors reflect subgroups of inconsistency and the use of error patterns that are atypical of normal phonological acquisition.

There is also some evidence that the classification of subgroups of speech disorder can be applied to children exposed to more than one language. Dodd, Holm, and Li (1997) presented two case studies of bilingual Cantonese/ English speaking children with speech disorders. One of these children, JL, had speech errors characteristic of

articulation disorder and phonological delay in comparison to his bilingual peers. The other child, CH, made errors that indicated that he had a consistent deviant phonological disorder. There was also some evidence that CH was having difficulty marking the differences between his phonological systems, a characteristic not evident in the larger bilingual group with whom he was compared.

Speech-language therapists need to be able to identify the subgroup of speech disorder so that they can intervene appropriately. A treatment case study of JL's speech disorder (Holm, Ozanne and Dodd 1997) showed that generalisation across a bilingual child's languages depends on the type of speech disorder: articulation errors were remediated in both languages following treatment in only one language; but phonological intervention did not generalise across languages. Thus, current intervention, typically by a monolingual English-speaking therapist, may prove inadequate. The subgroup characteristics of a bilingual child's speech disorder may therefore also affect the choice of service delivery.

Research addressing the clinical issues of assessment and intervention could also have important theoretical implications for two unresolved areas in child language development:

1. **The separateness of bilingual children's two emerging phonologies**

Ingram (1981) observed differences in one two-year-old English/Italian bilingual child's phonological error patterns in the two languages. He concluded that the characteristics of the input phonology of each language had a greater influence on the child's speech errors than the individual child's preferences for certain simplification strategies. Alternatively, children learning two phonologies

in the pre-school years might also provide evidence for one phonology affecting the other. For example, Dodd *et al,*. (1996) reported that a number of their Cantonese / English speaking pre-schoolers added an intrusive final consonant to many open (CV) Cantonese single syllable words, to create a CVC form which is more typical of English word structure. Nevertheless, in most cases, the consonant these children chose to add was selected from the small range of consonants that may occur word finally in Cantonese. Studies of the effect of intervention in one language on the bilingual child's other language could clarify the extent to which the two speech systems operate independently.

2. The distinction between articulation and phonological errors in a child's speech.

The demarcation between phonology and phonetics is sometimes difficult to establish. Beckman and Kingston (1990:1) argue the need to elucidate how 'discrete symbolic or cognitive units of phonological representation map on to the continuous psychoacoustic and motoric functions of its phonetic representation'. In contrast, other theorists (e.g., Browman and Goldstein 1992) dispute the need to distinguish between the two, arguing that representations of words include both phonological and phonetic specifications. The study of bilingual children's speech errors could provide evidence that will clarify this issue. While most languages share some phonetic units that are the same, each has its own distinctive phonological system.

The current paper attempts to add to the body of knowledge regarding speech disorders in bilingual children. It presents four case studies of children bilingual in either Mirpuri, Punjabi, Urdu and English. Unlike the Cantonese/ English children there are no group data regarding the normal bilingual development of children exposed to any of these languages and English. Nor are there data available on

standardised assessments for monolingual acquisition of the languages other than English. The questions addressed were:

1. Were the speech errors characteristic of a particular subgroup of speech disorder?
2. Did the speech errors indicate the same underlying deficit for both languages?
3. Was there evidence of differentiation of the phonological systems?
4. Were the English error patterns typical of monolingual children?

Method

Subjects

Four children referred to the Rochdale Healthcare NHS Trust Speech and Language Therapy Department were assessed. All of the children were exposed to either or Mirpuri, Punjabi or Urdu as well as English. The children were referred by either the schools or their doctors for assessment of their speech development.

Procedure

All of the children were given two phonological assessments. The South Tyneside Assessment of Phonology (STAP: Armstrong and Ainley 1988) was given by an English-speaking speech therapist to sample the children's English phonological acquisition. The STAP is an assessment used widely in Britain by speech therapists. The Rochdale Assessment of Mirpuri Phonology - Research Edition (RAMP-R) was given to assess their Mirpuri, Punjabi, or Urdu. The RAMP is a single word naming test designed to sample most phonemes in the three languages. Although the assessment is still in development, adult productions of the 77 words selected for the test have been transcribed in each of the languages. The children's productions of the words were compared to the adult productions transcribed.

A bilingual assistant administered the assessment in the language used in the child's home. The children's language development was also screened using informal comprehension and expression tasks in each language. The bilingual assistant carried out the tasks under the guidance of the English-speaking speech therapist. The Test of Visual Motor Integration was also administered to three of the children to assess their non-verbal development. The children were assessed within the speech therapy clinic.

The assessment sessions were recorded using a Marantz CP 130 audio cassette recorder. The speech samples from both languages were transcribed by an English-speaking speech therapist. The phonological processes used, articulatory errors, and percentage of consonants correct for each child in both languages was derived from the two phonological assessments.

Case Studies

Case Study 1: SA

Background Information

SA was assessed at the age of 11:2 years. Her developmental history was without incident and she had experienced no major medical problems. A family history of speech disorder was reported. SA is a fluent speaker of Urdu and English. She attends an Islamic school in Britain and is achieving well academically. SA has experienced no difficulty with language acquisition. She acquired Urdu as her first language until she started school where she was also exposed to English. SA was not given the VMI because there were no concerns about her general development.

Urdu Phonological Error Data

The only errors evident in SA's Urdu speech sample were a lateral distortion of the phonemes /s, z/, and the substitution

of [k] for /h/ in word initial position. The distortion of the /s/ and /z/ phonemes was consistent. The [k] substitution was consistent in initial position, however correct production of /h/ was evident in other word positions. Ninety percent of SA's Urdu consonants were correct over the entire sample of RAMP-R words.

English Phonological Error Data

The same lateral distortion of the /s/ and /z/ phonemes evident in Urdu was also evident in SA's English speech. The distortion was consistent and perceptually identical to the distortion in Urdu. There were no other errors in her English speech sample. The percent consonants correct in English was 85%. Monolingual English-speaking children's articulatory development is usually complete and accurate by 5 years of age.

Case Study 2: UT

Background Information

UT was assessed at the age of 5:7 years. His developmental history was without incident and he had experienced no major medical problems. UT is a fluent speaker of Punjabi and English. He attends an English-language school in Britain. UT has experienced no difficulty with language acquisition. He was exposed to both English and Punjabi from birth. He mainly speaks one language with each parent. UT achieved a standard score of 87 on the VMI giving him an age equivalent score of 4:10 years.

Punjabi Phonological Error Data

UT's Punjabi speech was intelligible although he used some phonological processes consistently. UT usually glided /r/⇨[j], however he was able to correctly articulate /r/ in some words. There was also evidence of cluster reduction (e.g., /dr-/ ⇨ [d-]; /-kr-/ ⇨ [-k-]); and pre-vocalic voicing (e.g.,

/pa-/ ⇨ [ba-]) errors. All of the Punjabi phonemes were used in UT's speech sample. The RAMP speech sample had 87% consonants correct.

English Phonological Error Data

UT's English speech was slightly less accurate than his Punjabi. He had 77% consonants correct in his STAP speech sample. A number of phonological processes that are developmentally appropriate for younger children were evident in UT's English speech: gliding (e.g., /r/⇨[w]; /l/⇨[j]); vowel epenthesis in clusters (e.g., /gr-/⇨ [gəw-]); stopping (e.g., /ð /⇨ [d]); fronting (e.g., / ʃ /⇨ [s]; /kl/⇨ [pəl-]; and a variable /s/ production that included /s,θ,ɬ/. There was no evidence of the /r, ð/ phonemes in UT's phonetic inventory. Most monolingual children of UT's age would have acquired all of the English phonemes and would have consistent, error-free speech.

Case Study 3: HK

Background Information

HK was assessed at the age of 5:3 years. HK's mother reported that she was late starting to talk, however the rest of her developmental history was without incident and she had experienced no major medical problems. HK is a fluent speaker of Urdu and English. She attends an English-language school in Britain. HK was first exposed to English when she started attending school one year prior to the assessment. She had experienced no particular difficulty with language acquisition. She acquired Urdu as her first language until she started school. HK achieved a standard score of 97 on the VMI giving her an age equivalent score of 5:2 years.

Urdu Phonological Error Data

HK's speech was intelligible, however she was making noticeable errors. Her speech accuracy on the RAMP-R sample was 73% consonants correct. A number of phonological processes were evident in her speech sample: backing (e.g., /t/ ⇨ [k]; /d/ ⇨ [g]); devoicing (e.g., /d-/ ⇨ [t-]); not releasing final consonants; final consonant deletion; stopping (e.g.,/-r/ ⇨ [-d-]); and weak syllable deletion. Although there is no normative data on Urdu phonological acquisition, clinical experience with bilingual Urdu / English speaking children suggests that the first three of these processes are atypical of normal bilingual development. The use of the processes was fairly consistent, and when the same word was elicited more than once the productions were the same. The use of backing was particularly persistent and unusual.

English Phonological Error Data

The consistent use of atypical and developmental processes was also evident in HK's English speech. There was evidence of: backing (e.g., /-n/ ⇨ [-k]; /t/ ⇨ [k]; final consonant devoicing; not releasing final consonants and final consonant deletion; stopping (e.g., /θ/ ⇨ [t]; and, assimilation (e.g., *taking* ⇨ [keɪkɪŋ], *rocket* ⇨ [wotɪt]). A number of these processes were also seen in HK's Urdu. HK had acquired all of the English phonemes except /ð,θ/. Her speech accuracy on the STAP was 84% consonants correct which is higher than her accuracy in Urdu. Most monolingual children of HK's age would have acquired all of the English phonemes and would have consistent, error-free speech.

Case Study 4: NF

Background Information

NF was assessed at the age of 5:3 years. NF's mother reported that he started talking at about the right age but did not really progress from single words. NF's general development was delayed: he was not fully toilet trained until after he was four years old, he was still mainly drinking from a bottle at four years of age. NF was born with a chest deformity, however he is medically stable. NF's comprehension and expression in both languages was significantly delayed. At four years of age he was mainly using single word utterances in Mirpuri, the language used at home. NF was first exposed to English when he started attending school one year prior to the assessment. NF had been attending speech therapy for a year prior to assessment for the study. Therapy had targeted language development and articulation of the phoneme /f/. NF achieved a standard score of 92 on the VMI giving him an age equivalent score of 4:10 years.

Mirpuri Phonological Error Data

Phonological analysis of NF's speech was difficult due to his unpredictable error patterns. Words produced more than once were rarely produced the same way (e.g., /ʧiv/ was produced as [dɪb], [ʧib], [dib]). However, inspection of the speech data revealed the inconsistent use of the following phonological patterns: stopping; initial consonant deletion; final consonant deletion; weak syllable deletion; cluster reduction; gliding; prevocalic voicing; and the use of glottal stops. NF's intelligibility even at a single word level was poor. He had a large number of homophonic words (e.g., [uti] for both *chair* and *doll*). His accuracy on the RAMP-R was 43% consonants correct. Phonemes that occur in both English and Mirpuri that were missing from his Mirpuri repertoire were /s, z, v, ʒ, ʧ/.

English Phonological Error Data

The phonological inconsistency evident in NF's Mirpuri was also evident in his English. He was very difficult to understand even at single word level. His speech accuracy on the STAP was 38% consonants correct. As with his Mirpuri there were no consistent error patterns in NF's speech. However, there was evidence of the inconsistent use of: stopping; initial consonant deletion; final consonant deletion; cluster reduction; gliding; glottal stop substitutions; voicing; assimilation; fronting; and vowel distortions. None of the words that were repeated or elicited more than once were produced in the same way twice. Phonemes that occur in both English and Mirpuri that were missing from his English repertoire were /ð, ʧ, ʤ, ʒ,h/. Most monolingual children of NF's age would have acquired all of the English phonemes and would have consistent, error-free speech.

Discussion

The disordered speech of four bilingual children was assessed. The results of the phonological analyses showed that:

- SA's speech was characterised by an articulation disorder in both Urdu and English.
- UT's speech was characterised by delayed phonological development in Punjabi and English.
- HK's speech was characterised by a consistent deviant phonological disorder in Urdu and English.
- NF's speech was characterised by inconsistency in Mirpuri and English.
- separate phonological systems existed for their two languages.
- a single articulatory system is used for both languages.

These findings have implications for our understanding of bilingual language acquisition and the differential diagnosis of phonological impairment. There are also clinical

implications for speech-language therapists working with bilingual children.

Bilingual Language Acquisition

The results indicated that the bilingual children had language-specific phonological systems. Analysis of the error patterns revealed that while several patterns were shared across their two languages, they also had language-specific phonological error patterns. For example, UT was simplifying clusters in English by adding an epenthetic vowel. However, in Punjabi he was simply deleting one of the cluster segments to simplify clusters. Another example of distinct error patterns was UT's substitution of [w] for /r/ and [j] for /l/ in English, but [j] for /r/ in Punjabi.

HK was using the same atypical and developmental phonological processes in both languages. However, she was marking aspects of Urdu phonology such as aspiration contrasts and vowel lengthening correctly, and distinctly from her production of English words. She also obeyed the phonotactic constraints of each language. SA's speech accuracy in both languages was very high, due to most of her errors being articulatory distortions of /s/ and /z/. However, evidence that she was using two separate phonological systems is provided by her use of the rule /h/ is realised by [k] in initial position only in Urdu words. She also used language-specific phonemes appropriately and obeyed each language's phonotactic constraints. The inaccuracy and inconsistency of NF's speech make it difficult to tell if he had clearly differentiated his two languages' phonological systems. However, the analysis of the phoneme repertoires suggested that he had two separate systems. NF was using five phonemes, that should occur in both languages, in one language but not in the other.

Previous studies of Cantonese-English and Italian-English bilingual children with speech disorder, reported similar findings: the children were disordered in both languages; and the error patterns were language-specific (Dodd, Holm & Li 1997; Holm & Dodd, submitted). The disordered children's findings suggest that bilingual children have two distinct phonological systems irrespective of whether the two phonologies learned are similar (e.g., Italian-English) or very different (e.g., Cantonese-English).

Differential Diagnosis of Phonological Disorder

Despite the fact that bilingual children have separate phonological systems, the characteristics of their error patterns in each system appear the same. NF made inconsistent errors in both English and Mirpuri. Both of UT's phonological systems were delayed. SA had the same articulation errors in both languages and HK used non-developmental phonological processes in both languages. These observations indicate that all four of the error patterns characteristic of the subgroups proposed by Dodd (1995) for monolingual children, have also been identified within the speech of these bilingual children with speech disorder.

The existence of subgroups in the bilingual population might be expected given that the four characteristic error patterns have observed not only in monolingual children speaking English (Dodd, Leahy and Hambly 1989), but also in Cantonese (So & Dodd 1994), German (Fox 1997) and Turkish children (Topbas and Konrot 1996). Experimental evidence suggests that different underlying deficits are associated with each of the four subgroups. For example, inconsistent errors are associated with a deficit in phonological planning (Bradford-Heit 1996).

Bilingual children provide a unique opportunity for testing hypotheses about factors affecting language

acquisition (de Houwer 1995; Meisel1990). The various deficits hypothesised as underlying the four subgroups' error patterns can be investigated further by looking at the error patterns of bilingual children. Bilingual children must show error patterns characteristic of the *same subgroup* of disorder *in both* of their languages to validate the theory that different surface speech error patterns reflect different underlying deficits. The finding that the children's error patterns *were* identified with the same subgroup in both of their languages validates the hypothesis that a single deficit underlies disorder in the two phonological systems of each child.

The effect of the underlying deficit on each child's two phonological systems is reflected not only in the type of speech disorder (articulation, delay, consistent, inconsistent) but also in terms of severity. The speech accuracy of the four children, as measured by percent consonants correct, was similar across languages (i.e., SA: 90% and 85%; UT: 87% and 77%; H: 73% and 84%; NF: 43% and 38%). Nevertheless, the observation that language specific phonological error patterns existed for all four children highlights the distinctiveness of their two phonological systems.

Clinical Implications

Any conclusions drawn from limited case data must be extremely tentative. However, the four case studies presented suggest important clinical implications for speech-language therapists:

> Bilingual children who are speech disordered appear to have two separate phonological systems, one for each language.
>
> Bilingual children's speech needs to be assessed in both of their languages for a clear profile of the nature of their errors.

- The deficits underlying various speech disorders will result in the same *type* of errors (e.g., articulation disorder, phonological delay, consistent atypical phonological errors, or inconsistent phonological errors) in both languages, but not necessarily the same errors.

The nature of phonological development and disorder of bilingual children requires further research. In particular, group studies of various language combinations are required to explore further the possibility that normally developing bilingual children have a different acquisition path to monolingual children. Further descriptions of assessment results and intervention studies of bilingual children with speech disorder are also required to confirm the existence of subgroups of children with speech disorder within the bilingual population and determine how best to remediate their disorders.

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SPEECH-LANGUAGE DISORDERS AND MULTILINGUALISM : THE MUMBAI EXPERIENCE

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ABSTRACT

It is increasingly becoming clear that the speech-language assessment protocols based on norms collected from monolingual population are inappropriate for assessing communication problems in multilingual clients. An empirical study was conducted in the city of Mumbai to study the nature of multilingualism, especially the language use patterns in families having children with communication disorders. The results of this study not only indicated that the observed patterns of language use among these communities differ from those proposed in the west, but raised some important issues pertaining to assessment, professional training and recruitment of clinical staff. The implications of the results of this study are discussed and a few problem areas awaiting further research are identified.

INTRODUCTION

Multilingualism has been defined as "The presence and use of two or more languages within a modern nation state"-- Asher and Simpson (1994:2630). Generally it is viewed as a continuum of skills in two or more languages (McCollum 1981; Mattes and Omark 1984; Kayser 1995). Most nations in the world are bi/multilingual be it unofficial or official and institutional. India, from its inception has declared itself as a multilingual nation and has recognized over 16 languages for official/administrative purposes. Besides these, there are a number of languages and dialects which may or may not have scripts but are in active use. The nature of bi/multilingualism is not the same across India. In

such a scenario, it is not surprising to encounter individuals who have varying degrees of competency in more than one language in India. The term "folk bilingual" coined by Gaarder (1977) appears to be relevant to a majority of people in India.

In the mid 60's, when the first All India Institute for training speech and hearing professionals was established, the specialists had to address the issue of multilingualism. The concern of the academicians arose from the following three major observations:-

1) The All India Institute of Speech and Hearing was established at Mysore in the southern part of India in the 1960s. Since this was the only centre for training speech and hearing graduates at the national level, the planners had to actively recruit students from various zones in the country. Often these students did not have spoken language skills in the regional language (i.e., Kannada) where the training centre was located. Bulk of the clients reporting to this centre naturally spoke the regional language. Hence strategies had to be evolved for helping these trainees carry out speech and hearing assessment and intervention in the regional language.

2) Paucity of employment opportunities often forced newly qualified clinicians to work in cities away from their hometown. Often these clinicians had no spoken language competency in the language of that region.

3) The paucity of centers offering speech and hearing services created another demand on the clinician. Often clients from different parts of India, wished to access services at the nearest available centre. It was not enough for the clinician to develop spoken language skills in the regional language but also evolve strategies for assessment in other languages not known to her/him.

Thus, the dearth of training centers, qualified professionals, speech and hearing centers and of job opportunity in the hometown forced speech language pathologists and audiologists to attempt speech, language and hearing assessments in languages for which they did not have adequate competence either in spoken or in written medium.

Thirty years ago, on examining the impact of multilingualism on speech and hearing clinical service delivery, Rathna (1974) strongly opined that language need not be a barrier for speech and hearing clinical practice in India. Rathna (1974) suggested development of word/phrase lists for conducting speech and hearing assessment aimed at 'functional language'. It was suggested that by mastering these phrases in the language unfamiliar to the clinician, s/he would be able to provide clinical service delivery. It was argued that for the purpose of remediation, the clinician would be able to prepare word and phrase lists which s/he would master for each session. In retrospect, the above approach appears to be extremely simplistic and naive. However, the approach needs to be viewed keeping in mind the assessment procedures in use at that time and the lack of sufficient normative data and formal tests in Indian languages.

Three decades ago, there were meager normative data available for quantification of speech and language skills. Articulation skills were tested using a 'clinician compiled' word list of phonemes in initial, medial and final positions of words. The errors were categorised into substitutions, omissions, distortions, and additions. In the absence of standardized language tests, clinicians often relied upon informal approaches. No attempt was made to arrive at a language age or identify the magnitude of delay. Conclusions as to the presence of a language disorder was left to the clinician's judgment and her/his knowledge of norms based

on western literature. This procedure has been useful in identifying gross delays and disorders. Considering the perfunctory nature of speech-language assessment in general, it is not surprising that Rathna's strategy worked.

Much research in the area of language disorders during 70s & 80s focused on developing tests based upon data from monolingual population. When monolingual population were not available, steps were taken to ensure that the language of interest was 'mother tongue' and the individual studied in the same medium of instruction (Babu, Rathna and Bettegiri 1972; Kelkar 1964; Thirumalai 1972; Tasneem Banu 1977; Sreedevi 1976; and Kumudavalli 1973). A similar view appears to have dominated western research in the 1960's and 70's. Early research in terms of normative data atleast in the U.S.A. was obtained from monolingual Caucasian subjects (Templin 1957; Sander 1972; Brown 1973; Carrow 1968).

In the late 1970's the field of speech language-pathology appeared to have looked towards linguistically based approaches to assessment such as for instance, the Form, Content and Use model (Bloom and Lahey 1978) and the various profiles of linguistic abilities (Crystal 1989). Such approaches to assessment provided considerable insight into the communication capabilities of individuals with limited spoken language skills and those with mild delays and deviances. However, in order to administer and score these procedures, the clinicians require considerable knowledge about the structures and functions of language under consideration.

The developments in the area of phonological analysis, psycholinguistics, cognitive linguistics and pragmatics have resulted in a wealth of information which has facilitated not only quantification and differential diagnosis, but also specific intervention strategies for specific problems.

Although the exigencies which necessitated adoption of the approach suggested by Rathna (1974) remain, it may be grossly inadequate in the present context marked by considerable advances in theoretical debates as well as availability of assessment tools both at the national and international levels.

Developments at the National level

There is a greater understanding of the complex nature of language acquisition/learning and about the interaction of different linguistic levels in both production and processing of language today than even a decade ago. Among other things, a large number of books are availble on this subject matter (see Gallaway 1998). There is a realisation that it is vital that the clinicians have adequate competency in assessing various aspects of language in a systematic way. The implications of such a realisation for the clinicians attempting language assessment in the unfamiliar language are readily apparent.

The first attempt towards developing age equivalent language and articulation tests in different Indian languages was a research project titled 'Development and Standardization of Language profile test and articulation test in seven Indian languages' jointly undertaken by the Regional Rehabilitation Training Center, Madras and A.Y.J. National Institute for the Hearing Handicapped., Mumbai, in the year 1990. Besides the articulation test, the project developed different versions of the linguistic profile test which provides information about the syntactic and semantic aspects of the child's expressive and receptive skills. From the raw scores it is possible to arrive at an equivalent language age.

It has been suggested that these age equivalent language tests could be used for assessing second language acquisition in bi/multilingual individuals. However, the

normative data has been drawn primarily from mono-lingual subjects. This appears to be based on the assumption that the processes of first and second language acquisition are similar. Knowledge of normal processes in monolingual individuals alone may not be sufficient for making clinical decisions, such as making differential diagnosis and planning intervention strategies in bi/multilingual individuals. This is especially true in metropolitan cities in India where the environment is often multilingual. But, there is little if any published information on the language use patterns of multilingual families in the Indian context.

There is a general assumption amongst Indian speech and hearing professionals that multilingual environment has an adverse effect on first language acquisition in children with language delay, although recent research contradicts this belief (see for example Bialystok 1994). The clinician often finds it difficult to help parents of children with delay to foster one language as s/he may encounter situations where the language spoken at home, extended families, neighbourhood, community, medium of instruction in the school they wish to opt for, are all different.

The International scene

American Speech-Language and Hearing Association (1989, 1993) provides guidelines on clinical and academic competencies for "bilingual" speech-language pathologists. To practice ethically as a bilingual clinician in USA it is not enough to speak two languages but have competency in intervening, assessing and providing intervention and counseling in the two languages. The clinician is required to have knowledge in both languages in the areas of normal processes, assessment and intervention. Such a recommendation appears idealistic considering the five bilingual family types reported by Harding, and Riley 1986 cited in Kayser (1995) shown in table-1.

Family Type-1: Mother speaks a native language B, while father speaks the dominant community language A. Language B is spoken to the child.

FamilyType-2: Mother speaks a native language B while father speaks the dominant community language A and a second native language C. Languages B and C are spoken to the child.

Family Type-3: The native language B is shared by the parents and spoken to the child. The community speaks the dominant language A.

Family type-4: Mother and father are monolingual, but do not share a common native language. Both the languages are spoken to the child. The dominant community language is not known to all three.

Family type-5: Mother and father speak the dominant community language A. Father, being a bilingual speaks language B also. Both the languages A and B are spoken to the child.

Table 1:- Bilingual family types according to Harding and Riley 1986 cited In Kayser 1995.

The classification given in Table -1 is based on the dominant community language, native language and second native language spoken to the child and it reflects the reality in the U.S.A. at that time.

Speaking from the context of the U.K., Miller (1984) stated that bi/multilingualism poses problems to the child (with a communication disorder), the therapist as well as the community. The case studies he described of children with Punjabi - English; Yiddish - English and Arabic-English language backgrounds are very informative in that they throw

light on the variety of different issues faced by all the parties involved. To elaborate, the child's medical problems associated with the particular handicapping condition he/she is facing are compounded by the social, emotional and language related problems imposed by bilingual educational practices. The therapist's main predicament is how to assess a bilingual child's competencies using monolingual tools and how to involve caregivers belonging to ethnic minority families who are not comfortable with the use of the dominant language in which instruction is being offered. Issues of language rights, language choice, facilities for bilingual education etc. are those which will concern the community. Miller (1984) made very useful suggestions like development of bilingual / bicultural remediation materials including computer software and appraisal of caregiver's skills in the language in which therapy is given etc. In his 1988 article Miller takes issue with the taken for grantedness on the issue of language dominance in bilinguals. He talked of the holistic view of bilingualism in which a person might be dominant in the lexicon of one language, but syntax of the other. He argued further that just as monolingual speech communities vary in how they mark different registers and convey nuances of meaning, so do bilingual communities. Which means, one cannot apply the norms based on one bilingual community to the next. There were others who spoke of using bilingual assessment procedures standardized on bilingual populations and criterion referenced measurements derived from information about development of the particular language under consideration (see for instance, Stokes and Duncan 1989). Duncan (1989) also talked of the importance of recruiting bilingual staff who share the home language of bilingual clients.

Such studies as those discussed above have not been reported in India, specially involving families with children having communication disorders. Hence an attempt was made

by the authors to describe the nature of bi/multilingual families whose children attended speech-language therapy at the A.Y.J. National Institute for the Hearing Handicapped, Mumbai.

THE STUDY

From the authors' clinical experience and preliminary scrutiny of the records, it was felt that it would be very difficult to classify the various languages used by the family into categories depicted in table 1. Generally in Mumbai city, Marathi is the dominant language along with "Mumbai Hindi". However within Mumbai, pockets exist where this may not be true in that, there may be other languages which are used for everyday communication and as media of instruction in schools. Hence an attempt was made to obtain information on the languages spoken by mother, father, neighbours, and the medium of instruction in schools of a total of 97 children below the age of 16 years having communication disorders such as delayed language acquisition, misarticulations, stuttering, voice disorders, etc, who were attending therapy at our center. If the child was not admitted to a school, then the medium of instruction of the school attended by the sibling was included. A total of 17 languages were identified, viz., Bhojpuri, English, Gujarati, Hindi, Kannada, Konkani, Kutchi, Malayalam, Marathi, Marwadi, Punjabi, Sign language, Sindhi, Tamil, Telugu, Tulu, and Urdu. Data from 23 of the 97 children had to be discarded due to inadequate records. From the analysis based on the remaining 74 children, five family patterns emerged.

Family Pattern	% of children with communication disorder falling in each patten (N=74)
I. Monolingual family. Children attend schools where the medium of instruction is in a language same as that spoken at home, but the neighbourhood is bilingual	7.2
II. Monolingual family living in a bilingual neighbourhood which includes their language. However, medium of instruction at school was different from that spoken in the neighbour-hood	13.4
III. Monolingual Mother, Father was bilingual spoke the language known to the mother and one more language which may or may not be the medium of instruction of the child at school. The neighbour -hood was frequently bilingual but occasionally multilingual.	4.1
IV. The parents and the neighbourhood is bi/multilingual. Both the parents are conversant with the medium of instruction in the school.	28.9
V. Totally monolingual situation.	22.7

Table-2: Language use patterns of bi/multilingual families having a child with communication disorders in Mumbai city

From Table -2, it is clearly evident that the family types and the nature of bi/multilingualism in Mumbai city are considerably different from those depicted in table-1. The family pattern IV appears to be dominant. The second largest group appears to belong to the monolingual family pattern. It is surprising that in a cosmopolitan city such as Mumbai, that monolingual families exist at all. On close scrutinization of the data, it was observed that these are mainly drawn from the dominant language group, Marathi. The number of cases coming from the multilingual family pattern IV do not appear significantly more than those cases belonging to monolingual family pattern V. Hence the often held premise among speech language pathologists, that multilingual environment contributes to language delay is questionable. Further data is required from the general population to ascertain the distribution of family patterns in order to determine if a particular pattern predisposes a child to communication disorders. Extensive studies of the effect of bi/multilingualism on language acquisition and disorders have not been undertaken in India (Thirumalai and Chengappa, 1986).

IMPLICATIONS

Certain questions which need to be addressed by future researchers are:-

(1). When does multilingualism cause delay in speech and language acquisition ?

(2). Is the speech-language pathologist's recommendation that caregivers and family use only one language with the child with delay in speech and language justified?

(3). Is bi/multilingualism a negative factor affecting spoken language skills in children with normal non-fluency, stuttering, phonological delay and language learning disorder ?

(4). What strategies should the Indian clinician adopt for ensuring that her/his acquired skills in languages does not deteriorate ?

(5). Should a course for teaching spoken language skills in languages of the client be made mandatory in all graduate courses in speech and hearing ? Or should it be left to the students to "pick up" the language ?

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TRACE DELETION HYPOTHESIS AND ITS IMPLICATIONS FOR INTERVENTION WITH A MULTILINGUAL AGRAMMATIC APHASIC PATIENT

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ABSTRACT

This paper describes a treatment strategy for a multilingual agrammatic aphasic patient by drawing on certain linguistic and psycholinguistic issues. Using a single subject experimental research paradigm, we examined emergent sentence production patterns in the subject. We used aspects of Grodzinsky's Trace Deletion Hypothesis (1995) and findings from neurolinguistic literature as a basis for selecting sentences to be introduced in the treatment. The subject was sequentially trained to produce wh-questions, and throughout training, generalization to untrained wh-questions was tested. The outcome of this experiment is discussed in terms of its relevance to our current understanding of the acquired syntactic deficits, language representation in multilingual speakers and the role of linguistic theory in language rehabilitation.

INTRODUCTION

Agrammatic aphasia is characterized by a set of pathological linguistic phenomena that tend to cluster in individuals who have suffered brain damage in Broca's area of the left hemisphere and its surroundings. From a functional point of view, it consists of perceptual and productive problems in the language domain, general cognitive problems and hemiplegia to the side contralateral to the damaged hemisphere. Tissot, Mounin and Lhermite (1973 cited in Grodzinsky 1990) listed six defining properties of agrammatism that are accepted by most researchers. These

include a lack of function words, preferred use of substantives, systematic use of infinitives, lack of grammatical agreement, telegraphic style and extensive use of stereotypes. Comprehension deficits have been increasingly reported in the literature during the past decade. Most of these studies base their evidence on the relative pattern of comprehension success and / or failure on different sentence types. The comprehension abilities of agrammatic Broca's patients have become the focus of intense interest among linguists and psycholinguists whose goal is to validate specific linguistic theories or processing accounts (see for example, Grodzinsky 1986). Aphasiologists and Neuropsychologists are also focussing on the pattern of comprehension deficits and their linguistic bases in agrammatism to gain insight into the mechanisms of language breakdown consequent to brain damage.

A number of hypothesis have now been offered to account for the performance of aphasic patients across sentences of different structural types (Grodzinsky 1986; Kolk and Van Grunsven 1985; Mauner, Fromkin and Cornell 1993; Pulvermuller 1995; Schwartz, Linebarger, Saffran and Pate 1987). Of these, the Trace Deletion Hypothesis (Grodzinsky, 1986; 1995) has motivated considerable validation research and debate.

The Trace Deletion Hypothesis (TDH) holds that agrammatic patients fail to represent the abstract (phonologically null) linguistic marker (trace) that holds the S(urface) structure position of elements that have been moved from their D(eep) structure positions. Within this analysis, passive voice and sentences with object-relative clauses contain a trace marking moved elements. According to this hypothesis, trace is 'deleted' in agrammatic aphasia which interferes with comprehension of sentences containing a trace. Active voice and sentences with subject-relative clause

constructions have no trace and are thus comprehended normally. Grodzinsky formalized the above assumptions using, what was called, the Default Principle. This is a nonlinguistic strategy which states that nounphrases that do not receive a theta role syntactically are assigned a default theta-role. Or, stated more precisely in terms of the Government and Binding Theory, noun phrases in non-thematic positions are under the scope of some Default Principle that associates a theta-role to every non-thematic position. Agrammatics perform well where no transformational operation takes place and where an NP is extracted from the subject position. Agrammatic subjects have difficulty when a trace is present in the object position.

In the past decade, much empirical support has been gathered for Grodzinsky's account. Most researchers have directly tested comprehension using sentence-to-picture matching tasks and compared the results with Grodzinsky's predictions. Such research is limited in scope for atleast three reasons : First, analysis of the relative performance across different sentence types fails to provide sufficiently versatile stimuli that would elucidate the differing predictions of the various theoretical accounts of agrammatic aphasia (Berndt, Mitchum and Wayland 1997). Secondly, the probe task does not reflect a real-life communicative interaction, and finally, performance in such a well structured task is influenced by several extraneous variables like fatigue and concentration.

There have been methodological variants such as word monitoring (Haarman and Kolk 1994), priming (Haarman and Kolk 1991; Zurif et al. 1993), and having patients judge sentence grammaticality (Linebarger etal. 1983; Shankweiler et al., 1989) or anomaly (Schwartz et al. 1987). Another method that has been used is observation of the effects of changes induced through explicit comprehension training (Thompson and Shapiro 1995; Byng, Nickles and

Black 1994). In our opinion, a good test of validity of the TDH would be to study its applicability in language therapy for agrammatic aphasic patients. That is, designing a treatment program aimed at overcoming the hypothesized loss of traces in non-canonical sentences. If such a therapy program succeeds in improving and generalizing sentence production, there could not be a better empirical support for the TDH. Moreover, post-training performance patterns may serve to elucidate residual problems of sentence interpretation or task demands.

The purpose of the present paper is to establish links between certain linguistic and psycholinguistic issues with a proper treatment design so that generalization from trained to untrained structures can be assessed. We examined the production of particular wh-movement constructions i.e., wh-questions requiring movement of an argument noun phrase (i.e. who and what questions) and those which require adjunct movement (i.e. when and where questions). Using a single-subject experimental research paradigm, the subject was sequentially trained to produce these wh-questions and, throughout training, generalization to untrained wh-questions relying on similar wh-movement processes was tested. The influence of training on other languages and aspects of narrative discourse was also examined.

The present research was motivated by a series of published articles by Thompson and his colleagues (1995, 1996, 1997) on training and generalization of argument and adjunct related nounphrases on English speaking agrammatic aphasics. It is crucial to examine whether comparable results can be expected in a study of a multilingual subject who speaks four different Indian languages.

METHOD

The present study used a multiple baseline ABA (pretherapy assessment followed by therapy and finally post-therapy assessment) design. A single subject was taken up for study.

The Subject

A thirty one year old woman, V.D., with language production and comprehension patterns consistant with agrammatic aphasia served as the subject. She evinced aphasia secondary to a single left-hemisphere thrombo-embolic stroke in the distribution of the middle cerebral artery. Lesions occupying the Broca's area and basal ganglion were evident on CT scan. At the time of the study, V.D. was 15 months post-onset of stroke. She passed a puretone audiological screening at 40 dBHL at 500, 1000 and 2000 Hz in both ears.

V.D. was premorbidly right-handed and there is no history of sinstrality in the family. She came from a multilingual background and was fluent in four languages viz., English, Hindi, Kannada and Telugu, the last being her mothertongue. The subject attended five years of college and had premorbidly worked as a high school biology teacher. Tables 1 and 2 summarize her language proficiency and usage patterns.

Task	English	Hindi	Kannada	Telugu
Comp.	+	+	+	+
Exp.	+	+/-	+	+
Reading	+	+	+	+/-
Writing	+	+	+	-

+proficient ; +/- can perform, but not proficient ; - canot perform

Table -1: Language proficiency of the subject

Setting	English	Hindi	Kannada	Telugu
Home	-	-	-	+
Neigh-bours	+	-	+	+
Work	+	-	+	-
Friends	+	-	+	+

+ is used in conversation ; - is not used

Table-2: Language use patterns of the subject

When V.D. was first seen at the All India Institute of Speech and Hearing, Mysore in March, 1996, she had an expressive vocabulary of 50-60 words. She communicated with single words, simple phrases and gestures. Going by the results obtained on the Western Aphasia Battery-Kannada version, she was diagnosed as a case of Broca's aphasia and was recommended speech therapy. She had been attending speech therapy for two months, after which the present study was carried out in June 1996.

Procedure

In the present study, two diagnostic tests for aphasia and one language test were administered to obtain a baseline of V.D's language abilities. Initially, her ability to comprehend different sentence structures and her ability to make grammaticality judgements on these sentences was tested. In addition, spontaneous speech was elicited in all the four languages using story-narration tasks. Next, the treatment program was implemented where the therapist worked on improving comprehension and production using the assumptions of the Trace Deletion Hypothesis (Grodzinsky 1990, 1995). When the program was complete, V.D's performance was measured with the same tools as used for baseline evaluation. The details of the procedure are given below :

I. Standard test administration: The following tests were administered: (i) Western Aphasia Battery (WAB)- Kannada Version; (ii) Boston Diagnostic Aphasia Examination

(BDAE) -supplement language test, and (iii) Linguistic Profile Test (LPT).

II. Speech Elicitation: A thirty-minute spontaneous speech sample was obtained in each language by asking V.D. to talk about the nature of her work and narrate the stories of the thirsty crow and the Ramayana.The speech was taperecorded. It was transcribed and analyzed following the procedure used by Saffran, Berndt and Schwartz (1989).

III. Grammaticality and comprehension: V.D's ability to identify grammatically incorrect sentences was tested by designing a yes-no task. It was important to check her ability to make grammaticality judgements since this provides an idea of her syntactic competence. Active, passive and cleft sentences, wh-questions and relative clauses were used.

Next, V.D's ability to interpret the meaning of different sentence structures (assign thematic roles of agent, theme and goal was assessed. Actives, passives, subject and object clefts, relative clauses and wh-questions were tested. A picture pointing task was used. The picture stimuli were simple line drawings drawn on cards measuring eight-by-eight centimeters.

IV. Therapy: V.D. attended thirty two therapy sessions of one hour each. Her mother, who accompanied her during the sessions was instructed on home training. As a result, V.D. received intensive training for four to five hours a day with atleast a thirty minute break between sessions.

Initially a few pre-requisite skills were established. These were language abilities that were required before movement of noun phrases and wh-markers could be taught.

V.D. was taught to construct active sentences. She was shown pictures with line drawings and had to frame a sentence describing the action in the picture. The constituent words were written on different cards which she had to sequence appropriately. Initially only obligatory one-place verbs like *kelasa* 'work' were used. Later, obligatory two placeverbs like *ripe:ri* 'repair' and three-place verbs like *koDu* 'give' were used. Optional two and three-place verbs were also used.

There are two kinds of phrasal movement subsumed under the general rule Move-alpha : wh-and NP -movement. The present study aimed at examining these two forms of Move-Alpha. It involved teaching V.D. to produce wh-and NP-movement one at a time and testing generalization of production within and across sentence types and across various languages. It was hypothesized that there would be generalization between structures which had the same location of traces (thematic grid). Hence, only one of the two structures with the same thematic grid (for instance, who and what questions) was taken up for training. The other structure of the pair was tested for generalization.

The sequence in which the non-cannonical sentences were taught was determined by a cautious review of literature.The sentence structures were ordered in such a way that the learning of one structure did not contaminate the generalization results of the structures to be taught later. For instance, Thompson and Shapiro (1995) and Thompson et al (1996) found that the learning of wh-movement did not generalize to NP-movement (i.e. passive sentences). This could be checked only if NP-movement had not been trained earlier. Hence NP-movement was taught following wh-movement. The following sequence wasused : 1. Who-questions 2. Where-questions 3. Object clefts. Further details of how this was done follow:

1. Who-questions : A set of fifty sentences was constructed, each of which had two nouns, a verb and a locative (prepositional) phrase of the structure, NP-NP-PP-V as shown in the examples given below:

(i) *ravi* *tanna* *sneehit-ar-ige* *hooTeli-nalli*
Ravi self friend + pl + dat hotel + loc.
sahaaya *maaDu - ttiddaane*
help do + PNG
'Ravi is helping his friends at the hotel'

(ii) *ravi* *yaar-ige* *hooTeli-nalli* *sahaaya*
Ravi who+dat hotel + loc help
maaDu - tiddaane?
do + PNG
'who does Ravi help at the hotel?'

The first step was training V.D. to map thematic roles (agent, theme, goal, location). She was instructed to locate the *-ige* bound morpheme. The noun attached to this is the 'theme'. The other noun phrase is the agent. The word order was varied within the limits permissible in Kannada. This was to rule out the adoption of a word-order based strategy in comprehension (that is, first noun is always agent and second noun is always the theme).

When V.D. had achieved thematic role assignment, she was trained to substitute the appropriate question marker *ya:rige* 'to whom' at the theme NP-position. She was instructed in the following manner. 'You want to know the person Ravi helped, so you ask'---. The next step was testing for generalization across structures. Using stimuli such as those in (i), wh-questions as in (ii) were elicited. To elicit what, when and where questions in Kannada, *eenu*, *yaavaaga* and *elli* respectively, the same procedure was used except that the subject was instructed to ask about the thing, time or place respectively. We also tried to elicit object clefts and passives (both NP-movement derived).

2. Where questions: The stimuli were sentences similar to (i). As before, the first step was identification of thematic roles and the second step was substituting the appropriate question word *elli* 'where' for the prepositional phrase. Generalization was tested.

3. Object-cleft sentences: V.D. was made aware of the bound morphemes that signify a change in word order, namely, *-inda* and *-paTTiddu* which are bound to the agent and goal (verb) respectively. In this manner, she was taught to identify the thematic roles.

(iii) *huDigi - yee huDuga - ninda taLLal paTTiddu*
girl + emp boy + by push PNG
'It was the girl who the boy pushed'

V.D. was prompted to compare and contrast the active and object cleft sentences. Then instructions concerning the movement of arguments to derive the surface form of the targeted sentences were given. New morphemes required in the surface form were provided and inserted into the sentence frame to derive object clefts from the active forms.

(iv) *huDigi- yannu huDuga taLLi - danu*
girl + acc boy push + PNG

(v) *huDugi- huDuga - taLLi - danu*
girl boy push + PNG

(vi) *huDugi-yeee huDuga-ninda taLLal* paTTiddu
girl + emp boy + by push PNG

To test generalization, wh-questions and passive sentences were elicited.

IV. Post-therapy evaluation: This comprised of the following;

1. Administering the standard language tests viz., WAB, BDAE and LPT.

2. Eliciting speech samples in all the four languages.

3. Testing comprehension and production of trained sentence structures in all the four languages.

RESULTS AND DISCUSSION

Performance on Trained Structures

V.D. mastered the prerequisite skills (tense, gender and number inflections) with ease. This supports the claim of impaired access to grammatical morphology (Linebarger et al 1983; Lapointe 1985) rather than its complete loss. After training on 'who' questions was complete, generalization testing revealed no improvement in passives,object clefts, where and when questions but significant improvement in the production of 'what' questions. There was also improvement in untrained 'who' questions.

Non-generalization of wh-questions to noun phrase movement derived structures (passives and object clefts) and lack of transfer of learning from 'who' questions to 'where' and 'when' questions has been reported by many researchers cited in Thompson and Shapiro (1995). According to Thompson and Shapiro (1995), passive sentences require movement of the noun-phrases, but wh-questions require substitution of a noun-phrase by a wh-marker. This is assumed to be the reason for the poor generalizability across these structures. Thompson and Shapiro explained the lack of generalization to where and when questions by referring to argument and adjunct movement. Adjuncts occur outside the verb phrase and are optional, arguments are directly theta-marked by the verb as illustrated below:

(vii) What is he cooking?
(viii) Where is he sleeping?
(ix)He is [VP(V cooking the dinner)] (argument)
(x) He is [VP(V sleeping)] in the bed (adjunct)

'Who' and 'what' questions are derived from argument movement and 'what' and 'where' questions from adjunct movement. A similar pattern is seen in Kannada which explains V.D's performance.

(xi) *ravi hooTelinalli tanna*
ravi hotel +loc self
sneehatarige sahaaya maaDuttaane
friend+pl+dat help do+PNG
'Ravi helps his friends at the hotel'

tanna sneehitarige 'his friends' is an argument. This sentence is used to derive a who-question.

xii) *avanu hooTeli-nalli laDDu tinnu-*
he hotel + loc sweet eat+
ttaa - iddaane
prog+PNG
'He is eating laddus in the hotel'

xiii) *avaLu beLage tarakaari kariidisu-ttaale*
she morning vegetable purchase + PNG
'She purchases vegetables in the morning'.

xiv) *avaLu angaDi-yinda baTTe kariidisu- ttaale*
she shop + loc cloth purchase+PNG
'She purchases clothes at the shop'

Adjuncts are not rigidly bound by the verb whereas arguments are obligatorily present. Deriving 'who' and 'what' questions from (xi) and (xii) respectively requires movement of the argument; and (xiii) and (xiv) require movement of the adjunct to form 'when' and 'where' questions respectively. Therefore when argument movement was taught (for e.g. who), it is easily generalized to the other argument derived form (what) and not to the adjunct derived forms.

In the second step of therapy in which 'where' questions were taught (that is, adjunct movement), there was improvement in the production of 'when' questions (also derived by adjunct movement). This is an interesting finding since only two wh-questions had to be trained and four were mastered. A therapy procedure which tests and teaches trace location is therefore economical. Thompson and Shapiro (1994 cited in their 1995 article) also found improved production of object cleft sentences in their English-speaking patients when 'who-questions were taught (examples xv to xvii) They explained this finding by the fact that both wh-questions and object clefts are derived by wh-movement. see examples below:

(xv) Who did the girl hit? (Wh-question)
(xvi) It was the boy who the girl hit (obj-cleft)
(xvii) The boy was hit by the girl (passive)

Such a generalization was not observed in V.D. Contrast the same structures in Kannada in examples xviii to xx.

(xviii) *huDugi yaar-anna taLLi-ddu ?*
girl who +acc push +PNG
'Who did the girl push?'

(xix) *huDuga-nee huDugi-yinda taLLa-pattiddu*
boy +emp girl + by push +3p.fem.sg
'It was the boy who was pushed by the girl'

(xx) *huDuga huDugi-yinda taLLapaTT-anu*
boy girl + by push + 3pmasc+sg
'The boy was pushed by the girl'

Object-clefts in Kannada do not have a 'who'-marker, but the verb assumes a passive inflection. This may explain the improvement in passive sentences when object-clefts were taught to V.D. in the last stage of therapy (compare xix and xx.) The findings are shown in Table-3.

Stage of therapy	Goal	Improvement in production of
I	Who-quest.	Who & What
II	Where-quest.	Who, What, Where, When
III	Obj.- Clefts	Who, What, Where, When, Obj.-Clefts, Passives

Table - 3: Extent of generalization in therapy

Within-argument and within-adjunct generalization was observed by previous researchers in the field. In some of these studies, agrammatics frequently mis-selected the specifier (wh-marker). In order to prevent this, in the present study, V.D. was trained to match each wh-word with its context (for example, 'where' signifies place of action) before she was trained to make transformations.

Generalization to discourse

Generalization from more to less complex structures was also seen. That is, when sentences like (xxi) were used to help derive productions like (xxii), generalized production of questions like those in (xxiii) was observed without direct treatment of these structures.

(xxi) *ravi aa huDuga-nige duDDu koDu-*
Ravi det boy +dat money give
ttaa-iddaane
prog+3+masc+sg
'Ravi is giving that boy some money'

(xxii) *ravi- aa huDuga- nige eenu koDu - ttaa-*
Ravi det boy + dat what give + prog
iddaane?
3+masc+sg
'What is Ravi giving that boy?'

(xxiii) *ravi eenu maaDuttaa-idda-ane?*
ravi what do +prog+3+mas + sg
'What is Ravi doing?'

Performance in other languages

Production of wh-questions, object clefts and passives was assessed in the other languages that V.D. knows (English,Hindi and Telugu). Tables 4 to 7 give her performance in each language in different tasks before and after the therapy program. Ten sentences of the NP-PP-NP-VP structure (for example, sentences (xi) to (xiv) were constructed in each language. V.D's ability to map thematic roles (that is, identify the subject and object of the sentences) was assessed. Next, she was instructed to form an appropriate question. Her scores in percentage correct on the choice of question marker and word order were calculated.

Task		*Who	What	*Where	When	*Obj.cleft	Passive
Identification	1	30	20	30	30	10	40
of thematic roles	2	100	100	100	100	90	100
Correct choice	1	40	30	20	40	-	-
of wh-marker	2	100	100	100	100	-	-
Correct word-	1	10	0	0	0	0	0
order	2	100	100	100	100	90	80

1 - Pre therapy performance
2 - Post therapy performance
*- trained structures.

Table 4 : V.D's performance in Kannada (in percentage)

Task		Who	What	Where	When	Obj.cleft	Passive
Identification of thematic roles	1	20	30	30	20	40	40
	2	90	90	100	100	90	100
Correct choice of wh-marker	1	30	30	20	40	-	-
	2	100	100	90	100	-	-
Correct word-order	1	0	10	0	0	0	0
	2	90	90	100	90	90	70

1 - Pre therapy performance
2 - Post therapy performance

Table 5 : V.D's performance in Telugu (in percentage)

Task		Who	What	Where	When	Obj.cleft	Passive
Identification of thematic roles	1	50	40	40	30	20	30
	2	90	70	80	80	70	90
Correct choice of wh-marker	1	30	30	20	30	-	-
	2	60	50	70	60	-	-
Correct word-order	1	20	20	30	20	20	10
	2	40	30	50	30	50	70

1 - Pre therapy performance
2 - Post therapy performance

Table 6 : V.D's performance in English (in percentage)

Task		Who	What	Where	When	Obj.cleft	Passive
Identification of themat roles	1	40	20	30	30	50	30
	2	70	70	80	70	80	90
Correct choice of wh-marker	1	10	30	20	10	-	-
	2	30	40	50	50	-	-
Correct word-order	1	10	10	0	10	0	40
	2	30	40	20	30	50	80

1 - Pre therapy performance
2 - Post therapy performance

Table 7 : V.D's performance in Hindi (in percentage)

Data from Tables 4 to 7 reveal marked improvement in Kannada and Telugu and moderate improvement in English and Hindi. That is, the effect of therapy in one language (Kannada) was generalized to other languages. There existed a differential recovery pattern - all languages were not facilitated to the same extent. Most surprising is V.D's ability to retrieve the appropriate wh-markers and gender, number and tense morphemes when no training was given on these aspects in Telugu.

The ability to mark thematic roles improved considerably in all the languages - this is a comprehension task while use of the correct word order, which showed the least improvement, is a production task. V.D. selected the specifier (wh-marker) appropriately in Kannada and Telugu nearly all the time, but misselected it a few times in English and Hindi. The probable reasons for the differential recovery pattern across languages in the present subject, the various recovery patterns reported in literature and its implications in understanding the nature of syntactic representations in the brain are discussed later.

Discourse analysis

Samples of narrative discourse that were obtained preceding and following therapy were analyzed according to the procedure detailed by Saffran, Berndt and Schwartz (1989). Though the number of words did not increase significantly, the rate of speech increased, implying an improvement in fluency. The other parameters that improved significantly after therapy were the number of nouns, pronouns, verbs correctly inflected, well formed sentences and the proportion of words in sentences. The improvement is more marked in Kannada and Telugu and less apparent in English and Hindi.

V.D. formed sentences of a variety of syntactic structures and her language more closely resembled that of non-brain damaged individuals. Nevertheless, passive constructions were used more frequently than is normally done. This may be the consequence of therapy, which focussed on such constructions.

Grammaticality and comprehension

The ability to judge grammaticality (assign thematic roles) and comprehend sentences changed to a nearly equal extent in all the four languages (Table-8).

Sent. Structures		Kannada		Telugu		English		Hindi	
		G	C	G	C	G	C	G	C
Active Sentences	1	64	75	70	56	72	40	66	45
	2	100	100	100	92	92	85	88	85
Passive sentences	1	60	46	54	54	46	30	68	38
	2	100	98	100	90	88	86	84	80
Object-Clefts	1	60	40	46	44	58	42	54	28
	2	98	88	92	82	84	76	88	70
Wh-Questions	1	72	62	64	65	68	55	26	58
	2	100	100	92	88	96	80	92	88
Relative Clauses	1	52	66	46	54	48	28	32	34
	2	96	90	84	78	82	66	50	69

G - Grammaticality judgment tasks
C - Comprehension tasks
1 - Pre-therapy scores
2 - Post-therapy scores

Table 8 : Scores in the four languages on grammaticality judgement and comprehension.

For example, V.D.scored 100 percent, 88 percent, 80 percent and 88 percentrespectivcly in Kannada, Telugu, Fnglish and Hindi on the comprehension of wh-questions.

The scores on grammaticality judgement always exceeded the scores on comprehension in a particular language for any syntactic structure. It can be inferred that there was a discrepancy between competence (grammaticality judgement) and performance (comprehension) which decreased with therapy (see Table -8 for object-clefts in Kannada).

Table. 8. Scores in the four languages of grammaticality judgement and comprehension.

When V.D. was attempting to assign thematic roles in the comprehension tasks in English and Hindi, she commented that she was trying to locate the appropriate inflectional morphemes. This indicates that V.D. was making a conscious attempt to generalize the strategy that she had learnt in Kannada. Though the percentage of errors is not markedly different across the languages, V.D. took a considerably longer time for English and Hindi. This implies that English and Hindi had not improved as much as Telugu had improved. Considering earlier reports of limited generalizability of therapy in agrammatic aphasics (Doyle, Goldstein and Bourgeois 1987; Byng, Nickels and Black 1994), the outcome of the present therapy procedure was unexpected, and is encouraging. It provides neuropsychological support to the otherwise purely linguistic theory of Trace Deletion (Grodzinsky 1986, 1995). It also shows that certain linguistic constructs and dichotomies (for e.g., adjuncts versus arguments, deep structure versus surface structure) are neuropsychologically real.

To summarise, the present therapy program, which trained production of who, where questions and object-cleft

sentences on the basis of establishing traces, saw improvement not only in the trained constructions, but also in untrained structures (what, when and passives), and in narration even in the other languages. The improvement in comprehension was nearly uniform across the various languages, though production improved differentially.

Two questions emerge from the results discussed in the preceding section:

1. Why does comprehension improve uniformly across languages while production does not?

2. Why did V.D. improve to a greater extent in Telugu when compared to English and Hindi?

Comprehension versus Production

The primary issue pertains to the better cross-language generalization of comprehension when compared to production. Though little work has been done in this direction, there is some evidenc that bilinguals have a fairly unified perceptual system and a dual production system. Studies of bilingual children have shown that they could comprehend the language that they had not been using for a long time, but are hesitant in producing the language. That is, when one language is not practiced, production deteriorates more than perception (see Albert and Obler 1978).

The above evidences suggest that the perceptual system of bilinguals is unified whereas production is dual. Caramazza et al. (1973 cited in Bates and Wulfeck 1989) called this the compounding of input and the coordinating of output. Bates and Wulfeck (1989) compared bilinguals of several native languages in a sentence comprehension task and concluded that they develop a single set of strategies for both languages. In other words, comprehension is a more unified heuristic task whereas production is more language specific. This may explain why V.D. performed uniformly on

comprehension tasks after therapy and did not do so in production tasks. Another likely explanation is that agrammatism may not be a deficit at the language specific syntactic level per se but may be a higher level representational deficit (Kolk 1995). Therefore, it can be argued that the present therapy technique facilitated retrieval of the strategy used in trace interpretation.

Parallel versus Differential recovery

The second question that emerged from the present study pertained to the better generalization of therapy to Telugu as compared to English and Hindi. Paradis (1977) noted five patterns of recovery in untreated bilingual aphasics: (1) synergistic or simultaneous recovery, which could be parallel or differential; (2) antagonistic recovery, when the return of one language is at the expense of a previously learned language; (3) successive recovery of the two languages; (4) selective recovery of one language, and (5) mixed recovery, characterized by interference between the two languages.

V.D. evinced parallel recovery with respect to Kannada and Telugu and differential recovery for English and Hindi. The non-uniform recovery patterns such as those exhibited by V.D. have boggled researchers as early as the nineteenth century. As an explanation, Ribot (1882 cited in Albert and Obler 1978) proposed that the first learnt language recovers first in aphasics. And the rule of Pitres (1895 cited in Albert and Obler 1978) states that the most familiar or most recently used language returns first in polyglot aphasias. Although these rules were formulated to explain spontaneous recovery, they can be extrapolated to the present study. Telugu was V.D's mother tongue and after the stroke, Telugu and Kannada were used maximally. In addition, Telugu and Kannada were acquired earlier than English and Hindi which were 'learnt' later. Telugu and Kannada were acquired

simultaneously and naturally (without formal instruction), whereas, English and Hindi were taught at school. This brings the compound-coordinate dichotomy into picture. Genesse et al. (1978 cited in Albert and Obler 1978) defined compound bilinguals as ones who are brought up in a bilingual environment from the earliest childhood, whereas coordinates learn one language after the other, usually outside the family. Hence, V.D. is a compound bilingual with respect to Telugu and Kannada, and coordinate for English and Hindi.

Albert and Obler (1978) surveyed case studies of polygot aphasics and concluded that people who learned both their languages in childhood (compound bilinguals) tended to show parallel recovery, whereas, people who learned a second language at school or as adults tended to show non-parallel recovery. V.D's recovery in her compounded and coordinated languages fits into this pattern. This notion has been formalized as one relating to the representational mediation processes operating upon input and output (see Albert and Obler 1978 for details about the theoretical models and Faroqi 1997 on how they can be applied to the subject of this study).

A linguistic explanation may also be offered for the differential recovery pattern, from a language typology point of view. Kannada and Telugu both belong to the family of Dravidian languages, hence can be grouped as cognate. The verb takes gender, number and tense inflections in a similar manner, SOV is the canonical word order in both the languages and there is some overlap in the lexicon. English and Hindi differ from Kannada and Telugu and from each other in that they belong to the Germanic and Indo-Iranian families respectively. English has an SVO word order and the verb takes only number and tense inflections. There is evidence from developmental studies of childhood bilinguals that the greater the structural similarity between two

languages, performance in the second language paralleles that of the first language. This may be a reason for the parallel recovery of Telugu and Kannada in the subject of this study.

Albert and Obler (1978) state that it may be in the interest of the bilingual individual to set up a single system and then generate rules to produce the second language on the basis of the single system. Thus, for example, it is unreasonable to suppose that entirely separate negation rules must be operating for Telugu - Kannada bilingual speakers (since in both languages the negation item *leedu* and *illa* respectively is always bound to the verb). Therefore, structural similarity between Kannada and Telugu may have caused parallel recovery in the case of V.D.

The language environment is a third influence on an aphasic's recovery of language (as given by the rule of Pitres). Post-morbidly, V.D. was exposed to Kannada and Telugu only since she stayed home (English and Hindi were the languages of her work place). This may have influenced the observed recovery pattern. That is to say, the differential pattern of recovery may be either due to the compound - coordinate differences, similarity in linguistic structures or the influence of the language environment. It is likely that a complex interplay of all the above factors may have caused the observed results.

CONCLUSIONS

Our findings suggest that detailed post treatment recovery data can contribute to our understanding of the nature of sentence processing deficits in aphasics. Our therapy program, in addition to being successful, is a novel and compelling experimental paradigmin testing hypotheses about language deficits and investigating various types of lexical and syntactic relations. We concur with Thompson and Shapiro (1995) who stated that 'when the linguistic

underpinnings of the language deficits exhibited by agrammatic aphasic individuals, the sentences selected for treatment, and the treatment strategy applied are considered together, the treatment appears to be efficacious. The sequence in which sentence types are introduced in intervention must be determined with caution if one has to demonstrate generalization effects.

Our therapy program has affected processes that are shared between sentence production and comprehension - this can be safely assumed since we worked on improving comprehension and it resulted in improved production which extended beyond the clinical setting. But the exact nature of this functional interaction between comprehension and production is still unclear.

The present investigation also underscores the role of research in the non-English speaking world in validating the current assumptions about language processing. Language differences have caused considerable miscommunication in the international aphasiology community. There are enormous quantitative differences between languages in the extent to which the 'same' symptom appears in the 'same' clinical population. For instance, agrammatic patients tend to err by omission in English and by substitution in a richly inflected languages. As a result, English Broca's aphasics appear to be much more severely impaired than their non-English speaking counterparts. Since we are consumers of English dominant aphasia literature, our partial ignorance of the language symptoms of non-English speaking aphasics might lead us to 'discover' patients who display a 'new syndrome'! Hence there is an urgent need for us to pay more attention to cross-linguistic research and describe the language symptoms in non-English speaking aphasics. This will enable theorists to formulate explanations that accommodate a wider and more variable corpus of data.

Apart from providing cross-linguistic data, bi/multi-lingual speakers represent an important subject group in whom cross-language differences are housed within the same brain. Bi/multi-lingual aphasics help us examine the nature of breakdown of each language consequent to the same anatomical lesion. This may help us find answers to the mind boggling mysteries of language representations in bi/multi-lingual brains.

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NEUROLINGUISTIC STUDY OF NAMING ERRORS (PARAPHASIAS) IN HINDI - SPEAKING APHASICS

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ABSTRACT

The speech and language of forty aphasic patients belonging to a wide variety of clinical types, viz., Broca's, Global, Conduction, Anomic, Trans Cortical (TC) motor, TC sensory and Wernicke's was analysed using Hindi version of the Boston Diagnostic Aphasia Examination. The naming errors noted in these patients were analysed and a typology of paraphasias for Hindi speaking aphasics was offered. The influence of variables like type of aphasia, age, sex, educational status and site of lesion on error types was discussed. An attempt was also made in this paper, to discuss some of the theoretical and clinical implications of the results of this study in relation to the existing literature based on English language.

INTRODUCTION

Systematic research in neurolinguistics dates back to the applied research of Roman Jacobson (1956), who proposed that since aphasias represent the disorders of language, its study should primarily be the subject matter of linguistics. Jacobson's proposal, related to the scientific analysis of language breakdown in brain damaged patients, was long ignored by traditional linguists for some of the following reasons : first, there existed a psychological barrier separating neurology from linguistics. Second, studying the abnormal language of patients with brain injuries did not appeal to contemporary linguists, who are more interested in

the structural analysis of language, as a system. Third, to many linguists, studying single cases studies of brain damaged patients would not offer any insights for meaningful linguistic theorising.

However, during the past couple of decades, neurolinguistic research undertaken in the West has shown that the examination of disordered patterns of language in aphasia provides an opportunity to test various linguistic hypothesis about structure, dynamics, development, transformation, evaluation and interrelatedness of various language functions. Neurolinguistic studies of aphasia have shown that language is a hierarchically organized structure and that it can be described in terms of its components like semantics, syntax, lexicon and phonology.

Impaired word-finding ability is the most central feature of aphasia (Goodglass and Kaplan 1972; Buckingham 1979) and it occurs regardless of the site and extent of brain lesion in aphasia. Depending on the extent and severity of deficits, patients manifest the anomic block in multiple ways. The patients may remain silent, circumlocute (talking around the word by describing its function), or use a paraphasia (inappropriate selection of words). Verbal paraphasias can be related ("chair" for "bed") or unrelated ("cup" for "chair"). Related verbal paraphasias are also called semantic paraphasias. Only patients with severe lexical breakdown such as that noted in Wernicke's aphasia produce unrelated verbal paraphasias, generic pronouns (here and there), and neologisms (unrecognized word formations) etc.

Paraphasias are defined as erroneous substitution of a target word by another word or nonword, elicited during naming, repetition, spontaneous speech and reading. The term "paraphasia" was coined as far back as 1877 and a distinction was made between literal and verbal paraphasias ; in the former case, there is a confusion between phonemes ; in the

latter, the two forms (target and the response) present some semantic resemblance to each other.

During the past few decades, a great deal of research in aphasiology has been devoted to the analysis of paraphasias. Jakobson (1964) interpreted paraphasias as a paradigmatic error in the process of selection. Lecours and Lhermitte (1969) showed that there are many different types of errors in aphasic language deviations and several types of paraphasias can be distinguished. Blumstein (1973) observed that phoneme substitution represents the most frequent type of error in literal paraphasias, followed by simplification, environmental, and addition errors. Lecours (1975) presented a systematic analysis of transformations of language in aphasia and proposed the concepts of paradigmatic distance, the degree of similarity between replaced and replacing units, and formal similarity index, the number of phonemes common to both the replaced and the replacing words.

There is a vast amount of published literature on naming deficits in aphasic patients speaking English and other European languages. One of the much debated (and yet unresolved) issue is, whether the word-finding difficulties are to be understood as lexical access impairment with intact underlying lexical representations or impairment to the semantic structure of the words themselves (see for instance Blumstein 1995). If the patient who is unable to name a particular object in one context, but is able to do so in yet another context ; or if the patient is able to say what the object is used for ; or mention some of its general properties like the number of syllables or the letter with which it starts, it is generally assumed that the representation of the word in the mental lexicon is intact and that the problem therefore lies with the processing routines used in accessing the particular item. Whether or not one can bring sufficient evidence to resolve this issue, investigations of word-finding difficulties

will continue to throw light on how words are represented in the lexicon, i.e., the organization of the mental lexicon.

One common approach to gaining further insight into the structure and functioning of the mental lexicon is to analyze the naming errors in relation to certain linguistic principles governing the words of the language under consideration. The Anglophone data led to different typologies of naming errors. The most commonly mentioned categories are described below :

1. Semantic verbal paraphasias : Substitution of a word from the same semantic field as the target word as in 'sofa' for 'chair' (see for example the data discussed by Rinnert and Whitaker 1973 ; Tsvetkova 1975 ; Howard and Orchard-Lisle 1984). Ruth Lesser (1978) made a further distinction between related vs. unrelated verbal paraphasias to point to the fact in the former category, the target word is identifiable whereas in the latter, it is not. When the target word can be recovered from the error, one can see that the relationship is either conceptual or formal. For a more recent discussion of the typologies of phonemic paraphasias see Buckingham (1992).

2. Phonemic / phonological paraphasias : Substitution of individual phonemes or distinctive features of the phonemes within the target word ; The errors clearly resemble the target word indicating that the difficulty is with getting the right sound or sound sequence within the target word (for further details consult Lecours and Lhermite 1969; Blumstein 1978; Joanette, Keller and Lecours 1980 ; Kohn and Smith 1990; Beland, Caplan and Nespoulous 1990).

3. Neologisms : Bizzare words in place of nouns, verbs or adjectives typically associated with auditory comprehension deficit following damage to the posterior portions of the brain They are also referred to as non-dictionary words (see Lesser 1978; Butterworth 1979; Lecours 1982; Christman 1992a).

4. Perseverations : repetitiveness, tendency to repeat a word or an expression that cannot always be attributed to topic bias. Also noted in cases of Dementia (see Sandson and Albert 1984; Buckingham 1985).

5.Circumlocutions: Word-finding difficulties are not confined to confrontation naming tasks alone. They also occur in conversation. Patients may select vague and inadequate words (often acknowledged by the patient as being inadequate) ; use large number of incomplete sentences. For instance, while wanting to refer to 'sink' , a patient might say "it is used for washing hands".

The present paper deals with different kinds of naming errors, viz., paraphasias produced by 40 Hindi-speaking aphasics. The main purpose of this paper is to classify and describe the findings that may or may not agree with the existing (English – based) findings. The results no doubt will have some bearing on the mechanisms of lexical representations and retrieval and other theoritical issues. Before going into the details of this study, it is instructive to summarize some of the major theoritical debates pertaining to phonemic paraphasias.

THEORETICAL DEBATES

Lecours and Lhermitte (1969) suggested that phonemic paraphasias could be seen as additions, deletions, displacements and replacements of either the phonemes or distinctive features of target words. They opined that the substitutions would be more likely to involve phonemes with minimally different distinctive feature compositions and that replacements would be likely among phonemes that shared many distinctive features. These authors suggested that phonemes activate their distinctive features and that the time course of this activation is such that a phoneme begins to become active prior to its actual production and remains

active for sometime thereafter. The activated pattern of distinctive features interfere with each other in patients with brain damage leading to phonemic paraphasias. The underlying problem has been thought of patients inability to plan the sound patterns of a word. The errors occur after a word's form has been accessed, but before that form is actually articulated.

Lecours and Lhermitt's model has been critiqued by many researchers in the field on the grounds that it predicts impossible consonant cluster and vowel sequences, whereas, the errors produced by the patients often respect the phonotactic rules of the language in that, the patients rarely produce illegal clusters. Further, the model's heavy reliance on the phonemic theory led to further criticism.

A more recent model by Beland, Caplan and Nespoulous (1990) predicted that the phonemic errors respect relationships between three different levels of phonological structure, viz., segments, syllables and stress contours of words. Specifically, these authors pointed out that in a vast majority of the phonemic paraphasias, syllabification is appropriate for the phonemic content of the utterance and stress contour is appropriate for both syllabification and phonemic content. The errors are to be understood as changes that apply to segmental representations, which are then subject to the rules of word level phonology including syllabification and stress. This model suggests that phonological derivation rules proposed by linguists for a given language have some correspondence to the processes of planning sound patterns of a word and that planning errors would arise when these operations go astray. Phonemic paraphasias are subject to different constraints in different patients because they could arise in different stages of planning of word's sounds.

Linguists for a long time have asserted that sonority theory has some potential for explaining certain regularities in intra-syllabic and trans-syllabic phoneme sequence patterns and the slips of the tongue produced by normal speakers. This theory basically proposes that the sonority (loudness) value of each sound class can be ranked according the degree of perceptual prominence, acoustic energy or vocal-tract openness such that the vowels (V) are ranked toward the most end of the sonority scale followed by glides (G) ; liquids (L); nasals (N) and obstruents (O) including stops, fricatives and affricates in descending order toward the least end of the scale (see Clements 1990 for more details). The most sonorous segment of a syllable (the vowel) is considered as its peak and other less sonorous segments constitute the onsets and the codas. The sonority sequencing principles (SSP) states not only that the onset and / or coda segments in a syllable should be of less sonority value than the peak, but also that they should be ordered towards the peak and decrease in sonority from the peak out toward the rightmost periphery, i.e., O-N-L-G-V-G-L-N-O (Christman 1992b). Support for this theory has been obtained primarily from data relating to language games, speech errors and historical sound changes.

Blumstein (1978) discussed the role sonority theory can play in explaining addition paraphasias resulting in cluster formations in aphasics. She noted that when clusters were formed from addition errors, liquid elements were added to the right of the initial obstruent element but to the left of the peak (vowel) element as predicted by the sonority theory. Buckingham (1987 cited in Christman 1992b) rightly argued that the sonority principles operate in tandem with the language specific phonotactic rules such that clusters that are not permissible in a given language would not be formed, even if they represented a preferred sonority sequence. Buckingham's (1990) study based on the speech of fluent aphasics also confirmed that the sonority principle provided

an adequate explanations for certain segment sequences and syllabification patterns noticed in the patients. Sarah Christman (1992b) provided a comprehensive account of the usefulness of sonority theory and principles in uncovering hidden phonological regularities in the neologisms of three fluent English – speaking aphasic patients.

It is clear from the brief review of the studies discussed thus far that language specific facts need to be taken into consideration before we go on to build models and theories of neurolinguistics in general and of certain language processes in particular.

The primary aim of the present study is to examine the nature of naming deficits by analyzing the patterns in naming errors produced by a wide variety of aphasic patients. An effort has been made to examine the deficit patterns in the context of linguistic theory and the neurolinguistic organization in the human brain. An effort was also made to reexamine some assumptions about the organization of language in the brain with reference to variables such as; sex, age, literacy level, and handedness. The attempt is to gain a better understanding of the nature of mental lexicon or semantic system in Hindi, through an analysis of errors made by aphasic adults in word production.

THE STUDY

Subjects

Forty right handed patients with chronic stable ischaemic infarction (single lesion) in left cerebral hemisphere were studied (28 men, 12 women; average age 45 yrs; age range 25 – 72 yrs). Fourteen of the forty patients were younger than 40 years of age. None of the patients had any background of previous neurological or psychiatric illnesses. Average schooling was 4.8 yrs (range zero to 16). Fifteen patients were illiterate with no schooling or with lost skills of

reading and writing. The lesions as depicted on CT scan templates were pre-rolandic in 18, post rolandic in 12 and combined in 10. Patients were seen at M.Y.Hospital, Indore during 1991-1996. The interval between onset of stroke and assessment of speech function ranged from 3 month to 2yr (mean 7.8 months). Following aphasia types were diagnosed. Broca (13), Global (5), Conduction (5), Anomic (5), TCM (3), Wernicke (6), TCS (3).

Testing procedures

General and systemic clinical neurological examinations was undertaken to determine motor, sensory & cognitive deficits. Patients were administered a validitated and standardized Hindi Version of Boston Diagnostic Aphasia Examination (BDAE by Goodglass and Kaplan 1972), developed by the author himself.

Paraphasias were scored and analyzed for spontaneous speech (including picture description from card no.1, the cookie theft or its Indian adaptation), repetition (words belonging to both high and low probability), recitation of automatized sequences, and naming (responsive naming, confrontation naming and body part naming) subtests of Boston Diagnostic Aphasia Examination.

Paraphasias were classified according to Ruth Lesser's 1978 classification (see Figure-1). Six categories are distinguished on the basis of nature of relationship between target word and response word, the identification of target word, and whether the response word is a dictionary word or not. This classification was chosen because it selectively allows us to focus on the preserved or impaired linguistic relationship between the target word and the word substituted independent of other aphasic disturbances.

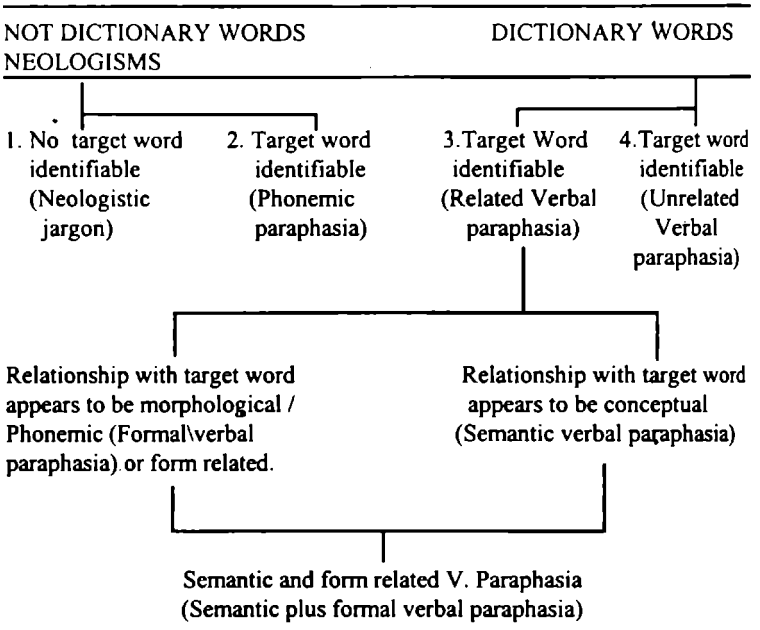

Figure : 1
Classification of Paraphasias
(From Lesser 1978)

Language samples were recorded and transcribed using broad phonemic transcription conventions of the International Phonetic Alphabet. However minor phonetic deviations (low level language deviations in articulation only) were not taken into account. When a single word contained different types of errors (eg., a phonemic substitution in a semantic verbal paraphasia) each type of error was counted separately.

Results and Analysis

The data are first presented in the form of examples of various categories of paraphasias. Subsequently, their associations with mode of elicitation (naming, repetition etc),

type of aphasia, age, sex and literacy status of patient and site of lesions were discussed.

Phonemic Paraphasias (total no: 164)
The response word is not a dictionary word. Only one or a few phonemes are altered and the target word is identifiable. Some of the examples are shown below:

Vowel change affecting the same syllable
e.g., kartak for the target word *kaartik* 'Hindu calendar month'

Insertion, affecting the syllable structure of the target word
e.g., nanendi for the target word *nadi* 'river'

Deletion resulting in simplification of syllable structure
e.g. kuta for the target word *kruurtaa* 'cruelty'

Metathesis involving interchange of consonants
gujnu for the target, *jugnuu* 'fire fly'; surkii for the target word, *kursii* 'chair'.

A close examination of these errors revealed the following: (1) the errors did not occur predominantly in any one position of the syllable (initial, middle, terminal).; (2) in majority of the phonemic paraphasias observed (119 out of the total 164 or 72.5%) only one syllable in the target word was changed though the changed syllable often belonged to a different phonetic class; (3) There were more deletions than additions and metatheses type errors, although the difference was not significant (4) there were more phonemic paraphasias during repetition and confrontation naming tasks compared to recitation and spontaneous speech.; (5) there were some other errors affecting place, manner, voicing, nasality features and other sub-phonemic (distinctive) features that could not be described systematically.

Neologisms (total no: 84)

Neologism is a phonological form for which it is impossible to recover with any reasonable degree of certainty some single item or items in the vocabulary of the patient's language as it presumably existed before the onset of the disease. In other words, it is not possible to identify the target word. However, it may sometimes be possible to identify its grammatical category based on its position and inflection.

Some examples of neologistic responses are given below:
taronaa for the target word *laDkaa* 'boy'
sumer for the target word, *kamjoor* 'weak'
parkii for the target word, *kursii* 'chair'

Semantic Jargon (Total number 16)

The response was dictionary word, but target word was not identifiable and no meaning could be derived. Fluent aphasics (conduction, anomic, transcortical sensory) produced most of these responses. The lesions were present in posterior part of the brain. Semantic Jargon was not produced by Broca's aphasics.

Examples are :

davaa *davaa* 'medicine' instead of the expected response, *paani* 'water'
chela *ceelaa* 'Pupil' instead of the expected word, *dhoobii* 'washerman'

Verbal Paraphasias (toatal no. 200)

A verbal paraphasia is interpreted as the erroneous use of a word belonging to an inventory of the language in place of another word which also belongs to one of that language's inventories. Two different subtypes of verbal paraphasias can be distinguished.

a) **Formal Verbal Paraphasias** (Total No. : 19)

It is a transformation in which the substituting word and the substituted word are similar in terms of their form but not their meaning. Morphemic verbal paraphasia is another related form in which an in-appropriate word is assembled using morphemes belonging to the language's inventory.

Examples are :-
sir lamba 'long head' for the target word, *srii lankaa* 'Sri Lanka' haaṭhee 'elephant' for the target, *raakhee* 'a ceremonial thread tied to the wrist'

(b) **Semantic Verbal Paraphasias** (total No.: 181)

Designates the aphasic transformation in which the substituting and the substituted words are close in meaning. The two may belong to same semantic field or be antonymous or target word may be replaced by superordinate, or an environmental proximity may exist between them. Some examples of Semantic Verbal paraphasias follow:

aasmani 'blue' for the target word, *laal* 'red'

Notice that the above response is a Paradigmatic response (P). It beongs to the Same semantic category and same part of speech.

Forty eighty two for the target word, *bayaalis* 'forty two'

Again the response is Paradigmatic (P), Same category and same part of speech.

sabji se 'with Vegetable' instead of the target noun, *caaku* 'knife'
In this case, the response is Syntagmatic (S), Different semantic category and different part of speech (addition of a case marker)

naakhun 'nail' in place of the target word, *daant* 'teeth'
The response is also Paradigmatic (P), Same category and part of speech.

deekhvo 'to see' instead of *ghaDii* 'cart'
Comment : Syntagmatic response, Different category and part of speech.

bahut majbut 'very Strong' instead of the target word, *muTThi* 'fist'
Comment : Syntagmatic response, different category and part of speech.

chooDnaa 'to give up' inplace of *dauDnaa* 'to run'
Comment : this response is paradigmatic (P), Same category and same part of speech.

Relationship of verbal paraphasias with parts of speech and semantic category

Semantic errors made in paraphasic utterances offer some means of examining the structure of semantic memory in the internal lexicon. There are many other ways of categorizing semantic errors using dichotomies such as, inner - outer, clang - residual, syntagmatic - paradigmatic and various types of word associations. Word associations in normal people have been utilized in research dealing with organization of semantic knowledge in brain. The paraphasic errors exhibited by the patients of this study were different in certain respects from response on word association tasks. Semantic confusions were more prevalent than word associations. Paraphasic responses do not represent a breakdown of the word association processes.

The target words were classified into following semantic categories - Body parts, Figures, Colours, Vehicles, Verbs, Animate objects, Furniture, Numeral, Abstract Nouns, Adjectives, Eatables, Week Days, Grammer words. For all these semantic categories, percentage of paraphasias belonging to same part of speech and same semantic field were also determined (See table - 1).

Category	Mode of elicitation	Total paraph.	Semantic paraph.	% belonging to same part of speech	% belonging same semantic category
Colour	Naming	48	32	94	94
Body	Naming	50	26	92	87
Numerals	Naming	48	29	97	100
Grammer	Repetition	25	17	100	100
Weekdays	Recitation	40	3	100	66
Abstract Nouns	Reptition	43	15	73	33
Adjectives	Repetition	23	6	66	33
Verbs	Naming and Repetition	73	50	86	76
Figures	Naming	30	16	75	44

Table-1
Varying proportions of Semantic Verbal Paraphasias belonging to same part of speech and same semantic category

This analysis revealed that (1) color names, grammer words, body parts and numerals yielded semantic verbal paraphasias mainly, and more than 90% responses belonged to same semantic category and same part of speech; (2) abstract nouns, adjectives, and verbs produced more deviations not belonging to same part of speech and same semantic category suggesting relatively loose association with meaning at single word level; (3) Deviations pertaining to geometric figures names were also marked, probably due to their being a late evolutionary addition to mental lexicon.

Different Types of Deviations in Responses pertaining to Verbs

Verbs offer more opportunity to analyze on the lines of static versus dynamic paraphasias and syntagmatic versus paradigmatic paraphasias. In dynamic paraphasias, the target verb is replaced by another verb. For e.g., 'to run' as a response to the target item, 'to throw'. Thirty such responses were observed in 16 of our patients. In static paraphasias on the other hand, the verb is replaced by a related noun, for e.g, patient will say hammer instead of 'to hit'. Eleven such responses were observed in 10 patients. Four of our patients yielded combination of static + dynamic responses such as for instance, instead of the expected target response, to plough a field', they said 'to drive the cart'. There were no significant correlations with aphasia type, site of lesion, literacy level, sex and handedness. The only exception was, age.

Only those patients who were younger than 40 years of age produced 7 dynamic and 11 static responses. This result atleast in part reflects possible variations in cerebral dominance for different aspects of language as a function of age. Similar conclusions could be reached while comparing syntagmatic and paradigmatic response. We found more syntagmatic errors in younger patients and to some extent in left handers and illiterates. More bilateral representation of language function in these groups may be responsible for this variation.

First or initial syllables in a verb are more firmly planted. Syllables in the later half of the word are prone to change. Such immutability of main root is not true for other parts of speech.

Mode of Elicitation and Type of Paraphasia

Majority of phonemic paraphasias (114 out of 164) were produced during the tasks of verbal repetition (82) or

recitation (32) which are relatively mechanical processes and may not need active access to mental lexicon in a conscious manner as is needed during naming task which produced only 45 responses of phonemic nature in contrast to 153 of semantic verbal type. This observations supports existence of a phonological lexicon which may be partly independent of semantic lexicon. Neologistic Jargon was also mostly elicited during repetition rather than naming (45 versus 30)

Most of the semantic verbal paraphasias (150 out of 181) were produced during naming. The chances of deviant response belonging to the same part of speech and same semantic category were more during naming (88.5% and 75%) as compared to during repetition (81.5% and 53%). This general phenomenon of more phonemic paraphasia during repetition and more semantic verbal paraphasia during naming was however dependent upon word category and part of speech.

Concrete and highly imageable nouns (like animals, artifacts, furniture, vehicles, eatables) more strongly exhibited the above mentioned phenomenon. At the other end of the spectrum, grammer words, numerals, adjectives, and geometric figure words either contradicted the trend or were neutral. That means, they produced more or equal number of phonemic paraphasias during naming and more or equal number of semantic-verbal paraphasias during repetition. In the middle range, abstracts, nouns, color names, verbs and body parts were encountered.

Type of aphasia and paraphasia

Fluent aphasic had significantly greater propensity to produce paraphasias while it was less marked in nonfluent aphasics. Semantic Jargon was not produced by Broca's and transcortical motor aphasics. Broca's aphasics had mostly phonemic paraphasias while fluent aphasics produced semantic ones (See table - 2).

	Patients with Paraphasias	Total No. of Paraphasias	Phonemic/ Semantic Ratio
1. Broca's (33)	12	153	103/50
2. Global (19)	6	73	39/34
3. Conduction (6)	6	100	62/64
4. Anomic (6)	6	36	40/60
5. Transcortical motor (6)	6	36	13/23
6. Transcortical sensory (3)	3	46	17/33
7. Transcortical mixed (3)	3	46	15/31
8. Wernicke's (4)	3	65	16/41

Table 3
Type of Aphasia and Paraphasia

Site of lesion and paraphasia

Corroborating the observations mentioned in above paragraph, patient with post rolandic lesions yielded more semantic verbal paraphasias then phonemic as compared to patients with pre-rolandic or combined pre and post rolandic lesions. Surprisingly, patients with subcortical lesion sites had considerably more semantic verbal paraphasias (35) than phonemic paraphasias (8).

Age and Sex in relation to Paraphasia Type

There was no significant difference in number of different types of paraphasias in relation to age. Female patients produced significantly more semantic paraphasias. This observation may have theoretical importance from two points of view:

(i) The fact that lateralisation of speech function to one hemisphere proceeds at different pace in the two sexes, slower in females, possibly related to hormones. This supposedly results in more bilateral representation of language function in females.

(ii) It is speculated that semantic aspect in the hierarchical levels of language (the other two being phonological and syntactic) is more bilaterally represented in human beings. Thus more diffuse representation of language in females, particularly its semantic aspects, may be responsible for more number of semantic paraphasias in that group.

Effect of literacy level on paraphasias

Literate subjects produced greater number of paraphasias (total of 368) and a majority of them (207) were semantic verbal type. Illiterate subjects on the other hand, had more of nonfluent aphasias and likewise less number of paraphasias, out of which the proportion of phonemic paraphasias was significantly higher (82 out of 147). These results suggest that acquisition of reading and writing skills may alter the way the language is organized in human brain. More definitive statements must await further research.

Discussion

During the last two decades, there has been a renewed interest in the neurolinguistic study of the working of the mental lexicon, as reflected by appearance of "lexicalist" grammers (Spencer 1991) and advances in psycholinguistic research on normal mental lexicon (Emmorey 1988).

However, one of the limitations of such group studies is an unavoidable heterogeneity within and among the different aphasia groups. Any comparison across groups may therefore be only tentative. It is virtually impossible to match the different aphasic groups with regard to not only the

severity of the language disorder, but also other potentially important variables such as etiology, post onset time, educational level etc. Pathological evidence from aphasia has

inherent limitations. It gives only one perspective about languag knowledge and use. For this reason, the results of this study should be considered as preliminary. They do however suggest some general trends.

The results of this study like many others, support a two level organization of mental lexicon - semantic and phonological. In many instances we observed (like Laine et al 1992) that patients had grasped the meaning of the target word, but were unable to access its phonological form. The type of errors were different according to mode of elicitation suggesting that different tasks tap diferent psycholinguistic abilities. During the repetition task, it is not necessary for patients to have access to their semantic system. Since only the phonological system is involved, the errors were also phonemic. Nonfluent aphasics (eg Broca's) have no lesions in posterior part of the brain (near Wernicke's area where the mental lexicon and its access routes are believed to be situated. Likewise their errors are not semantic in nature. Just opposite is the case with fluent aphasics, who have profuse number of verbal paraphasias. Phonemic errors are uncommon, because, the anterior parts of the brain which are concerned with phonological assembly are relatively intact The interconnections between semantics and outpu phonology may be serial (one way) or interactive or a combination of both. (see Figure -2).

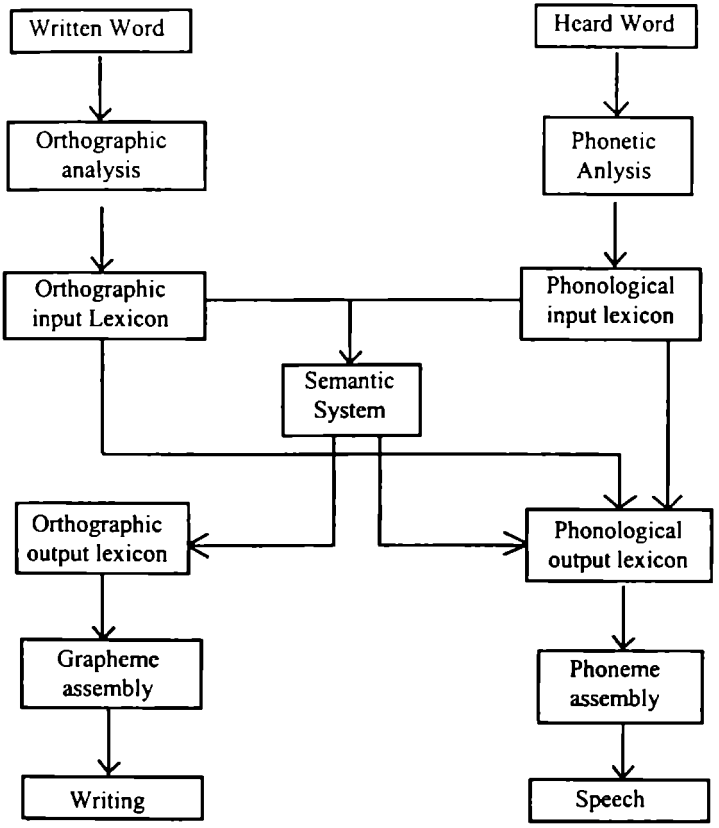

Figure - 2
Inter-connections Between Semantics and Output Phonology
(From Niemi 1993)

Genesis of neologistic jargon, can be explained on the basis of the above model depicted in Figure -2. Neologisms may be exacerbated in phonemic paraphasias, in which case, they are "sublexical" transformation of an already accessed form or two-stage errors, involving semantics as well as phonemic transformation or the result of an inability to access the output phonological lexicon, with random generation of a nonexistent form (Le Dorze and Nespoulous 1989).

Semantic paraphasias may be surface outcome of lexico-semantic problems in the structural organization of the lexicon (Goodglass and Baker 1976) or in accessing the semantic representation from an otherwise intact lexicon (Howard et al 1985). The intactness of lexicon can be proved by other methods like comprehension, pointing, reading etc, the data about which is not included in this paper. Production of informative circumlocutions also reflects adequate, although perhaps incomplete, semantic representation.

Difficulties in distinguishing the semantic fields of words are especially prevalent in posterior aphasia, particularly in Anomic aphasia (Kremin 1988). These patients cannot determine the semantic boundaries of a word; they even express great surprise that a single word can eventually have two different meanings. In other words, they exhibit inability to understand polysemia (Ardilla, Lopez and Montanes 1983). Kudo (1987) observed that hierarchical semantical categorization is generally impaired in aphasia ; subjective category domains are more diffusive in aphasics than in normals. However, fluent aphasics present a profound disintegration of semantic boundaries ; the semantic limits of words are lost. It has been observed, however, that fewer semantic paraphasias are produced in confrontation with operative items (Feyereisen, Van der Borgh, and Seron 1988). In general, the underlying representation of semantic categories is preserved in Broca's aphasia but seriously disrupted in fluent Wernicke's aphasia and Anomic aphasia (Goodglass and Baker 1976 ; Grober, Perecman, Kellar & Brown 1980). Word-finding difficulties and verbal paraphasias, particularly semantic but also unrelated verbal paraphasias, were abundant.

The observations based on the present study also supported the psychological reality of the main grammatical classes of words. We found selective success or failure in

accessing closed class items and function words depending on the type of patient and type of task. Allport and Funnell (1981) had reported that some aphasics have significantly more difficulty in producing verbs than nouns. One possible account for this vulnerability is that verbs may be tagged with more syntactic informations than nouns. This is another indication of the fact that word class is closely related to the abstract "meanings" of words. Present study also revealed that verbs tended to produce more out of class responses and different types of responses compared to other parts of speech.

Responses like *pyaar* 'love' instead of the target word, *pyaaraa* 'lovable' (English equivalent examples are 'punishes' instead of 'punishment') argue in favour of psychological reality for morphological decomposition as also proposed by Job and Sartori (1984). The processing of morphological structure of words has received interest in recent neurolinguistic and psycholinguistic research, the main issue being the degree of morphological decomposition of polymorphemic items, with special reference to inflected and derived word forms.

CONCLUSIONS

The overall evidence pertaining to naming errors in Hindi-speaking aphasics described in this paper fits well with the basic observation in the linguistics leterature. Specifically, the mental lexicon appears to have a multi level organization that encodes syntactic class and presumably also morphological structure of words. The relationship between language deviations and aphasia type are complex and multiple. Despite the fact that some language deviations clearly tend to predominate in specific forms of aphasias, this relationship is far from being simple. Fine-grained analysis of language deviations not only assists, but also is a prerequisite for the understanding of aphasic language disturbances (Menn & Obler 1990). Such type of neurolinguistic studies of

language disturbances also have significant implications for speech-language therapy. Immediately after the brain damage, there is a period of natural recovery, which with its variable course can actively last up to six months. It has been clinically proven that participating in various programmed speech and language training activities prescribed by a certified speech-language pathologist during and after the natural recovery has been found to play an important role in the recovery of language and speech process. Before prescribing appropriate exercises, speech-language pathologists undertake a diagnostic evaluation of lost language in aphasics and assess the residual functions. This helps them determine the nature of deficit and decide on the appropriate mode of language stimulation. Their primary goal is to promote better communicative skills in the patients. More research on aphasic patients speaking Indian languages is needed for making differential diagnosis and evolving appropriate remediation techniques that will exploit characteristic features of the languages involved.

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INFLECTIONAL AND DERIVATIONAL PROCESSES IN BROCA'S APHASIA: A CASE STUDY

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ABSTRACT

This paper presents preliminary results pertaining to recognition and production of certain inflectional and derivational processes in Telugu by a single subject with Broca's aphasia. The patient's ability to recognize and produce correct plural forms (aspects of inflectional morphology) was better retained than derivational morphology. Recognition of derived forms was better retained than the ability to produce derivations. The subject appears to have the concept of derivation but seems to have problems in association and lexical formation. These results are discussed in the light of the findings based on previously reported research on aphasics from English, Italian, German, Hebrew and Japanese language backgrounds to stress the point that detailed linguistic analysis of the materials is essential in cross-language aphasiological research.

INTRODUCTION

Past research has shown that Broca's aphasics with a lesion in the anterior regions of the brain display a dissociation between morphological disturbances and syntactic disturbances in that they can recognize correct grammatical forms, but exhibit marked difficulty in producing morphological markers like plural marker, possessive marker, passive sentences, sentences with subordinate clauses and so on. Grammatical structures were easily available for production in Wernicke's aphasics, who nevertheless had difficulty with recognition of correct

grammatical forms (see Lecours, Lhermitte and Bryans 1983, Ch. 12 for a review and discussion of these studies). From a theoretical linguistics point of view, inflectional morphology is what is said to be relevant to syntax whereas the same cannot be stated for derivational morphology (Anderson 1982). To elaborate, inflections never change the syntactic category of the word to which they are applied, whereas, derivations may do so. Rules of Inflectional Process Component (IPC) and Derivational Process Component (DPC) are thought to be sensitive to different properties of the base to which they are applied -- properties like syntactic category and semantic features respectively. In other words, inflectional and derivational processes constitute functionally distinct processes. Therefore, there exists a possibility of selective disruption to one or the other of these components of the lexical system following acquired brain damage.

In the case of English, agrammatic aphasic subjects (with lesions in and around the Broca's area) reportedly exhibit disfluent speech lacking functional elements such as inflectional affixes as well as function words like pronouns, prepositions and complimentizers. Most easily elicited sentence structures were, imperatives, WH questions and adjective + noun sequences; whereas, the most difficult ones were interrogatives, those constaining tense markers, passives and embedded sentences (Devilliers 1978; Gleason 1978; Goodglass, Gleason, Bernholz and Hyde 1972). Most linguistic accounts of such deficits in the 70's and 80's were interpreted to mean that certain (linguistic) categories were not available (therefore lost) in these patients. Caramazza and Hillis (1989) argued that the mere fact that certain features of sentences are not produced in spontaneous speech does not necessarily mean that they are not available at all in the linguistic system of the patient. The English speaking aphasic patient studied by Caramazza and Hillis appeared to be agrammatic in the production of spontaneous (continuous)

speech, but performed well on various tasks at the word level. It was demonstrated further that these patients can deal with inflectional morphology as long as it is determined by lexical information and a very limited syntactic context.

Liederman, Kohn, Wolf, and Goodglass's (1983) study showed that Broca's aphasics exhibited highest proportion of innovations in the form of coined derivatives, for example, words with derivational affix *-er*. This result is in agreement with Whitaker's (1972) observation that Broca's aphasics tend to nominalize verbs. Liederman et. al. argued that derivational affixes are lexically rather than syntactically motivated. To illustrate, adding the agentival affix *-er* to a verb does not depend on the structure of a sentence unlike inflectional affixes which do depend upon the structural features of phrases and sentences.

This brief review of literature based on English clearly shows that characterization of the nature of impairment in agrammatic (Broca's) aphasics is dependent on the language specific considerations and therefore one cannot make generalizations about the status of morphological component in agrammatic patients speaking languages which are very different from English. This point will be elaborated in the following paragraphs.

Grodzinsky's (1984) work demonstrated that for structural reasons, certain kinds of closed class items and inflectional markers cannot be ommitted by agrammatic aphasics. He illustrated this point using Hebrew data. The root morpheme of a Hebrew verb would be unpronounceable because it consists only of a consonantal tier. In other words, in semitic languages like Hebrew, a word is dependent both phonologically and morphologically on the inflection. Hebrew agrammatics therefore tend to substitute rather than omit grammatical morphemes. Grodzinsky's later works as well as those of others based on non-European languages has

contributed to the refinement of traditional (Anglocentric) descriptions of agrammatism.

Italian is a highly inflected language compared to English. Nouns in Italian carry number inflection. Gender however is lexically determined. Adjectives carry four different markers corresponding to masculine singular, masculine plural, feminine singular and feminine plural paradigms. Verbs too have an inflectional paradigm that is more complex than that for nouns or adjectives. The lexicon is derivationally productive. Miceli and Caramazza's (1988) study based on Italian agrammatic aphasics demonstrated that there is a striking dissociation between inflectional and derivational errors, 96.7% and 3.3 % respectively.

In a more recent study reported by De Bleser, Bayer and Luzzatti (1996) pertaining to the morpho-syntactic impairments in German and Italian aphasics, it was noted that the patterns of impairment are indeed language specific such that the German patients, for instance, had difficulty dealing with syntactically relevant morphology than the Italian patients. This was so because in German, what appears to be an SVO sentence is the result of verb movement and topicalization of the subject-NP. In other words, the subject is in a derived position, but in its place, one could as well have a non-subject phrase. This is not so in Italian, which is already an underlying SVO language. The preverbal position in Italian is more likely to contain the subject such that auxiliary and verbal agreement can rely on positional information. The main generalization of the results of De Bleser et al's study is that the patients can exploit very limited syntactic contexts for the determination of agreement morphology, but they do fail in more elaborate contexts. It therefore cannnot be the case that their morphological abilities are based on fully operative syntactic competence. In cases where the patients fail, their responses still refelct (a) an intuition about legitimate word

structures, and (b) the attempt to use morphology functionally, i.e., the forms which are selected have targets in the input even if they are the wrong targets (De Bleser et al 1996:184).

Kudo (1992) reported a study designed to explore word formation processes in 18 Japanese aphasic patients (six anomic, seven Broca's and five Wernicke's aphasics) and seven age-matched normal subjects. Four separate experiments were conducted to test patients' ability to use selection and order processes of word formation with respect to kanji orthography in which each kanji character represents a lexical meaning. The results of this study demonstrated that (1) the ability of word formation is impaired most severely with the Wernicke's aphasics and least severely with the Anomic patients (2) Phonological forms are better retained than orthographic forms and (3) The deficits in all the three clinical groups lie in gaining access to lexical information rather than in lexical organization itself. These findings are in agreement with an earlier hypothesis (Milberg, Blumstein and Dworetzky 1988) that aphasic patients are disturbed in conscious access to the lexicon, but they are intact in unconscious automatic activation of it.

The present paper describes the results based on a preliminary analysis of inflectional (limited to plural formation) and derivational errors noted in a single subject with Broca's aphasia, whose native language is Telugu, a language belonging to the Dravidian family spoken predominantly in parts of South India. In order to emphasize the differences that exist at the structural level between Telugu and other European languages discussed hitherto, it is necessary to describe some of the inflectional and derivational processes particular to Telugu language that are relevant to the present study. For other details, interested readers may consult Krishnamurti and Gwenn (1985).

INFLECTION AND DERIVATION IN TELUGU

In Telugu, plural formation is a complex phenomena in which the singular noun stem as well as plural morpheme *-lu* undergo several different morpho-phonemic changes. Some examples follow:

guDi + lu	---- *guLLu*	'temples'
ceTTu + lu	---- *ceTLu*	'trees'
paNDu + lu	---- *paLLu*	'fruits'
sanci + lu	----- *sanculu*	'bags'
pustakamu + lu	----*pustakaalu*	'books'

As far as derivational processes in Telugu are concerned, a large number of nouns and verbs are derived through the use of a wide variety of suffixes. Uma Maheswar Rao (1994) argued that in the early grammatical works on Telugu, derivational suffixes were taxonomic descriptions. He offered a set of derivational processes and talked of their productivity within the theoretical framework of Aronoff (1976). According to Aronoff, the notion of productivity has a direct bearing on the intricacies of the mechanisms of derivation. Aronoff proposed that the productive Word Formation Rule (WFR) is the result of an interplay of many complex factors. Only those words which exhibit some idiosyncracy in one or the other way in the process of their derivation will be listed in the lexicon. The listing of the output of a WFR in the lexicon leads to a loss in productivity.

Uma Maheswar Rao (1994) stated that linguists working on derivative processes in Telugu have assumed that the derivational processes are non-productive. He argued that deverbal nominal derivation in Telugu is not an unproductive process and that WFRs are fully effective and rule governed. To elaborate, each derivational suffix in Telugu depends upon the syllable weight or segment structure, syntactic features like whether the base is [+ / -- transitive], semantic coherence

like whether the base is regular or irregular and so on. Only those words which exhibit some idiosyncracy in one or the other way in the process of their derivation will be listed in the lexicon. The listing of the output of a WFR in the lexicon leads to a loss in productivity. All these considerations contribute to the complexity of the derivational processes in Telugu compared to the inflectional processes.

It follows from the above that derivational errors should be less in languages where the derivations are productive. Since the issue of productivity is not so stright forward in Telugu as evident from the above discussion, it should be interesting to note the patterns of errors in inflectional and derivational processes in Broca's aphasics. Since the results reported in this paper are based only on a single subject and limited stimulus material, definitive language-specific statements cannot be made based on the findings of this study.

METHODOLOGY

The subject

The 56 year old male subject who participated in this study was selected from the files maintained by the Nizam's Institute of Medical Sciences, Hyderabad. The subject was reported to have had brain injury resulting from a cerebro-vascular accident. He had right side hemiplegia at the time of admission into the hospital. He was diagnosed as having Broca's aphasia based on extensive neurological examinations, computerized tomography (C.T.) scan and Magnetic resonance imaging (M.R.I.). The results of the brain imaging tests showed hyper-density in the precentral gyrus in the frontal lobe with anterior and posterior extentions in the left hemisphere.

The subject got the stroke in January 1992. Prior to the onset of the stroke, he had been suffering from hypertension

He was a graduate and was fluent in the use of three languages, Telugu (his native language), English and Hindi. Language data were obtained two years after he got the stroke. His language was evaluated using Telugu version of the Boston Diagnostic Aphasia Exam (Vasanta and Usha Rani 1989). His writing and reading skills were not disturbed as much as speech production.

Speech Material

Test material used for assessing inflectional morphology consisted of fifteen different words incorporating all the morpho-phonemic processes that take place during plural formation in Telugu language. Three derivative suffixes in Telugu viz., (1) *--tanam* which combines with many adjectives forming abstract nouns as in examples such as *mancitanam* 'goodness'; *oNTaritanam* 'loneliness' (2) *--pootu* which combines with verbs and adjectives forming verbal nouns and adjectival nouns such as *tirugupootu* 'vagabond'; *pogarupootu* 'arrogant person' and (3) *--gaaDu,* a suffix denoting males as in *moosagaaDu* 'cheat' and *--gatte* a suffix denoting female form as in *aaTagatte* 'dancer' etc. *--gaaDu* and *--pootu* behave as agentifiers in Telugu. There were ten instances of *--tanam* and *--gaaDu* forms and six of *--pootu.*

Tasks

In the plural recognition task each test item was written on a separate card. There were three response alternatives for each target item . Card (a) had the singular form plus the plural marker without the necessary morpho-phonemic changes as in *guDi + lu* ---- **guDilu* instead of *guLLu* 'temples'. Card (b) had singular form followed by correct version of the plural form as in *guDi* 'temple'*--guLLu* 'temples'. Card (c) had both the alternatives given in (a) and (b) above. For example, *guDi* 'temple' **guDilu* (unattested

form) and *guLLu* 'temples'.

The subject was instructed to choose the correct plural form by marking a tick mark against the appropriate response alternative. The unacceptable response alternatives were included in this test because previous research on acquisitional / disruption of Telugu morphology has shown that children acquire the required morpho-phonemic changes gradually after passing through intermediate stages of using unacceptable forms such as the ones included in this study, and that aphasics use them in the course of recovery (see Swarajya Lakshmi and Usha Rani 1993 and Usha Rani 1994 for more details).

Identification of derivations required the subject to take part in three separate tasks; (1) a sentence completion task-- All the derivative suffixes are listed on a card. The subject was required to choose the correct form to complete a sentence (2) production task: After illustrating the task in a sentence context to the subject, he was required to produce the correct form for target sentences as shown in the example below:

atanu baagaa iidutaaDu. atanu manci ---- (iitagaaDu)
he very swim+PNG he good swimmer
'he is a good swimmer'

(3) Written word recognition task: The subject is required to choose the correct derivational form from a given set consisting of both possible and impossible combinations such as **pogarugaaDu, pogarupootu, *pogarutanam* etc.

RESULTS

Since the data are limited, both from the point of view of the subjects and number of test items, instead of tabulating the results, main observations will be summarised and commented upon.

In the plural formation tests, the patient could identify and produce correctly the plural form in almost every case of the target singular form. Performance was even better when he had to recognize the correct forms when the right and wrong alternatives were presented together in card (c). They had some difficulty in judging whether the incorrect form given in card (a) is indeed incorrect or the correct form given in card (b) is the correct form.

On the derivation tasks, the subject did very well on completing sentences and producing the target derivational suffixes ---*tanam* and --- *gaaDu*, but not so well with the forms, --- *pootu* and ---katte. They produced unacceptable forms like **paaTatanam*, **nidratanam*, **panipootu* and **pogarugaaDu* etc. In the third task consisting of a mixture of correct and incorrect derivational forms, the subject chose wrong forms resulting in illegal words like **tirugugaaDu* and **pogarugaaDu*. In general, the patient's performance was poor in the production task compared to sentence completion or written word recognition tasks. It must be noted that the inflectional processes were evaluated with little if any syntactic context whereas, correct production of derived forms, especially the task-b in this study required contexts that exceeded word level and therefore assessed not just lexical abilities but also fully operative syntactic competence as well.

DISCUSSION

Previous studies based on languages like English, German, Italian, Japanese and Hebrew have shown that agrammatism does not simply wipe out the ability to deal with morphology. Patients can deal with inflectional morphology so long as it is determined by lexical information and a limited syntactic context. In general, a striking dissociation between inflectional and derivational errors, with the former exceeding the latter has been reported in aphasiological data

pertaining to languages where derivational processes are very productive and the inflectional system is complex. On the whole, the results of this study are in agreement with these general trends reported in the literature.

The derivative suffixes elicited in the present study were very simple compared to the complex processes typically associated with Telugu language and discussed by Uma Maheswar Rao (1994). Yet, the patient had problems producing the correct forms. Comparison of the patient's performance across the three derivational tasks suggests that he seems to have had the concept of derivation, but his performance was constrained by problems which have something to do with association and lexical formation. When the patients performance on the plural formation task was compared to that in the derivational tasks, it appears that he could apply rules governing inflectional markers associated with plural formation much better than those governing derivational forms. This result which may have something to do with perceptual saliency is in agreement with the observations of Eling (1986). In other words, inflectional affixes are perceived separately more easily than derivational affixes. It is possible that the derived words are perceived as a whole independently rather than as root plus affixes. Recall that Anderson (1982) stated that inflectional affixes are sensitive to syntactic considerations whereas derivational affixes are sensitive to semantics. The present data based on Telugu suggests that derivational processes are affected to a greater extent than inflectional processes implying that this patient's semantic system is also disturbed. However, further generalizations cannot be made because the methodology used was not sensitive enough to isolate the nature of the disturbance to the syntactic vs. semantic systems.

CONCLUSION

In conclusion, the results of this study, preliminary as they are, demonstrated that an adequate understanding of the nature and extent of breakdown of inflectional and derivational processes in a given language depends upon language specific factors like the nature of affixation, compounding, productivity and other morphosyntactic factors. The main implication of this result is that, anglocentric theories and models of agrammatism or any other syndromes of aphasia are insufficient in gaining a complete understanding of neural representations of languages in general. Language specific studies providing detailed linguistic analysis of the materials used and the results obtained in a wide variety of psycholinguistic tasks are needed in order to devise adequate assessment and therapy materials.

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READING AND READING DISORDERS: AN INDIAN PERSPECTIVE

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ABSTRACT

The investigation of reading, its models, theories, acquisition and disorders, has emerged as a hot research topic in applied psycholinguistics during the last couple of decades. Much of the current research, however, has come out of the Western world and is thereby largely restricted to the reading of alphabetic scripts like English. These models and theories are in need of cross verification and validation with data from nonalphabetic scripts such as syllabic and ideographic scripts. This paper brings to bear, data from the semisyllabic Kannada script to two different aspects of current reading research - the disorders of reading and of metalinguistic skills vis a vis reading. It emphasizes both the contribution of such data to the refinement of current models of reading and the pitfalls of unquestioned application of the implications of existing Western theories to teaching and remedial work in this country.

INTRODUCTION

Since the 1970's, under the influence theoretical models of linguistics and psycholinguistics, research on reading - its acquisition and disorders, has been renewed and taken new directions. The last couple of decades have witnessed exhaustive research in this area. The reading process - nature of lexical access and lexical code, reading acquisition, types of phonological and semantic memory, orthography and reading disorders,cognitive factors and possible neurological predispositions involved in such failures, text processing and comprehension, linguistic

awareness and reading - all these topics have generated a great deal of research. Research, on reading (considered a secondary linguistic skill), is in fact, one of the most actively investigated topics in current cognitive psychology and applied psycholinguistics.

Over the years, it has been recognized that reading is a complex process that might be dependent upon and affected by a range of factors from biological to neurological predispositions, to neuropsychological processing abilities including visual and auditory discrimination and perception, extending to linguistic factors such as phonological and semantic memory, lexical code, access and retrieval. This information has been derived from the failures in reading both developmental and acquired, and the analysis of experimentally controlled skilled reading. Based on these data, structural models have addressed themselves to the issues of normal and skilled reading, the failures therein and an identification of the components that lead to these failures, as well as remediation of the same.

Since nearly all of the earlier work in this area was carried out in the West, much of what we know pertains to the acquisition of literacy in alphabetic scripts such as English. Consequently, most models of reading as also instructional procedures for acquisition of literacy and remediation of reading disorders, have largely been based on the alphabetic script and its peculiarities. Not only is our knowledge and understanding of reading and writing processes and their acquisition influenced to a great extent by Western theories and models, but so are the teaching methods used.

Given that all readers share the same biological mechanisms, there are undoubtedly several universal features in the process of acquisition of literacy. However, at the same time, it is a fact that the scripts of the world range from those that largely rely on and facilitate the derivation of meaning

directly from visual material without any mediation by sound, such as the ideographic scripts like the Chinese Kanji to those which economize highly on the number of visual symbols that are processed through the mediation of sound by a complex series of grapheme - phoneme correspondences such as the English alphabet. Midway through are the syllabic scripts like the Japanese Kana and the semi-syllabaries mediated through grapheme-phoneme correspondences, made relatively transparent by employing a large number of letter schemes representing the numerous possible sound combinations.

Recent research on the acquisition of literacy in Indian writing systems as also the disorders of reading that are seen in users of Indian scripts indicate that what is known in terms of literacy acquisition in the alphabetic scripts may not be wholly applicable to the acquisition and use of semisyllabic scripts such as many of the the Indian orthographies. It is essential that the Western models be validated in the Indian context not only for the purpose of applying or drawing implications from them for our educational programmes but also because theoretical models of reading ought to account not just for the reading of alphabetic scripts but for all of the existing varieties of scripts.

While reading, its acquisition, the difficulties therein and the suitability of alternate methods of teaching reading, have been hotly debated topics in the Western world for over half a century; it has not until recently attracted much attention in the Eastern world. The apparently lower incidence of reading difficulties and the relative lack of concern about these issues in the East, were attributed by Western scholars to the general lack of knowledge and sensitivity among educators to the specific difficulties faced by children, learning to read in overcrowded classrooms. On the other hand, the high incidence of problems associated with the acquisition of reading in the Western world was attributed

by Easterners to the vagaries and complex nature of alphabetic writing systems such as English.

Parallel to this debate has been the assumption [largely Western], underlying theories of the evolution of writing systems which claim a linear ascent from early pictorial systems to later phonological ones culminating in the alphabet, which in comparison with other writing systems is seen as both highly economical and as uniquely successful in representing anything that can be said.

From the 1970's, reports on differential patterns of reading disorders in readers of nonalphabetic scripts and/or biliterate readers whose mastery of alphabetic and non alphabetic scripts were differentially affected, brought to focus the need for cross verification and validation of the literature on reading with data from individuals who deal with a variety of nonalphabetic scripts. In the preface to their benchmark publication *Deep Dyslexia,* Coltheart, Patterson and Marshall (1980) cited cross-language comparison of symptom-complexes in reading disorders as an important innovation for the future. To quote, "Brains may be similar from one culture to another but orthographies certainly are not. We can confidently predict that further insights will emerge from comparing the differential effects of similar lesions upon the ability to read orthographies as dissimilar as alphabets, syllabaries and ideographic scripts" (P.viii).

Sasanuma (1980) based on her study of six Japanese dyslexics, reported that while the overall patterns of dyslexia exhibited by her patients were basically similar to those found among users of alphabetic orthographies, (suggesting that the neuropsychological mechanisms underlying the symptoms were essentially universal), superimposed on these similarities, there were some fine differences which she attributed to the specific nature of the Japanese orthography. Chief among these were the Kana/Kanji dissociations of various kinds and

degreees at different levels of processing and script specific errors. Kana and Kanji represent two distinct graphemic codes requiring different types of linguistic operations for their processing and various types of Kana/Kanji dissociations constitute one of the most prominent features of Japanese dyslexic symptomatology. Kana are phonetic symbols with a highly consistent one to one correspondence with syllables (morae) making them particularly suitable for the phonologically mediated non-lexical strategy and are thus likely to be associated with phonological paralexias. Kanji, on the other hand are a logographic code and are closely associated with a lexical/semantic representation, their association with a phonological representation being minimal thus making them highly suitable for the direct, lexical strategy which in turn tends to yield semantic paralexias.

Along with the dissociations between the two orthographies, Sasanuma found a high incidence of script - specific paralexic errors that is, semantic errors tended to be produced with words in Kanji and phonological errors with words in kana, both types of errors being exhibited in varying proportions by practically all dyslexic patients irrespective of their type and degree of impairment. The basic difference between the nature of the two linguistic codes was offered as an explanation of the script specificity of these paralexic errors in Japanese patients.

Karanth (1981) reported a differential effect of two different scripts - Kannada and English in an adult acquired dyslexic. Contrary to expectations, the patient had greater difficulty in reading Kannada despite its near perfect grapheme-phoneme correspondence, as compared to English. On examination, the patient, turned out to be ' a letter by letter reader' and the greater difficulty in Kannada was ascribed to the greater number of visual symbols and the finer visual discrimination required in reading Kannada, as compared to English.

In a discussion of the possible subtypes of dyslexia, postulated by Newcombe and Marshall (1981), Karanth (1985) pointed out that in languages like Kannada where the semi-syllabic script bears a near perfect correspondence to the phonology of the language, irregular words would be found to a far lesser degree than in English. Consequently, surface dyslexia wherein the major criterion for the diagnosis is the patient's selective difficulty in reading irregular words is unlikely to be found in Kannada readers. It was hypothesized that the only indication of surface dyslexia in Kannada would be the group of errors involving the anusvaara which is a grapheme that represents more than one phonemic value, in Kannada.

The above hypothesis was later confirmed (Karanth 1992), when in biliterate children with developmental dyslexia it was observed that the very same child made a large number of surface - dyslexia like errors in English, with only those words involving the anusvaara and arka (irregular, in terms of positioning in the written syllable, in Kannada), being affected in Kannada. The reading difficulties of these children centering around irregular words, manifested as a severe disorder in English but one of much lesser magnitude in Kannada and Hindi. Parallels may be seen in the growing literature on agrammatism in non-English speaking patients (see for instance, Grodzinsky 1984) including data from Indian languages such as Kannada (Rangamani 1991) and Tamil (Srividya 1990).

These studies of differential patterns of deficits in bilinguals and biliterates and their interpretation with reference to the characteristics of the particular languages and scripts are important, given that one of the more influential schools of thought in applied psycholinguistic research on bilinguals in the recent past has been that of different / differential cerebral representation of language in bilinguals

(Obler and Albert 1978; also see Karanth and Rangamani, 1988 for a discussion of related issues).

A second area of reading research in which applied psycholinguists have been particularly productive in the last couple of decades has been that of acquisition of reading in children and the concomitant difficulties.

Current theories on difficulties in the acquisition of reading are primarily concerned with the individual's abilities in the linguistic domain, particularly their phonological and syntactic operations. The major premise on which these theories have been built is that reading, which unlike speech is a secondary linguistic activity, involves considerable metalinguistic knowledge - a knowledge of the language in terms of its composition at various levels such as sentences, phrases, words and subword units such as morphemes, syllables and phonemes. Learning to read involves explicit conscious mapping of these linguistic units onto the graphemic symbols of orthography. It is hypothesized that the difficulties in reading encountered by children are related to these metalinguistic skills particularly at the phonological level.

The phonological awareness hypothesis as related to the acquisition of reading skills has been extensively investigated during the last couple of decades and all other factors (intelligence, socioeconomic status, etc) being the same, a positive correlation between the ability to analyze speech into submorphemic units and the ability to read has been established in children. What is not clear as yet however is, the exact nature of the relationship between speech analysis and reading abilities. There is evidence for a two way interaction. Longitudinal studies showing that speech analysis at an earlier stage predicts later progress on reading performance (Bradley and Bryant, 1983) and experiments wherein training in speech analysis ability has been shown to

improve reading capacity (Bradley and Bryant 1983, Oloffson and Lundberg 1983). This would imply that speech analysis abilities have a definite effect on progress in reading. On the other hand, sudden improvement in segmentation ability following the beginning of reading instruction both in children and illiterate adults (Morais, Cary, Alegria and Bertelson 1979) and demonstrations that orthographic knowledge is being used in speech analysis tasks such as counting the number of phonemes in words, would seem to demonstrate the effects of reading acquisition in speech analysis.

Given the equivocal nature of the evidence, the question of whether speech segmentation ability is a prerequisite or consequence of learning to read, remains unresolved. What is likely, is that the relationship is interactional in nature and requires further fine grained investigations. As in the analysis of the acquired disorders of reading, the nature of the script is emerging as a likely variable affecting this issue.

Prakash (1987), in a cross sectional study of children from grades I through V learning to read Oriya, examined the relationship between development of reading, cognitive processes and metalinguistic awareness. The findings clearly indicated that unlike in alphabetic scripts, phonological awareness is not a crucial factor in learning to read Indian syllabaries. Children could become proficient readers even if they were not good at segmentation skills at the phonological level. Similar results were obtained by Prakash and Rekha (1992) in a study on children reading Kannada, employing similar phonological tests. The issue of phonological awareness and literacy as related to Indian orthographies has been dealt in greater detail by Prakash, Rekha, Nigam and Karanth (1993) in a paper that analyzed and compared the responses of school going children, adult literates and

illiterates, Kannada uniliterates and Kannada - English biliterates on various syllable and phoneme segmentation tasks. The results indicated that the general nature and specific structural features of a writing system have a significant influence on the development of segmental awareness. It was also suggested that near perfect sound-letter correspondences in Indian scripts, when combined with code-emphasis, teaching style, may sometimes result in a situation where children could show good oral reading proficiency with very poor comprehension.

Karanth and Prakash (1996) carried out a longitudinal in-depth study of the stages of acquisition of literacy in a group of 50 children learning to read Kannada, over a period of 3 years to arrive at a comprehensive developmental framework for learning to read and write Indian scripts most of which, like Kannada and Devanagiri, share the same underlying system. The study was carried out within the broad framework of a model of literacy acquisition proposed by Frith (1985). The findings, particularly with reference to specifics were not compatible with what is reported in the West. Once again the reasons for the differences were to be found both in the script specific features and the instructional processes. Some of the script specific features of Kannada that are helpful in understanding the underlying processes of reading Kannada have been discussed here. For a more detailed discussion of the orthographic and structural effects on language processes and literacy acquisition See Karanth and Prakash (1996) and Karanth (In Press).

It is obvious that the study of reading acquisition and reading disorders within our rich and varied database will go a long way in providing the much needed 'critique of anglocentric theories and models in the field of applied psycholinguistics.

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READING COMPREHENSION ABILITIES OF MARATHI-SPEAKING NORMAL HEARING AND HEARING-IMPAIRED CHILDREN

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ABSTRACT

Western literature on factors contributing to success in beginning reading and/or reading comprehension places too much emphasis on the subject's sensitivity to phonological details. Since even orally trained hearing impaired children have access to phonological information based on inputs from lipreading and writing, it is important to evolve language-specific assessment procedures to examine different components of reading process in both normal and hearing impaired children. Preliminary results based on the performance of ten normal hearing and four hearing impaired Marathi speaking school children on a cloze procedure are described in this paper. Drawing on the results of this study, certain pedagogic implications are pointed out and suggestions are made for further research in this area.

INTRODUCTION

Reading is essentially a psycholinguistic Process. Reading processes are initiated by visual contact with the print, but the defining events, lexical and comprehension processes are essentially linguistic and cognitive processes (Perfetti 1994:850). It has been argued that knowing one's language and knowing how to decode print provides the basic ability to read with comprehension (Gernsbacher 1990 cited in Perfetti 1994). In order to comprehend the written material, the reader must be able to hold several words in short term memory, and their order long enough for sentence interpretation to take place.

In the case of normal hearing children, success in beginning reading is said to be related to one's ability to make use of a speech-based code (Hanson, Liberman and Shankweiler 1984). In other words, good readers are more efficient in phonological processing as evident by their performance in generating as well as judging rhyming vs. non-rhyming strings. This has been well established with reference to languages that make use of alphabetic scripts such as English (see Goswami and Bryant 1990 for an excellent review of research on the relationship between phonological skills and reading ability). As against this linguistic approach, the knowledge approach to reading holds that higher order knowledge structures that play an important role in comprehension have a stronger influence on one's ability to read than the ability to decode graphemes and convert them into phonemes.

It is a well known fact that congenitally or prelingually deaf children attain reading levels far below those of their hearing peers. Degree of hearing loss, intelligence and the abilty to use speech-based codes have been implicated as possible factors contributing to success in beginning reading in hearing impaired readers (Conrad 1979). It has been observed that deaf readers exposed to alphabetic scripts gain access to phonological information through three different sources, viz., experience with orthography, experience in speaking and experience in lipreading (Dodd 1980; Hanson 1991; Hanson and Fowler 1987). Waters and Doehring (1990) argued that orally trained deaf beginning readers do have knowledge of phonological information about words but that they do not spontaneously use this information in reading words because of their limited oral vocabulary. An earlier study reported by Lasasso and Davey (1987) supported the contention that lexical knowledge is an effective predictor of reading comprehension performance of hearing impaired students. More recently, Sterne and

Goswamy (1995), based on a study of English speaking deaf children, argued that deaf children can process phonological information, but that they tend to display an orthographic bias by focussing on the initial letter sequences during rhyme judgment tasks.

Massaro and Hestand (1983) reported a developmental study involving first, second, and third grade normal hearing children. The children were asked to pick the item that 'looked more like a word' from a pair of letter strings. The items were constructed carefully to assess the rule-governed description of English orthography. The results revealed that reading ability is positively correlated with knowledge of orthographic structure for young readers. The findings of a more recently reported study by Leybaert and Alegria (1995) revealed that deaf children's spelling is based on an exploitation of the linguistic regularities represented in the French alphabetic orthography. These authors concluded that the influence of orthography on reading and spelling might be more important for deaf children (than normal hearing children) because they would have derived their phonological representations through inadequate inputs like lipreading.

The studies discussed above demonstrate clearly that what contributes to reading achievement / failure of deaf children may have something to do with their vocabulary knowledge, lipreading ability, phonological awareness skills as well as certain language-specific factors like orthographic structure of the language and certain task variables. Much of the published information on reading abilities and deafness pertain to languages with alphabetic scripts like English. The present study is an attempt to obtain evidence that has bearing to languages which use syllabo-alphabetic scripts like Devanagari, although test material was not designed systematically to obtain data on Marathi orthographic structure. Specifically, reading comprehension abilities of a

group of ten normal hearing Marathi speaking children is assessed using a cloze test specially designed for the purposes of this study. These results are compared to those observed with four hearing impaired Marathi-speaking children. The attempt was to examine qualitative differences, if any, in the performance of these two groups of children that may be attributable to differences in the instructional strategies used in the schools where these children are studying.

THE STUDY

Assessment tool: The Cloze test

The Gestalt concept of closure, which explains the tendency for an organism to form a complete whole by filling in gaps in the structure influenced the development of Cloze test in the U.S.A. in the early 50's. Although, the Cloze test was originally developed to measure language correspondence between the reader and the writer, it has been used extensively in measuring pre-reading knowledge. Further, it has been reported (Rankin Jr. 1970) that performance on Cloze tests correlates well with reading comprehension.(a correlaation coefficient of 0.78) was reported.

In the classic Cloze procedure, every fifth word is deleted , no matter what the word is. In response to the criticism that such a procedure tests only the local syntactic processing, a revised version was developed in the 70's in which only content words (i.e., nouns, verbs, adjectives and adverbs) were deleted, thus increasing the test's dependence on semantic constraints in the text. In subsequent revisions, words were deleted systematically from a passage and for each blank, the reader was given a multiple choice list of four to five words from which to pick the word that was actually deleted. The multiple choice formats test the differential processing of semantic content as it is represented in various syntactic and discourse structures (Dieterich, Freeman and Griffin 1978).

Kretschmer and Kretschmer (1978:116) stated that cloze procedures have been used to explore deaf children's understanding of the syntactic / semantic constraints that apply in English sentences. Much of this research revealed that deaf subjects' performance was consistently inferior to that of normal hearing subjects. However, when correct response (on Cloze test) was redefined as correct form class rather than restoration of the exact (deleted) word, deaf children's performance was similar to that of normal hearing children; their performance on substantive words was better than that on functor words and that in general, deaf children benefitted less from contextual clues than normal hearing children.

Since standard reading assessment protocols were not readily available in Marathi and since Cloze test has been used successfully to ascertain deaf children's ability to grasp syntactic and semantic constraints governing the language, it was decided to develop a Cloze test in Marathi language and obtain preliminary information on reading comprehension abilities of normal hearing and hearing impaired school children.

Development of Marathi Cloze test

The author is not aware of any published information on the test material in Marathi with which reading comprehension can be assessed using a Cloze procedure. Instead of selecting the passages arbitrarily, an attempt was made to select passages of moderate difficulty by obtaining empirical data on twelve different passages (selected from stories from children's books) after ascertaining that the vocabulary used in the stories was familiar and the contents were interesting to a group of normal hearing children. Cloze passages developed out of these twelve stories were administered to eighteen normal hearing school children belonging to grades IV to IX. Based on the percentage correct

responses obtained from these children, the passages were graded as most easy to most difficult. Two passages of moderate difficulty were then selected for the purposes of this study. To get the children to respond to a set of questions at the end of the story (to assess their passage comprehension ability) further selection had to be done. The two Cloze passages finally selected were comparable in length (299 and 306 words) and each had 58 blanks created by the process of deletion of every fifth word. This process of deletion affected almost all the classes of words in Marathi. Most deletions however applied to nouns, verbs, adjectives and adverbs.

Administration and scoring

Action pictures depicting the main events of the story were used to provide visual clues to the hearing impaired children. All the subjects were asked to read the passage completely and then fill in the blanks, one at a time and not to leave any blank unanswered. Syntactically and semantically appropriate response was given a score of 2.0; semantically appropriate but syntactically incorrect responses were given a score of of 1.0 ; both semantically and syntactically incorrect responses were scored as zero. The total correct score for both the passages was 116.

The Subjects

These passages were administered to ten normal hearing children in the age range 9.8 to 13.8 years (mean age: 11.5 years). There were five boys and five girls in this group, all enrolled in Marathi medium schools in grades ranging from V to IX. Data could be gathered from only four hearing impaired children in the age range 12.3 to 17.10 years (mean age 15.3). There were two boys and two girls in this group who, although enrolled in special schools, they all had considerable exposure to oral language both at home and in the schools. The hearing impaired children had bilateral

severe sensori-neural hearing losses. All four of them had been using a hearing aid regularly for atleast ten years at the time of data collection.

Results and discussion

Since the two groups are not matched according to a number of variables including sample size, discussion of the results will be limited to the general observations, which must be confirmed in future studies. A comparison of the percent correct rèsponses from both the groups revealed the following trends: (1) Hearing impaired children performance (44.9%) was much poorer than that of normal hearing children (81.8%) on both the passages; (2) The errors made by both groups were similar in that they belonged to similar word classes; (3) There was a general tendency on the part of younger children from both the groups to fill in the blanks immediately after reading each sentence and not waiting until after the story is completed (despite the instructions to do so), however, the older children, particularly from the normal hearing group were able to benefit from the context of the story to choose correct answer more consistently than the younger children; (4) Neither group made errors in which form classes were mixed up, i.e, a noun was never replaced by a verb and so on; (5) Incorrect use of person, number and gender inflection markers resulting in lack of agreement between the subject and the verb was noted only in the case of hearing impaired subjects. These children also used incorrect oblique forms with the nouns (6) Children from both the groups displayed some knowledge of the mechanics of writing a story.

Analysis of the responses to passage comprehension questions following each story revealed that the normal hearing children were more successful in answering literal comprehension questions than the inferential comprehension questions, although the older children (above the age of 12 years) could answer all the questions accurately. The

performance of the hearing impaired children was very poor on passage comprehension task. They tended to merely copy the questions and not attempt to make the inference or paraphrase the gist of the story.

The very poor overall performance of the hearing impaired subjects in this study compared to normal hearing children suggests that they are not utilizing linguistic information (either oral or written) sufficiently to deal with even beginning reading. Since the hearing impaired children on the whole were older than the normal hearing children and since they have been using hearing aids regularly for over ten years, it was expected that they would exhibit reading comprehension abilities that were comparable to normal hearing younger children on reading material that does not deal with academic subjects. However, a close analyses of their phonological, lexical and morpho-syntactic abilities might throw more light on why these children fared so poorly on a simple reading comprehension task. Vasanta (1998) argued that residual hearing, lipreading ability and speech intelligibility interact with each other to determine what information coding strategies (for e.g. phonological or orthographic) a given deaf child would develop and that this would in turn influence their success or failure in reading and spelling. More data are needed before conclusive statements can be made on the reading abilities of Marathi speaking school children.

IMPLICATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The failure of the deaf subjects of this study in providing answers to the questions designed to examine their literal and inferential comprehension abilities suggests that there is an urgent need to examine teaching practices of teachers of hearing impaired children in Mumbai city. Specific instruction in paraphrasing, making inferences,

providing synonyms for select words are all strategies that should have been taught to hearing impaired children as old as those who took part in this study. Sensitively designed Cloze tests that make use of interesting stories and multiple choice response formats can be used as instruction material to improve syntactic and semantic processing abilities of hearing impaired children. Studies should be designed to assess reading comprehension of normal hearing children in English and Marathi to understand the complex relationship that scripts might play in beginning reading and reading comprehension. Passages graded for difficulty level (based on the performance of normal hearing children) can be administered to different subgroups of deaf children to gain an understanding of their reading attainment levels.

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Book Reviews

Rajendra Singh (ed.), 1997. *Grammar, Language, and Society: Contemporary Indian Contributions.* New Delhi / Thousand Oaks / London: Sage Publications. PP. 336 Rs. 495. ISBN: 81-7036-624-0 (India -HB); 0-8039-9376-5 (USA-HB).

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If the date (15 August 1997) at the end of the preface by the editor is not an uncanny coincidence, this anthology of papers by 'contemporary' Indian linguists may be said to be presented to mark the occassion of India's 50 years of Independence. The collection is also meant to be presented 'in the memory of P. B. Pandit, A. K. Ramanujan, and R. N. Srivastava, three contemporary Indian language scholars who India may find difficult to replace'. The editor expresses his hope in the preface with these words; '(this collection) will lead to the building of a few bridges and to the articulation of a new synthesis in linguistics, a synthesis that must transcend the current stalemates'. The stated purpose of anthologizing these fifteen papers is to counter the Western (Anglo-American) tendency to unilaterally acquire the self-proclaimed right to define what constitutes theory, and to set the record straight as these papers are meant to establish and highlight the 'theoretical presence' in Indian linguistics.

The book is neatly divided into three parts as suggested by the title. The first part, GRAMMAR: MORPHOLOGY, AND SYNTAX has four papers on what generally gets recognized as 'core' or 'theoretical' linguistics. The second part, GRAMMAR AND LANGUAGE consists of one long essay which is designated to theoretically relate to the first and the third part. The third part, titled LANGUAGE

AND SOCIETY consisting of ten papers, presents themes which often get designated as 'peripheral' to linguistics or are part of the hyphenated linguistics. The placement of the parts is strategic. Given this scheme, the themes of the papers cover a wide range of concerns related to language. The readers may have their pick from the assortment.

The volume includes 'contemporary' writings by Indian linguists. A short note on the 'contemporariness' of these writings may be in place. Fourteen out of the fifteen papers were published between 1969 and 1989. Only one paper was written specifically for this volume. It may not be wrong to assume then that Indian linguistics before the Bloomfieldian and Chomskyan paradigms (remember the summer school of linguistics in the 50s and 60s) had made significant inroads into our scholarly enterprise. They were perhaps not 'theoretical' or significant enough for inclusion in this volume. Ironically, the editor has quite rightly been critical of the blind Indian herds that have been following the Western Gurus, putting 'their Indian language at the service of this or that centre-directed paradigm.' Ostensibly, there has been no serious and meaningful thinking on language during the 40's and 50's (before the enlightenment from the West) to merit attention. There must have been very good reasons for excluding the works of scholars like Siddheshwar Verma, Suniti Kumar Chatterji, Babu Ram Saxena.... to name only a few. It is possible that the scholarship of the 40's and 50's does not strictly fulfil the criterion of contemporariness, or it does not consist of what could be legitimately included in the editor's definition of linguistics. Or did they meet 'only the criterion of transient and local visibility'? How far is local visibility politically value free?

The criteria for inclusion in the volume are clearly defined by, to quote the editor, (a)' a transcendence of what both India and the Anglo-American West had to offer at the

time they were written and (b) a visible impact on later work both in India and outside'. A. K. Ramanujan (one of the three scholars in whose memory this volume is presented) and particularly Kunjunni Raja (appearing as Kunnani Raja --- bless the press!) who undoubtedly fulfil both the criteria, are regrettably conspicuous by their absence. Does one trace an element of haste in putting the papers together for the volume? Apart from the 'exclusions' on grounds of 'transient local visibility', length, language, inability to procure permission to reprint, one wonders whether a considerable number of babies were not thrown out with the bath water by limiting the scope with a contemptuous dismissal of 'vulgar correlationism' and other works supposedly 'applying centre-directed paradigms'!

These remarks, I must hasten to add, are not meant in any way, to undermine the value and significance of the papers included in the volume. Yet, unfortunately, many of the contributors to this book are better recognized, and visibly so, for their other works rather than the ones included here. If it is a question of 'impact' in terms of later research in the field, Bh. Krishnamurti is better recognized for his re-subgrouping of the Dravidian languages rather than the present verification (with Dravidian data) of Wang and Chen's hypothesis of lexical diffusion of sound change (publication in *Language* not withstanding). Similarly, Agnihotri's later insightful work on multilingualism and language in education has had greater impact than the present paper proving Lambert and Co. wrong. Though Pandit's remarks on Gumperz's paper, to misquote, are worth more than shelves full of current writings in linguistics, he, as one of the 'scholars who India may find difficult to replace' perhaps deserved a better slotting than the present post-scriptal one. As an additional paper (and the volume does have more than one entry by single authors), his work on Saurashtri for example, could have substantially enriched our representation of the Indian theoretical presence.

Singh, in his introduction, has given the purpose and gist of the contents of the book with his characteristically remarkable clarity and elegance. To attempt to do so here would not only be an excercise in futility but given the wide range of topics covered in this book (and the fact that the discerning reader may already be familiar with most of the articles as they have appeared in visible books or journals), it would stretch beyond the scope of a review. What follows is, more or less, a one line theme of the papers.

In general, what binds the book together is the fact that many of the contributors raise questions about some current paradigms of linguistic analyses. The four papers in Part-I contest currently privileged theoretical positions in phonology, morphology, and syntax. Mohanan uses the Paninian distinction between the root and affix to build a theory of Lexical phonology. Singh questions the central generative phonology's assumption that even non-automatic morphology is a part of phonology. Singh and Matohardjono have strongly argued for a word-based morphology as being the most efficient and comprehensive than the Paninian paradigm. In the chapter on syntax, Mohanan argues for the incorporation of the Relational level of description in addition to the Categorical and Thematic levels in order to allow for a distinction between configurational and non-configurational languages and capture the 'shared properties of human languages', inspite of superficial differences'.

In the lone paper in Part - 2, Dasgupta, in line with the grammatical tradition of Natural Linguistics, makes a connection between the 'internal' and the 'external' and examines how Chomsky's exclusion of the 'external' limits the scope of linguistic enquiry to a great extent.

In part - 3, Bh. Krishnamurti, with Dravidian data, supports Wang and Chen's hypothesis of lexical diffusion of sound change. Nadkarni argues that structural borrowing

need not always be motivated by gap-filling needs. The relative clause in Saraswat Konkini spoken in the state of Karnataka is a case in point. Speaking from the perspective of a tradition of multilingualism at the grass-roots level, Pandit questions the validity of describing / measuring bilingualism with a set of tools/ models designed for the description of monolingual communication. Contesting the notion of discrete languages, he points out that bilingual speakers are effective communicators by virtue of possessing 'shared rules', i.e, an 'internally homogeneous single system of apparently two (formally speaking) distant languages'. Srivastava's paper takes on the current myths in the West regarding the social advantages / disadvantages of linguistic homogeneity / heterogeneity, and characterizes bilingualism with features as functional realizations of the inherent characteristics of the 'Indian speech community'. Singh, Lele and Martohardjono present a critique of the 'contemporary inter-ethnic interactional sociolinguistics' by pointing out how in the absence of a critical sociological approach and failure to look at power structure as an independent variable, such sociolinguistics is likely to become a mere tool for propegating the modern day ideology of industrial capitalism. Pattanayak puts forward arguments in favour of the mother tongue in education and points out how 'the politics of development in the world not only disables individuals and societies through suppression and manipulation of the mother tongue, but language subjugates its own users by making it the consort of the nation and empire'. Khubchandani examines in detail, the political dimensions of language choice in education in India, particularly from the point of view of the minority language speakers. The paper appeals for the education system to take account of the complexity of dialects in flux without compartmentalizing the continuum of language hierarchy which allows for the diglossic complementation of different languages signifying different

communicative tasks in a plural society like India. Kelkar, discussing what is involved in 'poem-encountering events', peels the onion to the core and provides a theory of stylistics. Agnihotri and Khanna (despite the editor's aversion to correlationism) argue with substantial empirical data, that social factors are more important for second language learning than psychological factors like motivation --- whether instrumental or integrative. Prabhu argues that in a second language learning situation, 'situational presentation of language is least successful in creating the desirable conditions, that translation by learners creates those conditions more successfully, and that problem solving (or task based activity) is more successful than both'.

The editor's welcome efforts to bring significant Indian works in linguistics together are noteworthy. Sage must be congratulated for the fine professional job it has done in the production of the book.

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Book Reviews

R. Narasimhan (1998). *Language Behaviour: Acquisition and Evolutionary History*. New Delhi: Sage Publications. PP. 219 Hb. Rs. 375. ISBN (India): 81-7036-686-0; US-hb: 0-7619-9232-4

Reviewed by D. Vasanta, Dept. of Linguistics, Osmania University.

"Disciplines exist for the sake of their subjects, not the other way round. If the boundary that has been drawn around a discipline proves a hindrance to the proper study of that subject matter, then it is the boundary that must change " (Kress and Hodge 1979:3).

The above statement, in my opinion, captures the spirit of the book under review. The author, an eminent computer scientist has made an attempt to demonstrate that inorder to gain an adequate understanding of how children acquire (and use) their mother tongue, we may have to synthesize insights from disciplines as varied as linguistics, psychology, cognitive science, communication disorders and cybernetics.

The book is organized under three sections: I. THE PRESENT - in this section, first, a model of language behaviour acquisition has been described that makes a distinction between language behaviour as opposed to language knowledge. Within this model, language behaviour development has been viewed as constituting development of interpretative and generative systems. The child's task is to abstract structures like language behaviour schemata and language behaviour tokens from the verbal and non-verbal aspects of the envrironment. How this is done is illustrated by

the author using samples of a normal child's language behaviour he has recorded and analysed within a pragmatic framework. He also argued that semanticity is one of the characteristic feature of language modality and that the computational processes specific to language behaviour are what are unique in human beings. He cited some Western studies of aphasia in native signers to support that semanticity computation is supported by specialized intermodal mechanisms and processes. The information processing model he proposes relies on a number of behaviouristic concepts such as imitation, rehearsal, analogizing etc. as well as on memory search paradigms used in Natural Language Processing applications, particularly machine translation.

Next, the author goes on to demonstrate that the inputs from the language environments are indeed crucial for the acquisition of language behaviour even if they are not of any consequence to acquisition of grammar. The main support for this observation is drawn from the gestural language behaviour of deaf children of normal hearing parents discussed by Goldin-Meadow and Mylander (1990). The author's main point is that the mother's (or caregiver's) input does indeed provide the bricks and construction details for devising certain gestures used by deaf children. In the next chapter, he goes on to discuss more cases of 'language acquisition in exceptional circumstances' such as that of hearing children of deaf parents, children with visual impairments and Down's syndrome children to understand the nature of functional deficits suffered by these children while acquiring language behaviour such as deficits in planning a sequence of actions, in judging and drawing valid conclusions, in role-playing and in providing instructions to others to solve a puzzle and so on. The author argues that these difficulties in using language expressions relating to specific situational aspects should be related to our attempts to draw up general language acquisition frameworks. In the next and

the final chapter of this section, he points out that mainstream linguistics has always restricted itself to the questions of representation of language knowledge (but not to processing) and that this has had an undesirable consequence to the field of psycholinguistics in that, several child-language specialists have merely preoccupied themselves with describing the correct grammar underlying child language behaviour. According to the author, even the recent shifts away from syntax to semantics and pragmatics within psycholinguistic studies of child language acquisition are not radical enough. Drawing on the ubiquitous dichotomy, orality and literacy and some of the debates surrounding it, the author comments that linguist's study of language does not relate to, and so does not have significance for the every-day oral language behaviour of a speech community. Linguists, Prof. Narasimhan argues, deal with autonomous prose texts, which are symbolic hardcopy versions of the speech acts. Towards the end of Part -1 of the book, the author asserts that the computational modelling of child language behaviour should address itself to the "oral-gestural, dramatic, emotion-laden, socially involved language behaviour that is integrally bound up with the context of situation" (p. 121) and that this is what is universal among all human beings.

The second section labelled, THE PAST deals with the evolutionary history of language behaviour, in particular, with what the author terms, the "continuity puzzle" - the argument that having language seems to be an all or none affair and the fact that the communication systems of animals lack two most defining characteristics of human language behaviour, viz., instructability and the capacity to reflect. After dicussing Bickerton's notions of protolanguage vs. language; the Ape language; language of under-twos; language of delayed learners, Narasimhan concludes that the continuity puzzle remains unresolved so long as we adhere to syntax-centered approaches to the study of language

behaviour. In the next chapter in this section, he discusses individual Ape-language projects in relation to human children under controlled conditions and concludes that Apes have the necessary cognitive base to acquire rudiments of symbolic communicative behaviour if exposed to interactive environments and that the differential learning capabilities of these animals exposed to natural language / sign language behaviours may have something to do with differences in brain processes and mechanisms. Some of the questions arose out of the studies discussed in chapter 6 are taken up and examined in the next two chapters of this section only to reach the conclusion, the continuity puzzle is unlikely to be solved until we understand the neural underpinnings of the behaviours like pointing, imitating, pantomiming, pretending, role-taking etc. all of which seem to play an important role in language acquisition behaviour of children.

In the third section of the book called THE FUTURE, Narasimhan discusses some of the major implications of his proposal -- that the proper framework for the study of language behaviour in human beings is, the information processing or the computational framework. The readers are however cautioned that there are still many unresolved issues concerning for instance, meaning computation, modelling of discourse and modelling of conversational behaviour involving two or more modalities. In conclusion, Narasimhan asserts that researchers involved in studying language behaviour should try and come to grips with developments in the sensory-motor, cognitive and language modalities in a unified fashion, for, the primary task of child language acquisition studies is to evolve a computational level modelling framework! The book contains an introduction by the series editor (which, for the most part makes use of the author's own arguments) and two appendices (the first one provides a detailed corpus of utterances of a Tamil-speaking child's language behaviour from age 9 months to 33 months

and the second one provides a summary of the major debates, though not quite up to date) on the orality - literacy contrast.

This book, on the whole, is extremely readable and challenges many well-received notions about studying the processes of child language acquisition and use. Therefore, it should be of interest to researchers belonging to the various disciplines mentioned above. However, in his attempts to draw on information from so many diverse fields to explicate a theory of language behaviour acquisition within the scope of this book (which is barely 200 pages long), Prof. Narasimhan ended up being rather parsimonious with respect to the studies cited from any given discipline, many of which are also dated. My comments and criticisms which pertain mostly to the first two sections of this book are aimed at strengthening Prof. Narasimhan's proposal regarding the overall framework for the study of language behaviour acquisition which takes pragmatics and not syntax as its starting point.

Empiricism vs. Nativism

Chomsky's critique of Skinner's *Verbal Behaviour* and his book *Aspects of the Theory of Syntax*, according to the author, have generated paradigm shifts; first a shift from environment to speaker-hearer's ability to produce and interpret sentences which were never encountered before, and a second shift from speaker-hearer's language behaviour to language knowledge (competence) and that these shifts in general, and the dichotomy competence vs. performance in particular, have had important implications (he actually means, negative consequences) for the field of psycholinguistics. Surprisingly, the author makes no reference to Chomsky's works after 1965. There should have been a mention of atleast Chomsky (1986), a paper in which he was reported to have commented on the changing perspectives on the nature of acquisition of language. While the author takes issue with Chomsky's move to banish

considerations of behaviour altogether from language acquisition studies (p.30), he does not explain his own position vis-a-vis the behavioristic models of language learning.

It was pointed out that Skinner was not directly concerned with the problem of language learning when he wrote the book, *Verbal Behaviour* and for this reason, critics have pointed out that Chomsky levelled a rather unfair criticism of Skinner in his famous 1959 review of Skinner 's book (see for instance, Swiggers 1995). Specifically, it was linguistic philosopher, Quine who argued that language aptitude is innate and not language learning and that the former when put to work in the course of language learning turns on intersubjectively observable features of human behaviour and its environing circumstances. It is not clear whether Prof. Narasimhan's proposals have anything to do with Quine's theory of language learning. Or, is he contented in merely postulating that imitation, rehearsal and analogizing are the basic processes underlying language behaviour development simply because they lead to an example driven modelling approach and hence are computationally viable? While nonverbal behaviour has been rightly credited as being constitutive of communicative competence, there is little discussion on the role of these three principles (imitation, rehearsal and analogizing) in the development of sign language behaviour. Evidence based on Golden-Meadow and Mylander's (1990) study involving ten deaf children of normal (hearing) parents alone is hardly sufficient to draw the conclusion that caregivers' input, however limited it may be, has the capability of improvising children's language behaviour acquisition.

In the literature pertaining to sign language studies, a distinction is made among three different modes of non-verbal communication viz., (1) homesign, (2) spontaneous

gestures and (3) sign languages. The spontaneous gestures that hearing people produce are thought to adhere to a structure that is determined by the speech that they accompany. Homesign in contrast, is structured independently of speech and its structure is evolved over a single generation (the life of the deaf individual) as opposed to a natural sign languages such as American Sign Language (ASL), whose structure has evolved over many generations. A study reported by Morford, Singletone and Goldin-Meadow (1993) has shown that the iconicity in gesture reflects features of an object as an individual entitty rather than as a member of a class whereas the iconicity in ASL and Homesign reflect features representative of the entire category of objects. After discussing the results of this study, the authors concluded that while the relationship between symbol and referent may be the central focus for the 'language creator', this relationship loses importance for the 'language user' as the language evolves. Instead, it is the relationship between the symbols of a language that is important -- these symbols specify both what a referent is, and what it is not. Does it mean then that in the course of language behaviour acquisition, a child gets transformed from being a language creator to language user ?

In yet another paper dealing with a review of research on homesigners from different cultures, Morford (1996:175) stated that although homesign systems are clearly not as complex as conventional languages, the range of language-like devices that children can generate without input is nevertheless impressive.... these children use their homesign systems for language functions for which they have no model in the environment. The question, 'what is the contribution that a child makes to the language acquisition situation?' raised by the author of the book under review (on P. 83) cannot be answered adequately without examining recent findings of studies such as those mentioned above.

Further, application of systemic- functional linguistic models to the analysis of sign languages have led researchers to realize that the experiential and logical meaning potential of a given linguistic semiotic system may vary as a function of culture and language medium. Johnston (1992) for instance, has argued that deaf signers are more concerned with presence-manipulation metafunction (interpersonal meaning) rather than meaning-exchange metafunction (ideational meaning) or textual meanings and that the relative weight given by a linguistic community to each of these metafunctions may shift depending on the range of functional varieties and genres of sign languages in use. Volterra and Erting (1990) have made a significant contribution to our understanding of early communicative behaviour of hearing and deaf children through their edited collection of articles titled, *From Gesture to Language in Hearing and Deaf Children.* Some of the findings reported in this book on the stages involved in the transition from early nonverbal communication to (verbal) language across different modalities would certainly have strengthened the author's arguments, but like many other recent books dealing with the topic of input and interaction in early language acquisition, it does not find a mention in this book.

On the question of internally available mechanisms, the author asserts (on P. 118-119) that inter-modality associations form an essential basis for language behaviour acquisition and use, but that very little work has been done on the nature of the intermodality associative linkages from an information processing point of view. Substantial amount of evidence pertaining to the role of oral input alongside written language input in the language development of deaf children has been left out and hence such a conclusion, in my opinion is premature. I have in mind books such as Constraints on Language Acquisition: Studies of Atypical Children edited by Tager-Flusberg (1994). To understand the extent to which

neural mechanisms for language are modality independent, researchers are turning to sign-language studies. In the book under review, discussion on the sensory-motor channel taking on dual role of subserving perceptual-motor as well as language functions in aphasic subjects who are native signers, the author makes a reference to just one study, that of Poizner et al (1987) to reach the conclusion that the semanticity computation is supported by specialized mechanisms and processes (see p. 42). Recently, Poizner and Kegl (1992) presented a major review on the neural basis for language and motor behaviour. Their findings based on ASL and use of latest techniques of three-dimensional motion analysis using computers established that processing of visual-gestural languages is also mediated by anatomical structures in the left hemisphere suggesting that brain organization for language in deaf signers parallels that in hearing-speaking individuals. The assumption that different neural mechanisms underpin verbal and nonverbal communication abilites does not therefore explain anything.

Armstrong, Stokoe and Wilcox (1995) proposed that the notion of 'semantic phonology' can serve as a vital link in our understanding of how language could have emerged from visible gestures. Specifically, they argued that semantic phonology invites us to look at manual, visible gesture in semantic terms as agent-action or action-object interactional constructions. I feel this concept can be extended to elaborate the behavioural pragmatic framework putforward by Prof. Narasimhan in this book. Two other theoretical insights which may have had bearing to the proposed model of language behaviour acquisition are; the Spatial Form Hypothesis of Deane (1993) and the theory of Neural Group Selection proposed by Edelman (1989).

Orality vs. Literacy

The proposal (on p. 37) that the use of ordinary language behaviour (i.e., one's mother tongue) in everyday life (the units being utterances in context) is different from the use of language behaviour based on schooling and formal learning (the corresponding units are sentences taken out of context) is neither new nor original. That what linguists study is not the oral language behaviour of a speech community, but instead, they focus on autonomous prose texts (or symbolic representation of oral speech restricted to verbal part) or that the formal categories and rules have very little to do with oral laguage behaviour and less to do with the acquisition of mother tongues by children are also not problematic. But to equate the distinction between language behaviour and language to the dichotomy orality vs. literacy or more specifically to the oral mode of behaviour of the non-literates vs. language behaviour of literate adults in my view is problematic. It is problematic because the meanings of the terms 'orality' and 'literacy' themselves have been thoroughly interrogated in recent years and the validity of many received notions about the so-called purely oral vs. purely literate societies have been questioned from methodological, empirical and theoretical grounds (see for instance, Street 1995).

The great divide framework (which upholds a clear distinction between orality and literacy) advocated by Walter Ong, Jack Goody, David Olson among others holds that (1) written discourse encodes meaning through lexicalization and grammar, while oral discourse does so through paralinguistic features; (2) that written discourse is more connected and cohesive while oral discourse is fragmentary and disconnected; (3) that written language delivers its meaning directly via the words on the page, whereas oral language is more embedded in the immediate social pressures of face-face communication.

Street (1995) presents evidence based on linguistic and anthropological theories from studies that made use of discourse analysis and ethnographic research methodologies to demonstrate that all of the above assumptions are mere myths that ought to be rejected outright. Because, many of the early studies on oral vs. literate societies did not specify the context in which literacy is learnt nor of the modes of learning, the social relationships of students to teachers or modes of socialization and acculturation. It should be noted that in schools, students also learn cultural models of identity and personhood not just how to decode script or write in a particular way. Street (1995::175) concludes his chapter on literacy practices and literacy myths by stating that literacy cannot be divided from orality on the grounds either of cohesion or of connectedness or that it employs paralinguistic as opposed to lexical features of language. Nor is it true to suggest that oral language is more embedded in social situations and 'exchange' while written language remains independent and autonomous. According to Street, in order to gain a better understanding of the relationship between orality and literacy, we need to pay attention to the wider parameters of 'context' than that permitted by Anglo-American linguistics. Th theoretical debates on orality-literacy contrast presented in the Appendix -2 of the book under review will surely take on a new perspective when viewed against these recent research findings.

The Continuity Puzzle

Bickerton's (1990) proposals that language is primarily a representational system and only incidentally a communication medium; that the language of the apes, the language of under-twos in the ontogenetic development of humans, the language produced by children who learnt their language beyond the critical period and the pidgin languages are all protolanguages because they lack rule governed

structure are too wild and unsubstantiated to be given so much consideration in this book on the grounds that Bickerton's work deals with behavioural pragmatics. In fact, it has been pointed out recently (in the context of review of Bickerton's 1995 book) that Bickerton ignored a great deal of primate research which shows that animals do follow complex system of social rules governing food sharing, hunting and grooming (see for instance Romaine 1997). The discussion of the differences noted between Apes and children with respect to the uses to which they put the language behaviour was limited by the author's conception of functional universals of behaviour (see figure 1.1 on p. 38) such that we are told that Kanzi, the ape could not use language behaviour for exploration or reflection. While the author didnot endorse the notion of 'simple languge' of the apes proposed by some of the researchers of ape-language projects, he holds that the problem lies with our inability to work out a natural measure of complexity for human languages in the evolutionary context. What is sadly missing in the section on 'lessons to be learned fromApe-language projects' (p. 152) is an interpretation of Kanzi's or Alia's performance from a systemic- functional perspective.

In conclusion, the book has a great deal to offer to our efforts at rethinking language behaviour acquisition in children. The sections dealing with language behaviour evolution (aspects of phylogeny) need to be substantiated with a discussion of more recent research findings. The author should also consider adding a section on the causes and consequences of language disruption in the future editions of this book. Many of the questions raised and the problem areas identified were constrained by the author's allegiance to the use of information processing models to accomplish computational modelling of language behaviour. All in all, Prof. Narasimhan's book opens up many more research questions than those raised by him in the last section on 'The

future of language behaviour studies'. It is a bold attempt, rather a plea to concerned professionals from language-related disciplines to expand the boundaries of their particular discipline just a little bit more so that we can begin to gain a better understanding of human language behaviour.

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J. Venkateswara Sastry

1996 : Coauthor: A. Usha Rani. 'On the preservation of word-order in aphasia'. In V. Swarajya Lakshmi and Aditi Mukherjee (eds.), *Word Order in Indian Languages.* Hyderabad: CASL, O.U. and Booklinks Corporation.

Nagamma Reddy

1996 : Coauthor: A. Kanakavalli. Indeterminacies in the phonological analysis of nasals in Telugu and Hindi: The archinasal assimilation, neutralisation and coarticulation. *Aligarh Journal of Linguistics* 4:2, 86-98.

1996 : 'The influence of plosive consonant voicing and aspiration on duration of vowels in Telugu and Hindi'. In S. K. Verma and Dilip Singh (eds.), *Perspectives on Language and Society (Srivastava Memorial Volume),* New Delhi: Kalinga Publications.

V. Swarajya Lakshmi

1996 : Edited a Book with Aditi Mukherjee. *Word Order in Indian Languages.* Hyderabad: CASL, O.U. and Booklinks Corporation.

1996 : 'OSV structure in Telugu: A functional perspective'. In V. Swarajya Lakshmi and Aditi Mukherjee (eds.), *Word Order in Indian Languages*. Hyderabad: CASL, O.U. and Booklinks Corporation.

1996 : Coauthor, A. Usha Rani. Vowel harmony in Telugu plural formation:: A psycholinguistic perspective. *PILC Journal of Dravidic Studies* 6:1, 21-28.

1997 : Dialect variations - Telugu language teaching. *Indian Journal of Applied Linguistics.* 23:1, 41-52.

B. Vijayanarayana

1996 : The adjective class in Telugu, Hindi-Urdu, English, German, French and Russian: A grammatical comparison. *PILC Journal of Dravidic Studies.* 6:2, 189-212.

1997 : Gender with special reference to Telugu. *PILC Journal of Dravidic Studies.* 7:1, 63-72.

D. Vasanta

1996 : Coauthor, V. Sailaja. 'Word order variation within dative constructions in Telugu: A psycholinguistic perspective'. In V. Swarajya Lakshmi and Aditi Mukherjee (eds.), *Word Order in Indian Languages.* Hyderabad: CASL, O.U. and Booklinks Corporation.

1996 : 18th International conference on education of the deaf - A report. *Hearing Aid Journal* 40, 123-127.

1996 : Unit 3: Teaching Learners with Special Needs. Certificate Course in Teaching English in secondary schools. Course CTE 05. Unit - 3 (pp. 22-32) . New Delhi: Indira Gandhi National Open University.

1996 : On the scope of applied linguistics. *Indian Journal of Applied Linguistics* 22:2, 29-40.

1997 : Coarticulation in the temporal domain: Evidence from Telugu speaking prelingually deaf children. *Asia-Pacific Journal of Speech, Language and Hearing* . 2:2, 139-144.

A. Usha Rani

1996 : Coauthor, J.Venkateswara Sastry. 'On the preservation of word order in aphasia'. In V. Swarajya Lakshmi and Aditi Mukherjee (eds.), *Word Order in Indian Languages.* Hyderabad: CASL, O.U and Booklinks Corp.

1996 : Coauthor, V. Swarajya Lakshmi. Vowel Harmony in Telugu plural formation: A psycholinguistic perspective. *PILC Journal of Dravidic Studies.* 6:1, 21-28.

K. Ramesh Kumar

1997 : The existential verb 'be' uNDu in Ganjam Telugu : A morphological comparison. *International Journal of Dravidian Linguistics.* 26:2, 145-162.

1997 : Social vs. linguistic variables: A quantitative study in Ganjam Telugu. *Aligarh Journal of Linguistics.* 5:1, 56-77.

ACADEMIC/ EXTENSION ACTIVITIES OF THE FACULTY MEMBERS

B. Lakshmi Bai

1996 : Presented a paper titled "Indian Languages: Some challenges from media" at the 18th All India Conference of Linguists held at the Central Institute of Indian Languages, Mysore during October 5-7th.

1996 : Presented a paper titled "In search of a perspective for multidisciplinary interaction in the National symposium on Language: A multidisciplinary approach, organized by the CASL, O.U during March 15-16.

1997 : Presented a paper titled, "Participial modifiers in Tamil and Hindi" in the Indo-French symposium on Natural Language Processing organized by the Centre for Applied Linguistics and Translation Studies, University of Hyderabad during March 21-26.

Aditi Mukherjee

1996 : Delivered four lectures at the UGC Refresher course in Linguistics held at the CIEFL, Hyderabad.

1996 : Presented a paper titled " Rethinking standardisation" at the National seminar on Language: A Multidisciplinary Approach organized by the CASL, O.U. Hyderabad during March 15-16.

1997 : Presented a paper titled "The myth of standard development" at the South Asian Language Analysis 18th Round Table conference at the Jawharlal Nehru University, Delhi during January 6-8.

1997 : Offered lectures at the Refresher Course in English at University of Hyderabad; UG.C. sponsored orientation course to college teachers organized by the Academic Staff College, O.U., and at the U.G.C. sponsored orientation course at J.N.U. New Delhi.

J. Venkateswara Sastry

1996 : Presented a paper titled, "Standard language teaching: A problem in school curricula" at the XXXV Indian Social Science Congress held at Allahabad, U.P. held in the month of February.

1996 : Delivered a lecture on "Problems of language teaching" to the participants of the Refresher Course in Telugu (meant for the college teachers) organized by the Department of Telugu, O.U. in the month of August.

1997 : A paper titled "Modern Telugu" was presented in absentia at the North American Telugu Association conference held in the month of July at Sanfransisco, California, U.S.A., which is subsequently published in their journal, *Telugu.*

1997 : Delivered a lecture on Telugu pronunciation to the participants of U.G.C. Refresher Course for college teachers

organized by the Department of Telugu, O.U. in the month of September.

Arun Kumar Sharma

1996 : Presented a paper titled, "Status of Telugu as an official language: An overview", at the National seminar on socio-political movements in South India held at the University of Madras.

1996 : presented a paper titled, "Rural education and language problems in Indian schools: An overview", at the XIX Indian Social Science Congress held at Allahabad.

Nagamma Reddy

1996 : Presented a paper titled, Importance of durational knowledge for Text to speech system of Telugu at the Indian Congress on Knowledge and Language organized by the C.I.I.L., Mysore.

1996 : Presented a paper, Articulatory and acoustic characteristics of fricatives in Telugu at the Acoustical Society of India's annual meeting held in Hyderabad and organized by Research Centre Imarat.

1996 : Gave an extention lecture on phonetics at the Dept. of Humanities, IIT, Madras.

1997 : Participated in the National seminar on Core Grammar held at the Eastern Regional Language Centre at Bhubaneswar by presenting a paper titled, Core-Phonetics and grammar in the Indian context.

1997 : Participated in the 20th All India Conference of Linguists held at the Punjabi University, Patiala by presenting a paper titled, Consonant to vowel and vowel to consonant coarticulatory effects: Evidence for and against syllable affinity in Telugu.

1997 : Presented a paper titled, The orthographic and phonological representation of nasals in Telugu: Educational and technological perspectives at the 4th All India Telugu conference jointly organized by P.S. Telugu University and International Telugu Centre at Hyderabad.

1997 : Presented a paper on 'Integration of technology research techniques with natural language processing' at the National Seminar on Natural Language Processing and its Applications held in Calcutta and organized by the Indian Statistical Institute, Calcutta.

1997 : Gave extension lectures on aspects of Telugu, Hindi and English phonetics at Govt. College for Women, Begumpet, Hyderabad; U.G.C. Refresher course organized by the CIEFL, Hyderabad; and Dept. of English, Annamalai University.

1997 : As a chairperson of Hyderabad chapter of the Acoustical Society of India, organized a one-day Multi-disciplinary seminar on Acoustics in Hyderabad on August 9th.

V. Swarajya Lakshmi

1996 : Directed a National Symposium on Language: A Multidisciplinary Approach organized by the CASL, O.U. during March 15-16 and presented a paper titled, Analysis of cross-dialectal communication in the same symposium.

1997 : Participated in the XVI International Congress of Linguists held in Paris during July 20-25 and presented a paper titled " Convergence in the semantics of polite and non-polite forms in Indian languages.

B. Vijayanarayana

1996 : Presented a paper titled, Gender with special reference to Telugu, at the National Seminar on Morphology organized by the CIEFL, Hyderabad during July 12-13.

1997 : Presented a paper titled, Third-person proform in Telugu: A critical study at the 25th All India Conference of Dravidian Linguists held in Chennai during June 17-21.

1997 : Partcipated in a Seminar cum Workshop on Production of Literary Translations organized by the Centre for Translation and Interpretation Department, CIEFL from October 20-22. Translated into Telugu, Morley Callaghan's short story, *Watching and Waiting* as part of the assignments of the workshop.

D. Vasanta

1996 : Presented a paper titled, Some thoughts on the scope of Applied Linguistics at the National Seminar on Applied Linguistics, organized by the CASL, Annamalai University, TN.

1996 : Participated in the National symposium on Language: A Multi-disciplinary Approach organized by the CASL, O.U. during March 15-16 by presenting a paper, "Changing conceptions of language in Neurolinguistics: A response to Dr. Apoorva Pauranik.

1996 : Presented a paper titled, Portrayal of women in print media: on the issue of language use, at a National seminar organized by the Dept. of Journalism, O.U.

1996 : Gave a lecture on 12-9-96 at the U.G.C. Refresher course in linguistics organized by the CIEFL, Hyderabad on the topic, Gender differences in language use.

1996 : Gave a lecture at the 31st orientation course to college and university teachers organized by the Academic staff college, University of Hyderabad on gender and language.

1997 : Presented a paper "Rethinking Neurolinguistics: Insights from sign-language studies" at the South Asian Language Analysis, 18th Roundtable conference held in J.N.U. New Delhi during January 6-8.

1997 : Gave a lecture on 27-3-98 at the U.G.C. Refresher course in English organized by the Academic Staff College, University of Hyderabad on Language from user's perspective.

A. Usha Rani

1996 : Received a grant from the U.G.C., New Delhi for carrying out a Major research project titled, "Acquisition and loss of lexical anaphors and dative subjects in Telugu and Dakkhani". Co-investigators: K.V. Subbarao and Barbara Lust.

1996 : Attended an International Seminar on South-Asian Anaphora, organized by the Department of Linguistics, Delhi University during January 2-6.

1997 : Presented a paper (coauthor, V. Sailaja) titled, Null subject in child language and agrammatism at the International seminar on Nulls, organized by the Department of Linguistics, Delhi University during Jan. 9-11.

K. Ramesh Kumar

1996 : Presented a paper titled, Social vs. linguistic variables: A quantitative study in Gunjam Telugu, at the Indian Social Science Congress held in Allahabad during March 11-14.

1996 : Presented a paper titled, An acoustic study of vowels in Raj Gondi Dialect at the National Symposium on Acoustics orgaized by the RCI, Hyderabad during November 21-23.

1997 : Presented a paper titled, The verb to be and to become in Raj Gondi dialect of Telugu, at the South Asian Language Analysis, 18th Roundtable conference held at J.N.U. New Delhi during January 6-8.

1997 : Presented a paper (coauthor: T. Venkata Swamy) on Agreement in Adilabad Gondi at the All India Conference of Dravidian Linguists held at Chennai during June 17-21.

1997 : Participated in an International workshop on Geolinguistics and language development, jointly organized by the School of Language Development, Telugu University and Bhasha research centre, Baroda during December 22-24

DEGREES AWARDED

1996 : M.Phil Degree awarded to **Prasanna Lakshmi** for her thesis on 'A stylistic analysis of the poetry of Dom Moraes. Supervisor: Prof. Aditi Mukherjee, Osmania University.

1996 : M.Phil Degree awarded to **S. Bhoopal Reddy** for his thesis on ' Pronunciation variation of vowels in Telugu with special reference to Telangana and Rayalseema dialects'. Supervisor: Prof. Nagamma Reddy, Osmania University.

1997 : Ph.D. Degree awarded to **Akurati Gayathri.** Dissertation Title: Negative constructions in Telugu: Meaning and Grammar. Supervisor: Prof. B. Ramakrishna Reddy, Telugu University.

NATIONAL SEMINARS ORGANIZED BY THE DEPARTMENT

Language: A Multidisciplinary Approach

During March 15-16, 1996, the Centre of Advanced Study in Linguistics, Osmania University held a National seminar on the above topic under the directorship of Prof. V. Swarajya Lakshmi. Mr. B. Vijayanarayana served as the organizing secretary for this two day seminar which was attended by over fifty scholars. The seminar was inaugurated by the Vice-Chancellor of Osmania University, Prof. Ramakistayya. During the inaugural session, the V.C. released one of the centre's publications that is just out of press, *Word Order in Indian Languages* edited by V. Swarajya Lakshmi and Aditi Mukherjee. The keynote address was delivered by Prof. C. Ramarao. Prof. Bh. Krishnamurti presided over the inaugural session. Fifteen different papers were presented in the various sessions of this two day symposium which was planned primarily to bring professionals from different disciplines who are concerned with language in all its dimensions.

Several papers presented at this symposium attempted to review the growth in the field of linguistics and its connections to neighbouring disciplines resulting in new areas of scholarship and thus expanding the scope of linguistics. For instance, a paper by a Neurophysician from Indore traced the progress of a relatively new branch of linguistics, viz., Neurolinguistics and highlighted the contribution of theoretical linguistics to the understanding of the language breakdown following brain damage in adults. The respondant to this paper pointed out that it is important to take note of the fact that the changing conceptions of 'language' within Neurology / Neuropsychology set the agendas for research in Neurolinguistics. The historical

linguists among the paticipants pointed out how people of the Old Indo-Aryan stage were conscious of sociolinguistic variations in language use, while the Sanskrit scholars emphasized the importance given to pronunciation of the sabdas. Some papers dealt with the problems faced by Journalists in the use of language in print media.

The relevance and feasibility of the concept of standard language was critically examined in one paper and yet others talked about the relevance of the notion of standardisation to language testing in the Indian context. Some scholars talked of the importance of examining communication patterns of different socio-cultural groups and the relevance of such studies to 'ethno-communication studies'.

There was a lively discussion involving a group of computational linguists who discussed some of the problems they face in their work that pertains mainly to variation in the use of Telugu at different levels. They outlined several areas of research relating to Telugu language that needs to be undertaken, the results of which would feed into their ongoing work in computational linguistics.

Language Planning and Teaching of Indian Languages as L-2 in School Curriculum

During February 14-15, 1997, the Department of Linguistics under their CAS programme conducted a national seminar on the above topic under the directorship of Prof. Arun Kumar Sharma. K. Ramesh Kumar served as the organizing secretary.

Prof. K. Nagamma Reddy, the Head of the Department gave the welcome address and Prof. Arun Kumar Sharma presented an overview of the seminar. Prof. Ramakistayya, the Vice-Chancellor of Osmania University presided over the inaugural function. The chief Guest for the

seminar was Jnanpith Awardee, Padmabhushan Prof. C. Narayan Reddy. He pointed out that the three language formula was planned as a Government policy in order to promote national integration through the teaching of the languages. He, therefore stressed upon the need for teaching of L-2 in a multilingual country like ours and appreciated the choice of the topic for the seminar.

Padmashri Dr. P. Pattanayak, in his keynote address, expressed his concern over the present day state of the languages and cultures of our society. He presented statistical information about the decreasing number of languages which are being taught as part of the school curriculum. He pointed out that there is no definite language policy in our country, and stated further that the three language formula is one strategy for teaching languages at the secondary level. He felt that in most of the universities, the study of language means the study of literature.He suggested that we must adopt a language policy for promotion of primary education through the mother tongue.

There were thirteen papers in all. The topics covered included; language planning, problems of language teaching, vocabulary acquisition of L-1 and L-2, language curriculum, teaching of languages using computers. These papers were presented in six different technical sessions in this two-day seminar.

VISITING FELLOWS

Dr. K. Rajyashree, Reader, Central Institute of Indian Languages, Mysore was a visiting fellow at our centre during March 1996. During the two week period of her stay Dr. Rajyashree gave six lectures on the following topics; Sociolinguistics, language planning, language development, language, education and culture and sociolinguistic surveys.

Dr. M. Jagannath, Professor in Applied Linguistics at the Institute of Diplomatic Studies, Riyadh, Kingdom of Soudi

Arabia (also affiliated to the Marycape community college, Phoenix, Arizona, U.S.A.) was a visiting fellow during August 1996. He gave five lectures relating to, Historical linguistics with special reference to Indo-Aryan and Phonology of English spoken in India.

Dr. V. Gnanasundaram Professor cum Dy. Director, Central Institute of Indian Languages, Mysore visited the centre during the last two weeks of December 1996. His lectures pertained to the topics, Field linguistics, language planning for tribal education, language maintenance and language loss.

Prof. Vasant Khokhle, Department of Linguistics, University of Bombay was the visiting fellow at our centre during February 1997. During his two-weeks stay, Prof. Khokhle offered six lectures on the themes, Multilingual ethos; cultural patterns and adaptation; knowledge, language and power; English in the Indian cultural pattern; language and identity and Language planning and cultural pattern.

EXTENSION LECTURES

Dr. B. D. Jayaram from Central Institute of Indian Languages, Mysore gave an extension lecture on 9-2-1996 on the topic of Sampling techniques for social science research in which he talked about a number of qualitative and quantitative techniques of data anaysis.

Prof. Jagannath, University College of Arizona, U.S.A. gave two lectures; (1) Generative phonology and rule ordering with reference to Panini's approach on 12-2-96 and (2) Structuralism and Generative grammar with special reference to phonology on 14-2-96.

Dr. Surajbhan Singh, Professor of Linguistics from Delhi University gave two guest lectures on Standardization of Hindi on 21-2-97 and on Coinage of technical terms in Indian languages on 24-2-97.

REPORT ON THE MAJOR RESEARCH PROJECT

Acquisition and Loss of Lexical Anaphors and the Dative Subject in Telugu and Dakkhini

This is a report of the work in progress on the Major research project funded by the U.G.C. and carried out at the Department of Linguistics, Osmania University. Duration: 3years 1996-1999. Principal investigator:A. Usha Rani, Osmania University; Co-investigators: K. V. Subbarao, Delhi University, and Barbara Lust, Cornell University, U.S.A.

BACKGROUND

The main aim of this project is to explore the acquisition of certain syntactic constructions of Telugu and Dakkhini Hindi-Urdu and also to see how these constructions are impaired in aphasics with a view to understand the nature of language acquisition and loss. Such an analysis might have implications to the claims made in theoretical linguistics concerning notions such as innateness, parametric variation, learnability etc. Lexical anaphors (reflexives and reciprocals) and dative subject constructions are typical constructions commonly found in South Asian languages and hence they were selected for the purposes of this study. We feel that data from Indian languages which is hitherto unexplored will contribute a great deal to the study of anaphora.

From a typological point of view, languages in the world can be distributed into two distinct categories with regard to the occurence of lexical anaphors. Languages such as English, German, Hindi-Urdu, Kashmiri, Punjabi, Oriya, Bengali etc. have only a nominal device in reflexives and reciprocals as illustrated in examples (1) and (2) below:

(1) *mai nee apneaap koo deekha*
I erg refl. saw
'I saw myself'

(2) John and Mary like each other
reciprocal

However, languages such as French, Telugu, Kannada, Mizo etc. have a nominal as well as a verbal device as shown in (3):

(3) *vanaja tana ni taanu poguDu - kon - di*
vanaja self acc self praise VR agr
'Vanaja praised herself'

The verbal device *kon* is manifested as a verbal reflexive-reciprocal and the occurence of the verbal device is obligatory except in the dative subject construction (Amritvally 1984, 1989; Subbarao and Saxena 1985, 1987; Subbarao and Lalitha 1995).

It is important to emphasize the following points here; first, the anaphors in Telugu are bipartite and reduplicated in structure as is the case with many other South-Asian languages. For instance, to illustrate using an example from Mizo,

(4) *Lali -- ϕ (a maah Leh amaah) á -- in -- hmu*
Lali --erg self and self 3sg VR saw
'Lali looked at herself'

Second, in some cases, the reduplicated structures do not occur and such non-occurence depends on the argument position in which an anaphor occurs. Third, the verbal reflexive / reciprocal which is *koL / kon* in Dravidian has several other functions such as an inchoative marker and self-benefactive as in example 8 below. Fourth, the nominal anaphor can optionally be dropped when the verbal device is overtly present and it cannot be dropped when it is not present and five, the redulicated form has an alternant which is a SIMPLEX form which can occur when the verbal device is present. The following examples will illustrate these points:

(5). *(nannu) neenu addamloo cuusukunnaanu*
me I miior-in see+VR=PNG
'I say myself in the mirror'

(6) a. *vanaja (tanani) (taanu) addamloo cuusukondi*
vanaja herself mirror-loc see+VR+PNG

b. *vanaja addamloo cuusukondi*
vanaja mirror+loc see +VR+PNG
'Vanaja saw herself in the mirror'

(7) *goopi aameni addamloo cuusEEDu*
goopi her+ acc mirror+loc see+P+PNG
'Gopi saw her in the mirror'

(8) *talupu terucukondi*
door open+VR+PNG
'the door got opened'

(9) *talupu gaaliki terucukondi*
door wind+dat open+VR+PNG
'the door got opened by the wind'

(10) *neenu ciira konukkonnaanu*
I saree bought +VR+PNG
'I bought myself a saree'

The acquisition of anaphors in languages such as English deals with anaphors such as himself, myself, ourselves, each other etc., which are only nominal in nature. While languages like Telugu, Kannada and Tamil have both nominal and verbal devices, no study has thus far been done to investigate how children acquire these devices. The questions that arise with regard to Dravidian lnaguages in general, which have both nominal and verbal devices are the following:

(i) Are these two devices acquired simultaneously?
(ii) Does the acquisition of one precede the other? If so, what type of developmental errors are made?
(iii) How do children acquire the reduplicated bipartite complex forms?
(iv) How do children know when to use the reduplicated form vs. the non-reduplicated form?
(v) At what stage do children learn to acquire the dative subject constructions?
(vi) Do children at any stage come up with a verbal reflexive / reciprocal in the dative subject construction that is not permitted in adult grammar?
(vii) What type of 'developmental errors' occur with regard to anaphors in the dative subject constructions?

We offer two justifications for choosing Dakkhini Hindi-Urdu (hereafter Dakkhini). One, Dakkhini is a transplanted variety of Hindi-Urdu, an Indo-Ayan language spoken in the southern part of India where Dravidian languages such as Telugu, Tamil etc. are also spoken (Arora 1987; Subbarao and Arora 1989; Arora and Subbarao 1989).

It is crucial to note that many children acquiring Dakkhini also acquire Telugu simultaneously. The question that needs to be answered is, how does a Dakkhini learner's acquisition of the verbal device similar or different from the acquisition of the verbal device of a Telugu learner?

The second phase of the project is concerned with the acquisition of the Dative subject constructions which is typical of South-Asian languages. In the so-called Dative subject constructions, the subject which is an experiencer or affected argument is case-marked by the DATIVE in most of the Indo-Aryan and Dravidian languages and by the GENETIVE in Bengali and Assamese (Masica 1974, 1991; Verma and Mohanan 1990). The dative subject does not control agreement but it has several syntactic features of the

subject such as being an ANTECEDENT of an ANAPHOR as shown in example (10) and antecedent to PRO as in example (11) below:

(10) *siitaku tanamiida tanaki koopam vaccindi*
sita +dat self +loc self+dat anger came+PNG
'Sita got angry with herself'

(11) PRO *koopam vacci siita paDipooyindi*
anger came Sita fell + PNG
'Sita fell down with anger'

Todate, no work has been reported that investigated how children acquire these constructions and what kind of developmental errors, if any, they are likely to make. The study of acquisition of the dative subject construction is significant in a language such as Telugu in view of the fact that a verbal reflexive / reciprocal is not permitted to occur and the otherwise optional simplex forms of the anaphor in the nominative subject construction is prohibited in the dative subject construction (Subbarao and Saxena 1987).

The study pertaining to the breakdown of binding relations in English aphasics (Grodzinsky et al 19933) aims at extending the empirical scope of experiments such as the present one to populations whose language faculty is incomplete, in order to obtain clues to the formation of the rules that govern anaphoric relations in linguistic theory. The studies conducted by researchers (Blumstein, Goodglass, Stantlender and Biber 1983) provided preliminary evidence that Broca's aphasics with agrammatism are selectively impaired in their command of rules governing the relationship between anaphora and their antecedents.

There are very few studies dealing with the nature of morpho-syntactic breakdown in aphasics speaking Indian languages. Studies of Usha Rani (1986, 1994) and Jaganmohanachari (1992) revealed that plural markers and

case inflections are impaired in Telugu aphasics. The latter study also showed that dative case marker is more impaired compared to the other case markers. We are not aware of any work done on anaphors in Telugu aphasics.

THEORETICAL IMPLICATIONS

One of the fundamental claims of the Government and Binding theory is that syntactic principles such as subject - object asymmetry, principles about binding, structure dependency principle, the PRO theorem etc. are innate and that they are part of the genetic endowment of human beings (Chomsky 1981; Chomsky and Lasnik 1991). The implication of such a claim is that these principles are not directly learned. Experimental research done on the acquisition of aspects of English syntax primarily attempted to explore whether these principles are innate or learned (Crain and Mckee 1985; Grimshaw and Rosen 1990; Borer and Wexler 1987; Grodzinsky and Kave 1993, 1994; Grodzinsky and Reinhart 1993). According to the innateness hypothesis, child learns only what is parametrically variant. This study will attempt to focus its attention on the nature of parametric variation in the acquisition of lexical anaphors.

One of our goals will be to collect data on lexical anaphors and the dative subject constructions from aphasics with a view to find out whether the nominal reflexive as well as the verbal reflexives are impaired at the same time. In aphasics, sometimes, post-positions are lost. This investigation would try to see whether the dative post-position that occurs with an indirect object (recipient) and that occurs in the dative subject construction are impaired or lost simultaneously or not. We wish to see if the loss of the dative case marker permits the occurence of the VR which otherwise is not permitted in the dative subject constructions.

METHODOLOGY

a. Subjects

Regarding acquisitional aspects, both developmental data and experimental data will be collected from children belonging to two to three year age group separately in Telugu and Dakkhini languages. For data-collection purposes, children will be divided into the following age groups;

2:0 -- 2:2
2:3 -- 2:5
2:6 -- 2:8
2:9 -- 3:1

Spontaneous speech samples will be collected from one child from each of the above age groups. The age range of children to be included in the experimental study will be from 3-5 years. Ten Telugu and ten Dakkhini speaking children will be selected for the experimental study.

Data regarding language loss would be collected from ten Telugu aphasics and ten Dakkhini aphasics. Four (adult) subjects who are neurologically normal will also be chosen for the purposes of control data. They will be matched with the aphasic subjects with respect to age and educational status. Language assessment of aphasic patients will be done using Telugu version of the Boston Diagnostic Aphasia Examination (Vasanta and Usha Rani 1988). The diagnosis of Broca's aphasia will also depend on the neurological reports from the hospitals.

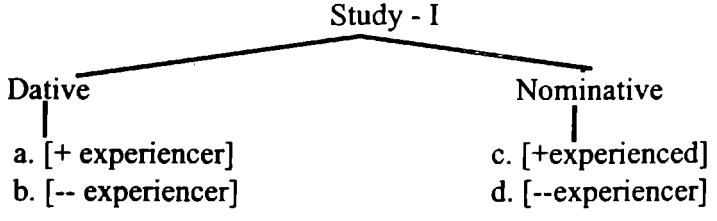
b. Tasks

Tasks to be used with children will include (a) imitation (b) act-out experiments (comprehension) and (c) description of pictures. The imitation data will be collected by making use of three different types of sentences viz., correct sentences, incorrect sentences where case markers are deleted

and scrambled sentences. From aphasic subjects, data will be elicited using imitation, comprehension and production tasks. Attempts will be made to ensure that all sentences are of equal length (approx. 10 syllables); verbs in all the sentences will be in the past tense and both transitive and intransitive verbs appear in all the sentences.

c. Experimental design

Four separate studies will be conducted. Each study will incorporate two conditions with + or - features in a sentence context. Each feature is presented with three sentences. There will be a total of twelve sentences for each study. The first three studies are designed to test single dative marker, whereas, the fourth test is designed for testing coordinated dative subjects. To elaborate, with reference to Telugu, in dative subject constructions, the subject which is an experiencer or affected argument is case marked with the dative and in nominative constructions, the indirect object is case marked with the dative. Study one is designed such that both dative and nominative subject constructions (with or without experiencer) occur as shown below with examples:



a. waaDiki	tala	noppi	waccindi
he + dat	head	pain	came

'he has headache'

b.	*naaku*	*skuulloo*	*pennu*	*dorikindi*
	me+dat	school +loc	pen	found

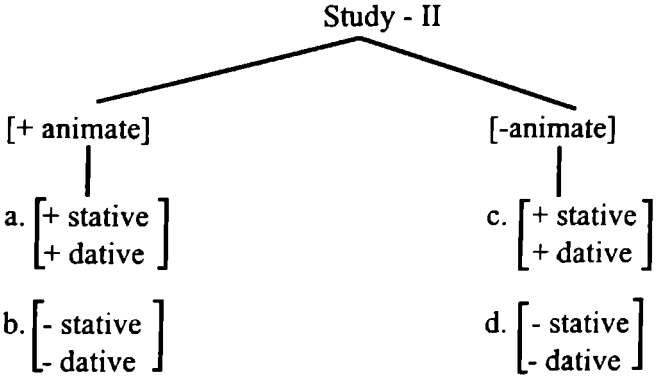
'I found a pen in the school'

c. *neenu* *entoo* *koopangaa* *unnaanu*
I very angry am
'I am very angry'

d. *neenu* *ceTTuki* *niiLLu* *poosEEnu*
I tree+dat water pour
'I watered the plant'

Children acquire postpositions rather late and aphasics loose them rather early. The above study is designed to see whether the dative marker that occurs with an indirect object as in (d) type sentence above and dative marker with the subject such as (a) above are acquired or lost simultaneously or not.

The second study is designed to see acquisition and loss of two features, (a). [+/- animate] nouns with dative marker and (b). [+/- stative] verbs using examples given below:



a. *naaku* *muuDu iLLu* *unnaayi*
I three houses are
'I have three houses'

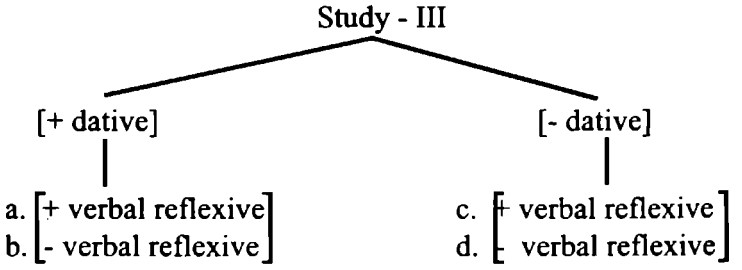
b. *neenu* *waaDiki* *pennu* *iccEEnu*
I he + dat pen gave
'I gave a pen to him'

c. *ii* *ceTTuki* *aakulu unnaayi*
this tree+dat leaves are
'this tree has leaves'

d. *paapa* *bommaki* *gaunu* *weesindi*
child doll +dat frock put on
'The child has put on a frock for the doll'

Acquisitional studies show that cognitively children conceptualize animacy very early. The second study has been designed to see the role of animacy in the acquisition of the dative marker.

Telugu like most other Dravidian languages has a verbal reflexive. The reflexive is infixed between the verb stem and the PNG markers. The third study focuses on the verbal reflexives with both plus dative and minus dative constructions as shown below:



a. *naaku* *neenee powDar* *puusu* *konnaanu*
me+dat I+emp powder apply VR+PNG
'I myself applied powder'

b. *aameku* *aamee* *waNTa ceesindi*
she+dat she+emp meal did+PNG
'she cooked the meal herself'

c. *nannu* *neenee* *tiTTukonnaanu*
me + acc I+ acc scold+VR+PNG
'I scolded myself'

d. *neenu* *waaDini* *tiTTEEnu*
I he+acc scold+PNG
'I scolded him'

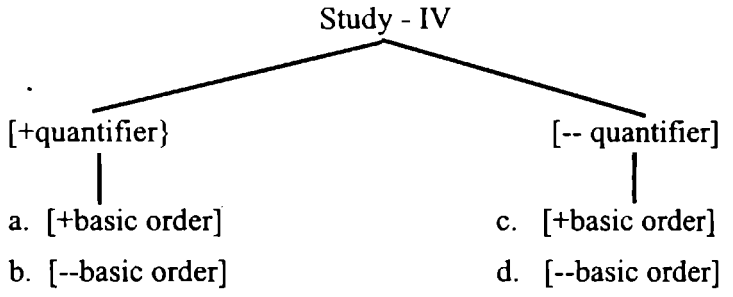
Work on language acquisition in Telugu children has shown that instances of self benefactives illustrated in the examples (a) and (b) below do appear in very young children:

a. *mandu* *raasukonna*
medicine apply+ self ben.
'(I) applied medicine myself'

b. *pawDar* *raasukonna*
powder put + self ben.
'(I) put on the powder myself'

We wish to examine if the VR is also acquired during the same period as the self benefactive .

The fourth study has been designed to test features such as plus or minus quantifier with both basic word order and relatively free word order. In the following examples, coordinated dative subjects are chosen to demonstrate the use of two lexical dative case markers occuring in the same sentence.



a. *waaDiki niikuu ennoo paaTalu waccu*
he+dat you+dat many songs know
'He and you know many songs'

b. *ennoo paaTalu waaDiki niikuu waccu*
many songs he +dat you+dat know
'He and you know many songs'

c. *amma naakuu niikuu caakleTLu teccindi*
mother me+dat you+dat chocolates brought
'mother brought chocolates for you and me'

d. *naakuu niikuu amma caakleTLu teccindi*
me+dat you+dat mother chocolates brought
'mother brought chocolates for you and me'

Vasanta and Sailaja's (1996) study has shown that even in the so-called free word order languages like Telugu, ordering of individual constituents obey certain syntactic/ semantic constraints and that sensitivity to such constraints is not acquired until after the age of ten years. The fourth study described above which makes use of basic word order as well as free word order constructions with and without a quantifier is likely to throw more light on this issue.

PROGRESS MADE ON THE PROJECT

To date, spontaneous (thirty minute) speech samples have been collected from four Telugu children and one Dakkhini child. Data were recorded using a cassette type standard tape recorder. Transcription process has just began. Some aphasic adult subjects have been identified with the help of a neurophysician and a physiotherapist. Subject information sheets have been prepared for the purposes of obtaining case history information and language level of both children and aphasic subjects.

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NEW BOOK AT A GLANCE

B. Vijayanarayana and C. Ramarao, eds. *Word Formation in Indian Languages*. Hyderabad: Centre of Advanced Study in Linguistics, Osmania University and Booklinks Corporation, Hyderabad. 1998. xii plus 148 pp. ISBN 81-85194-51-33 Rs. 200/- ; US$ 25=00; UK£ 15/-

This volume contains a keynote paper and twelve other papers selected from among those originally presented at the National Seminar on 'Word Formation in Indian Languages' organized by the Centre of Advanced Study in Linguistics at Osmania University on February 9-10, 1994. Through a study of different languages viz., Telugu, Tamil, Dakkhini, Panjabi, Bengali, Sanskrit, and Indian variant of English, the contributors provide descriptions of either word formation processes or issues involving word formation.

Contents and Contributors: List of contributors; Preface; Reflections on morphology and the lexicon with apologies to neo-Paninians: Rajendra Singh; Syntax as a source of word formation: a case of Telugu: C. Ramarao; On certain aspects of word formation processes: a Case study of Telugu: G. Uma Maheswar Rao; Constraints on feminine agentive derivation in Telugu: V. Swarajya Lakshmi; Word awareness and word formation: A study of compund noun production and segmentation by Telugu children: D. Vasanta and P. Sailaja; Grammatical change in Tamil due to the formation of new words: B. Padmanabha Pillai; Deriving nouns in Dakkhini: An experimental study: B. Lakshmi Bai and Najmus Sahr; Word formation in Panjabi: Derivation and compounding: Sukhvinder Singh; The possible and the impossible in Bengali word formation: Some problems in nominalization: Udaya Narayana Singh and Suchita Singh; Word formation in Ashtadhyayi: H. S. Ananthanarayana; Sanskrit word formation and the Samartha theory of Panini: Siniruddha Dash; The treatment of word formation in traditional Sanskrit grammar: G. Rangarajan; Word formation in an Indian variant of English: Priya Hosali.

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