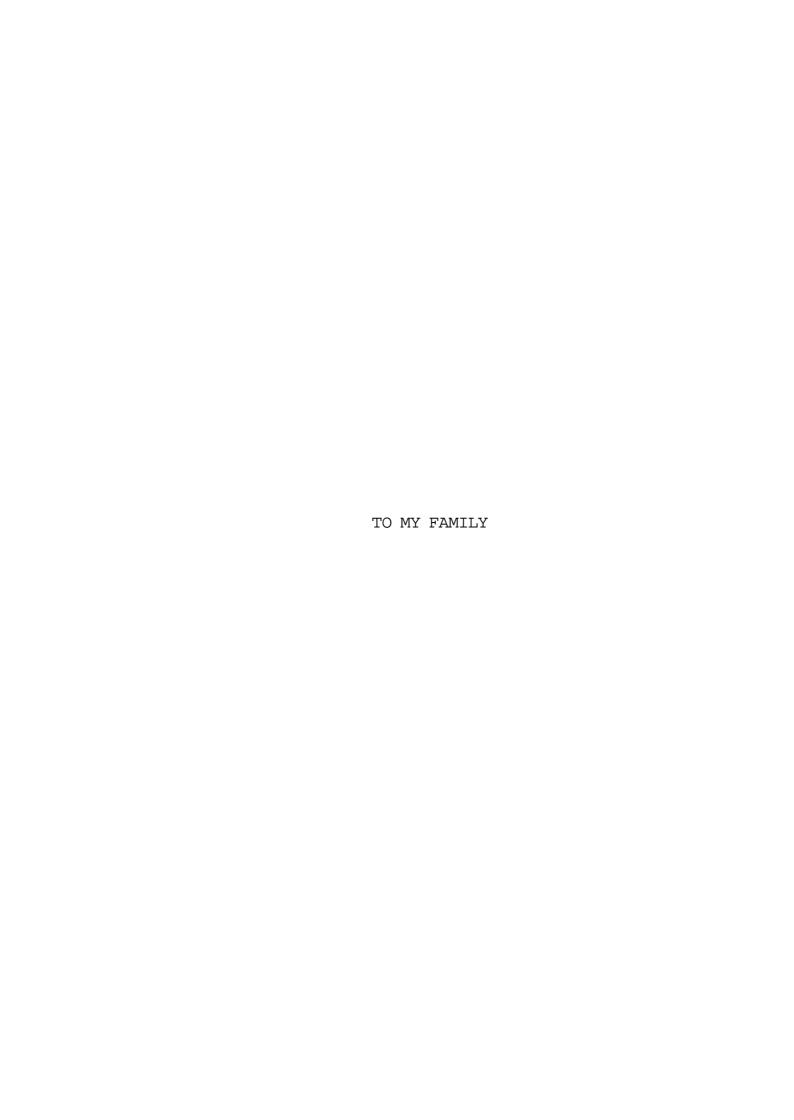# CONVERSATIONAL ANALYSIS IN APHASIA

Reg. No. 8403

A DISSERTATION SUBMITTED IN PART FULFILMENT
FOR THE DEGREE OF MASTER OF SCIENCE
(SPEECH AND HEARING) TO THE
UNIVERSITY OF MYSORE

ALL INDIA INSTITUTE OF SPEECH & HEARING
MYSORE-570 006

1985

TO MY FAMILY

CERTIFICATE

This is to certify that the Dissertation entitled "CONVERSATIONAL ANALYSIS IN APHASIA" is the bonafide work done in part fulfilment for Final Year M.Sc, Speech and Hearing of the student with Register No.

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CERTIFICATE

This is to certify that the Dissertation entitled "CONVERSATIONAL ANALYSIS IN APHASIA" has been prepared under my supervision and guidance.

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<u>DECLARATION</u>

This Dissertation entitled "CONVERSATIONAL ANALYSIS IN APHASIA" is the result of my own study undertaken under the guidance of Dr. P. Karanth, Head of the Department of Speech Pathology, All India Institute of Speech and Hearing, Mysore and has not been submitted at any University for any other Diploma or Degree.

Mysore

Dated: May 1985.

Register No. 8403

<u>ACKNOWLEDGEMENTS</u>

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INTRODUCTION

INTRODUCTION

'Aphasia is an impairment of language functioning of persons who have incurred localized cerebral damage that results in a reduced likelihood that an individual involved in a communicative situation will understand or produce appropriate verbal formulations' (Eisonsen, 1973).

It is clear that aphasic persons experience difficulty in understanding and/or producing appropriate verbal formulations. Thus there exists a communication gap, or a barrier between them and their communicative partners.

This is better expressed in a quotation given below which effectively voices the feelings of the aphasic person.

I know you believe you understand what you think I said, but I am not sure you realize that what you heard is not what I meant. (Anonymous).

The smooth flow of thoughts and ideas that is characteristic of communication between normal individuals may be absent and a communication gap may exist between an aphasic person and his/her interlocutor. But despite this fact, it is also known that the aphasic person retains the functional use of language to some extent.

Reports have shown that there appears to be an agree-
ment of the fact that even severely impaired aphasic patients
appeared capable of communicating some semantic intentions
in naturalistic settings, (Holland, 1975; Whitney, 1975) but
that the aphasics underlying intensions are minimized in
formal diagnostic and therapeutic settings.

The linguistic deficits in aphasia, in terms of phonology,
syntax and semantics have been extensively studied, but the
fourth aspect which is pragmatics, has not been studied even
in normal language, until very recently.

Thus, pragmatics in aphasia is a new concept which requires
careful, detailed and extensive investigation.

According to Crystal (1981) " 'Pragmatics' is a loosely
used term in contemporary linguistics which refers to the study
of language from the point of view of the user, especially of
the choices he makes and the constraints he encounters in using
language in social interaction, and the effects his use of
language has on other participants in an act of communication".

It is the pragmatic aspect of language in aphasics that
will be considered in the present study.

An attempt has been made here to identify the pragmatic
strategies that an aphasic person may employ to overcome his
linguistic deficits which enables him to make functional use

of the language available to him. These strategies may be
in terms of verbal and/or extraverbal features.

'Nonverbal communication is of particular relevance to
the researcher concerned with characterising language from a
pragmatic perspectiva.Characterisation of a patient's commu-
nicative efficiency must encompass a consideration of non-
verbal skills'. (Behrmann and Penn, 1984).

Argyle (1975) states that, 'Just as the type of nonverbal
behaviors differ, so do their functions in relation to the
verbal components of communication. Several functions have
been identified, for e.g. it may substitute for verbal output,
it may act as a compensatory device by paralleling the verbal
output or it may extend beyond the verbal aspect, thereby pro-
viding additional information for the interlocutor'.

The present study attempts to identify these nonverbal
behaviors and the functions they serve in communicative situa-
tions.

According to Bates (1976), pragmatics is defined to be
a set of rules governing the use of language in context. So
also, Behrmann and Penn (1984) have conserved that probably
the most relevant context in which to observe, describe and
remediate nonverbal behavior in aphasia, is the conversational
setting, since this is a natural opportunity to observe
the patients adaptation to his problem and to the communication

task. Furthermore, it enables one to note the type and functions of nonverbal skills in relation to verbal abilities.

The widespread impression is that, aphasics can communicate effectively in real-life situations as compared to formal testing situations and part of this information may come from the successful exploitation,by aphasics,of other 'pragmatic devices'. Their ability to take turns, use of proper intonation, nodding appropriately, maintenance of eye contact seems to be relatively well preserved. The more important contributors may be the capacities of normal conversers to structure discussion appropriately and to make several inferences about the topics and comments which the aphasics are seeking to convey.

The present study attempts to identify the pragmatic strategies in terms of nonverbal and verbal behaviors, in the conversational setting. It attempts to identify:

i)   The linguistic constraints encountered by expressive aphasics in their use of language.

ii) Choices, extraverbal and/or verbal, made by these aphasics to overcome the linguistic constraints.

iii) Effects thier use of language has upon their listeners.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

The most widely cited definition of 'pragmatics' is that of Morris (1946) who defined it as the relations between the signs and their human users.

According to Dewey and Bentley (1949) and Silverstein (1973), 'pragmatics is not simply another kind of sign relation equivalent to syntax and semantics. Pragmatics is the study of human indices, and indices can be interpreted only when they are used. One cannot describe the meanings of indices. One can only describe rules for relating them to a context in which the meaning can be found'. Pragmatics, according to Crystal (1981), 'is a loosely-used term, in contemporary linguistics which refers to the study of language from the point of view of the user, especially the choices he makes, and the constraints he encounters in using language in social interaction and the effects his use of language has on other participants in an act of communication'. Crystal says that it is not easy to make an exhaustive list of all the factors which have to be taken into account in order to understand the social intent behind a sentence. So also, it is difficult to distinguish one 'social force' from another and it is not known as to how these intangibles can be correlated with the formal features of language. 'Thus, the theoretical debate in this field is making slow progress'. Crystal (1981).

As investigations in pragmatics have not been extensively carried out in normal language itself, very few studies have been reported regarding the pragmatic aspect in aphasic language

A review of the relevant literature is presented under the following headings.

- Conversation in Aphasia.

- Discourse in Aphasia.

- Requesting Strategy in Aphasia.

- Non-verbal Communication in Aphasia.

- Gestures in Aphasia.

- Self correctional strategies in Aphasia.

Conversation in Aphasia:

It has been commonly observed that aphasics show relatively intact automatic speech whereas their propositional speech may be impaired to a much greater extent. Cicone, et al (1979) analysed the different types of propositions in the communication of aphasics; conducted a 'case analysis' to study the kinds of information communicated by the patients through speech and gesture and assessed the clarity in the communication of aphasics with which, information both linguistic and gestural is conveyed to the listener.

Each aspect of this study will be discussed in detail.

The different types of propositions in the communication of aphasics were classified as follows:

- Stated propositions - statements in which the frame of the proposition,verb + one or more arguments, if required was apparent and well-defined.

- Inferred propositions - statements in which one or more of the elements required for the proposition was not explicitly stated by the patient, but could be inferred from his previous speech, or from the content of the interviewer's preceding comment.

- Incomplete propositions - Statements in which, a verb was present but an argument required by the verb was missing and not inferrable.

Ones which cannot be classified under propositional statements are:
- Assents and Denials - simply 'yes' and 'no' reactions.
- Null statements - verb is neither present nor in any way inferrable.
The study was carried out in anterior aphasics, posterior aphasics and normals.

The results reflected the greater dependence of the anteriors on the interviewer for taking the lead in the conversation. For the most part, the interchange with the anteriors consisted of questions put to the patient, to which he could simply agree or disagree, or answer with one word. It was observed

that posteriors and controls produced roughly the same number of conversational units, but that the posteriors' showed the highest proportion of null statements. It was seen that, quite apart from any 'emptiness' of speech content, posteriors produce in adequately formed statements more often than do anteriors or normals.

- 'Case Analysis' conducted on the speech and gesture occuring in the conversation to study the kinds of information communicated by the patients. 'Case analysis' made it possible to characterize and then quantify the types of meanings carried in the speech and gestures of the patients and generated meaningful units which made possible an examination of the relative use of speech to communicate information.

Anteriors, as was observed, uttered much less words than normals and posteriors. Posteriors and normals produced a far smaller proportion of inferred cases which indicate the interviewer's tendency to structure the conversations with anteriors. So that the patient need state only a minimum amount of information to be understood.

- Clarity in the communication of aphasics with which information is conveyed to the listener.

To assess such clarity, ratings were made for each proposition as a whole, and also for each individual referent (case, verb.

modifier) within a proposition. Each propositional unit (stated, inferred or in complete) was judged as clear or not clear. Clear, if the statement was grammatical and logically sound, both in itself and in the context of the conversation. Unclear if, incomplete or unclear reference, unclear construc-tions, or out of context.

It was seen that, posterior patients produced a much higher percentage of unclear propositions than did the anteriors or normals. Anteriors were slightly less clear than normals, but on the whole, were more similar to normals than to posteriors. Lack of clarity due to 'unclear constructions' of propositions or 'out of context' statements was almost entirely a posterior phenomenon. The lack of clarity in the posterior aphasic may stem less from the incomprehensibility of individual referents than from the posterior's tendency to string referents together in incorrect or confusing ways. The anterior aphasic's speech came across as clear to the listener but this could be that much of the information communicated by anteriors was inferred from questions asked by the interviewer.

The finding that the proportion of clear referents was greater for anteriors than for normals is a reflection of the lack in the anteriors one word utterances for the nonspecific speech that does occur in normal conversation. Even when the individual referents are intelligible instances of the appropriate

cases, posteriors speech can come across as unclear due to contradictions between referents, inadequate constructions of propositions, or clashes between a referent or proposition and the surrounding conversational content.

According to Cicone et al, while anteriors and posteriors produced a similar percentage of 'confused' speech, the sources of confusion were different.

Posteriors were confusing, usually as a result of searching for a word, or listing a number of possibilities but rarely indicating satisfaction with any one. Anteriors confusions when they occurred, were the result of speech and contradicting gesture. Much of the information communicated by anterior patients was rated 'clear' but also, much of this information was not contained in the gesture itself, but was inferred from the context of the conversation.

Discourse_in_Aphasia:

Discourse i.e. connected speech,addresses problems of the social, psychological and pragmatic aspects of communication as well as its linguistic aspects.

There are two types of discourse (A) Narrative discourse (B) Procedural Discourse. Former, is a language representation of a happening, real or imagined, which consists of matching a

verbal sequence of clauses, to the sequence of events which actually occurred.   The clauses of a narrative are typically ordered in temporal sequences.

Procedural Discourse, consists of steps or procedures which are stated in a specifiable order and which are chrono-logically or conceptually linked.

It is goal-oriented as the focus is on explaining how something is done and it does not have a person reference or a chronological sequence.

A study was carried out by Ulatowska et al (1981) to study the ability of a group of mildly impaired aphasics to produce narrative and procedural discourse. It was seen that, the aphasics produced language which was reduced in complexity, manifested by less embedding i.e. smaller percentage of depen-dent and nonfinite clauses; reduced in quantity? and manifested by decrease in information content in both narratives and procedures.

In narratives it was the amount of evaluation which was primarily reduced in aphasics. In procedures, reduction was primarily in the amount of language leading to a small number of steps.

Berko-Gleason and Goodglass (1977), in a study of the production of narrative discourse by two groups of Broca's (anterior) and Wemicke's (posterior) aphasics, reported reduction in the number of themes and in the amount of embedding in the aphasic groups as compared to normals, and marked differences in style between Broca's and Wernicke's aphasics.

Gleason et al (1980) attempted to study a further characterization of the differential structure of the narrative style of these two groups (Broca's and Wemicke's) using the picture story test, as compared to normal speaking adults.

They observed that the general picture of aphasic narrative, is one that is characterized by the presence of few themes, few lexemes, absence of anaphora (pronoun antecedents) and the use of many pronouns without antecedents. Broca's aphasics narrative style contains few words direct speech and more nouns than verbs, Wemicke's aphasics narratives are distinguished by the use of many words, concatenated sentences, deixis (verbal pointing) and the use of verbs rather than nouns.

Requesting_strategy_in_aghasia:

Prinz (1980) attempted to study some of the communicative strategies possible in various forms of aphasia. He focused on the production of request used as a communicative strategy, since it is the primary means by which individuals get the environment to respond to their needs.

The central issue addressed by Prinz (1980) was to study whether aphasic patients could circumvent their linguistic deficits, by maximizing contextual cues or whether aphasia represented a deficit that extends beyond linguistic competence, also compromising pragmatic aspects of communication. He also studied whether the type of communicative deficit in the aphasic patient in relation to both comprehension and production affect the type of communicative strategies utilized in requesting.

One Broca's (anterior) aphasic, one Wernicke's (posterior) one Global aphasic and one nonaphasic adult served as subjects in this study. Procedure consisted of a series of 10 requesting elicitors, that is, specific conversational situations constructed to elicit requests from the subjects which were presented randomly throughout the 20 videotaped conversation with the experimenter.

The verbal and nonverbal strategies employed by each subject were coded according to the speech and gestural act categories. Besides describing the illocutionary force, the propositional adequacy of each request was coded. A request was judged 'adequate if it conformed to the listener's expectations of the appropriate-ness of the request, and was considered to be propositionally 'Inadequate' if it was unrelated to the listener's previous utterances, or if it hindered the overall communicative act of request-response sentences.

It was seen that, in all the cases, the illocutionary
force of speech was readily discernible to the experimenter.
The speech acts used by all aphasic subjects, regardless of
etiology or severity of the aphasics, were always identified
as requests by the experimenter. However, adequacy of the
propositional content of each request was not 100% in all cases.
It was also seen that the degree of communicative deficit in
the aphasics seems to have a direct bearing upon the type
of communicative strategy utilized. For e.g. the global aphasic
tends to rely more on gestural and contextual information to
get across the illocutionary force of the request and the Broca's
aphasic depends more on verbal strategies. Clearly, the aphasics
cognitive processes cannot be severely disrupted if he is capable
of communicating an intention via the complex selection and
utilization of appropriate strategies in particular conversational
situation.

These findings substantiate observations by Holland (1975),
Whitney (1975), and Wilcox and Davies (1977), that aphasics
despite the etiology or extent of their linguistic impairment
are capable of communicating a broad range of intentions, and
employing pragmatic strategies in making known their needs.

Gestures_in_Aphasia:

The process of communication, besides speech, also involves
other paralinguistic channels which too, serve important commu-

nicative functions. These are cues such as intonation, facial expressions, eye movement and bodily gestures including movements of head and eye.

From all these, gestures (and the role they play in communication) can be used for analysis as they can be observed easily, they carry a wide range of meanings, referential as well as expressive and it provides as the most viable alternative means for communication. Thus, studying the role of gestures in aphasic communication serves as an important consideration of the pragmatics of aphasic communication.

Types of Gestures:

Jenkins et al (1975) explain that gestures, fall into two categories. Those that signal a proposition such as a threatening gesture (e.g. a raised clenched fist) and those that symbolize a proposition such as fingerspelling or the gestures for victory or peace. They define a symbolic gesture as one which bears no necessary relationship to that for which it stands. The relationship is specified by convention or arbitrary association.

Cicone, et al (1979) explain referential gestures as those in some way communicating information about things in the world. They further classify them into:

A) Iconic Gestures:- The movement in some specifiable way captures the nature of the referent.

(i) Emblens- are those gestures for which there are widely accepted interpretation.

(ii) Pantomimes - as defined by Duffy et al (1975) is the deliberate use of bodily or manual movement to convey a message in the absence of speech.

These include gestures depicting actions, spatial gestures showing direction or location in a fixed frame of reference and gestures showing attributes of referents such as form, contour or quality of a referent.

(iii) Numbers
(iv) Writing in the air.

(B) Non-Iconic Gestures: These simply point out a referent.

(i) Specific - Designating a present object or a space previously associated with an established referent.

(ii) General - Associating an area of space with a referent defined in speech.

(C) Other gestures: These cannot be included in above categories nevertheless they carry meaning.

Cicone, et al (1979) studied the relation between gesture and language in aphasic communication with regards to the kinds of meanings putforth, the modes of communication used (speech vs gesture) and the clarity with which reference was made in

conversation, with major emphasis on measuring the patient's.
success in conveying information to the listener via speech
and gesture. Also conversation were analyzed to determine the
amount of information communicated via speech alone relative
to the amount arriving with gestural assistance. Differences
between groups could suggest information specific deficits in
gesturing analogous to the linguistic deficits particular to
anterior and posterior aphasia.

Their findings revealed a strong parallel between the
gesturing and speech of aphasic patients.

In anterior aphasics, output in both modalities, speech
and gesture, is relatively sporse, simple and punctuate, generally
informative and clearly intelligible. Occassionally, gestures
alone were used to compensate for the efferts required for speech,
but in general, they accompanied the one-word utterances that
were produced. Also, a higher proportion of 'referential' gestures
were produced than in posteriors and normal control groups.
This could be explicable either as a function of the lack, in
anteriors of the 'rhythmic', and 'emphatic' gestures that typically
accompanied fluent speech, or as a reflection of the anteriors'
overall orientation toward communicating referential meaning.
As anteriors were seen to make greater use of gesture alone, it
seems to indicate that gestures may be compensating for their lack
of verbal communication. But it was seen that normals and anteriors
overall produced the same amount of gestures and this suggests

that the anterior patients were not very actively compensating
for their verbal deficits or else they would have gestured 'more'
than control subjects, substituting gestures for what would
normally be spoken information. Thus, according to Cicone et al,
the proportionally greater role played by gestures in the commu-
nication of information by anteriors may well reflect the fact
that they speak so sparingly rather than any increased fluency
of gestures.

In posterior aphasics on the other hand, it was observed
that gesturing was frequent, relatively complex and often elabo-
rate, consistent with the perflexing nature of their oral output,
they were seen to produce a higher proportion of non-referential
gestures and their gesturingwas more likely to be scored as
'unclear' or confusing. Posteriors relied more on the simple
and somewhat vague 'general' referential gestures and less on
the more contentful pantomimes and emblems. Their gesturing
appeared to have lost its content just as their speech seemed
empty. Thus posteriors were observed to be fluent gestures.

Cicone et al's findings suggested that speech and gesture
undergo similar changes in aphasia; anterior aphasics gestured
no more 'fluently' than they spoke, though they succeeded in
conveying a significant proportion of what they communicated;
posterior aphasics gestured somewhat 'fluently' than normals,
though their gestures were 'unclear' and confusing.

A number of studies support these findings.

Duffy, Duffy and Pearson (1975) studied pantomime recognition in aphasia as compared to normals. The results of this study met with the requirements for demonstrating that gestural deficiency in aphasia is the result of a general symbolic communication disorder, as given by Goodglass and Kaplan (1963), whose findings were as follows:

(i) more severe gestural deficiency in the aphasic than in the control group.

(ii) correlation of gestural deficiency with severity of aphasia.

(iii) disturbance in the formulation of movements without specific disturbance in the execution of movements.

Duffy et al's (1975) conclusion is similar to that of Pickett (1972) who stated - 'Gestural ability is related to the overall severity of aphasia and is not independent of general communication behavior'. But it does not support Goodglass and Kaplan's (1963) theory which states, 'Aphasics have a gestural deficiency which is best understood as an apraxic disorder consequent to a left hemispheric lesion'. Gainotti and Ibba (1972) observed that gestural comprehension disturbances are markedly related to the difficulty involved in repeating the pantomimed gestures and suggested that difficulties in reproducing symbolic gestures are commonly attributed to ideomotor apraxia and could sometimes be the result of an inability to understand the meaning of the gesture itself.

Based upon this study, Gainotti and Lemmo (1976), studied comprehension of symbolic gestures in aphasia based on the test for Symbolic Gesture Recognition, a test for Ideomotor Apraxia and the Verbal Sound and Meaning Discrimination Test. Their results have shown that (i) aphasics are specifically impaired on a test of symbolic gesture interpretation (ii) their inability to understand the meaning of symbolic gestures was highly related to verbal semantic impairment (iii) Only a slight relationship could be found between comprehension and reproduction of symbolic gestures.

Another study by Duffy and Duffy (1981) which studied the deficits in pantomimic expression and pantomimic reception in aphasia showed the following results.

- A significant deficit existed in pantomimic recognition among aphasics and a strong relationship existed between deficits in their verbal and nonverbal behaviors.

- aphasics exhibited deficits in both expression and recognition when compared to nonaphasic subjects and in some tasks even showed more impairment in pantomimic than in verbal performance.

- despite the different surface behaviors involved in their per-formance, both pantomimic expression and reception, reflected a common ability and thus, either task could be used as an index of an underlying competence.

- The results were consistent with the assertion that there may be a single generic impairment underlying the defective performances on the various verbal and nonverbal tasks thereby resulting in high correlations both within and a cross verbal and non-verbal modalities.

- It also appeared to them, that, on comparing the pantomimic and verbal abilities in both the aphasic and normal group, that, pathology in the brain simply reduces the level of overall functioning rather than changing the relationships between pantomimic and verbal abilities.

Duffy and Duffy (1981) also gave four causal theories of deficit of pantomimic expression in aphasia!.

(i) Intellectual Deficit - But there is no support for the view that nonverbal deficits in aphasia are the result of general intellectual deficit and this is supported by Goodglass and Kaplan (1963).

(ii) Limb apraxia - Pantomime involves motoric execution of the communicative act and hence can be affected by apraxia. But their data indicated that limb apraxia may not be the usual or most potent cause of pantomime impairment in aphasics though it may be a contributing factor in many instances.

(iii) Central symbolic Deficit - The consistency of data verifying strong relation between verbal and nonverbal deficits support the

hypothesis of a generic symbolic ability or process which is requisite to, and underlies the use of verbal and nonverbal communicative behaviors.

(iv) Verbal Mediation Hypothesis: It is possible that aphasic verbal deficits produce, or are also manifest in subvocal or internalized usage of linguistic abilities. Thus pantomimic expression will be impaired as a consequence of verbal dysfunction if some type of subvocal verbal ability is required to plan, organize and execute requisite motor patterns. But there is not enough information to support the last two theories.

On the, other hand there have been studies which have shown that gestures are not affected in aphasics to the same extent as speech.

Duffy and McEwen (1978) studied pantomime symbolism and pantomime recognition in aphasia, and it appeared from this study that the normal relationship between pantomime arbitrariness and pantomime recognition was not affected by the left hemispheric damage and indicated that it is not the degree of symbolism (arbitrariness) of the pantomime which accounts for the increased errors in the aphasics pantomime recognition. There results do not support Jankin's et al (1975)proposition that 'the aphasics should exhibit nearly normal competence for expressing his intentions or understanding those of others, so long as they are presented in the form of signal communiques, which were as they hypothesized controlled by the right hemisphere'.

Daniloff et al (1982) studied gesture recognition in aphasia and found that:

a) All subjects performed equally well regardless of their aphasic severity classification.

b) Action picture recognition was related to listening ability.

c) Action pictures were easy to identify than object pictures.

d) On error responses subjects overwhelmingly chose related over unrelated foils. Thus one inference that may be derived is that, although the ability to recognize gestural symbols may not be completely normal in aphasic patients, it is less impaired than recognition of verbal signals. These results could be due to the fact that data included subjects without profound language deficits and study dealt with recognition and not recall as in other studies which have shown gestural impairment. (Goodglass and Kaplan (1963), Duffy at al,(1975), Duffy et al (1978).

In certain sub-types of aphasia, gestural comprehension may be relatively better preserved than in other subtypes. Here the authors do not imply that a localized area in brain specifically comprehends gestural symbols. Rather studies by Duffy et al indicate evidence that a very basic cognitive capacity underlies all language comprehension Chester and Egolf (1974) believe that nonverbal messages like gestures are more primitive both phylo-genetically and ontogenetically than linguistic or verbal messages.

gestures, were believed to be, less arbitrary than spoken language and have for less linguistic structures.

The finding from Daniloff et al's (1982) study which show gestural recognition abilities more intact than receptive and expressive language skills suggest that the aphasia exhibited by these subjects is not a general representational disorder so much as a disorder specific to the linguistic system. It appears that the earlier developing representational abilities have been preserved better than later developing representational abilities, specifically linguistic abilities.

Critchley (1939, 1975) has described two types of extra-verbal behaviors - 'pantomime' which takes the place of speech when expressing an idea and 'gesture' or 'gesticulation' which includes movements particularly of the hands and face which accompany speech for the purpose of emphasis. He believes that like their verbal behaviors, the extraverbal prepositional and automatic behaviors of aphasics show different degrees of impairment.

Hughlings Jackson (1939) compared the relation of pantomime to gesture with that of propositionizing to emotional utterance.

Based upon this, Duffy and Buck (1979) studied the relationshop between the prepositional - pantomimic and the emotional - gestural deficits of aphasics and then compared these to the

verbal deficits of the aphasics. The propositional extraverbal behaviors, studied were both the recognition and expressive use of pantomimes and the emotional gestural behaviors selected were spontaneous (nonverbal) facial cues.

The aphasic subjects performed significantly poorly than the controls and right hemispheric damaged subjects on both the pantomime expression test and the pantomime reception test. But there was no significant difference in the accuracy of communication by facial expression among the three groups. Thus, the aphasics showed no deficits in subpropositional spontaneous facial expression. Thus, the results were consistent with Critchleys proposition.

It was seen that in aphasics, both verbal and extraverbal propositional behaviors seem to be impaired to about the same degree as a result of left hemispheric damage. Subpropositional facial expression bears no significant linear relationship to the impairment of propositional behavior either verbal or extra-verbal.

This clear difference between propositional and sub-propositional behaviors of aphasics indicates different cerebral processing for these two types of behavior. Two neural mechanisms have been proposed. Jenkins et al (1975) have proposed that 'signal' communicative behaviors such as facial expression are mediated by the

right hemisphere and 'symbolic' or propositional behaviors are mediated by the left. But if this were to be the explanation, then right hemisphere damaged subjects should have shown poor performances in the facial expression tasks which was not found.

Another explanation can be based upon Chester and Egolf's (1974) belief (as stated earlier) which says that some types of nonverbal communications may be phylogenetlcally and ontogene- tically more primitive and mediated by 'lower' rather than 'higher' neural processes and thus more resistant to damage by cerebral insult.

Thus, in most studies regarding gestures in aphasia, it is observed that the gestural deficit runs parallel to the deficit in speech. It appears that, speech functions as the major and dominant channel, with the nature and quality of the gesture as secondary reflections of the speech properties. There arises a view that there exists a single 'central organizer' which initiates and determines the complexity and clarity of both speech and gesture. It is not true that gestures are entirely 'parasitic' upon speech. Also, there are patients in whom, gestures are quali- tatively better than speech. This finding suggests either that gestures can sometimes take the lead,or that the central organizer retains some flexibility about which modality to employ preferential.

Given the finding that gesture and language so closely parallel each other,it so appears that gestures do not play a major supple- mentary role in the communication of aphasics. Gestures thus seem to be as clear - or as unclear - as speech.

Thus, Cicone et al question the validity of the widespread impression that aphasics can communicate effectively in real life situations (as compared/to their often inadequate performance in formal testing situations). Part of this information may come from the successful exploitation by aphasics of other 'pragmatic devices. Their ability to take turns, use of proper intonation, nodding appropriately, maintenance of eyecontact, seems to be relatively well-preserved. Even more important contributors may be the capacities of normal conversers to structure discussion appropriately and to make shrewd inferences about the topics and comments which the aphasics are seeking to convey. Particularly in the case of anterior patients there is a strong tendency on the part of other conversants to supply contexts where the aphasics can successfully exploit their meagre linguistic and gestural repertoire. As for posterior patients, the richness of their out-puts gives the listener considerable information with which to work. While the gesturing alone provides little help, individual referents are generally clear'.

It is probably premature to conclude anything more than the fact that nonverbal communication is more broadly represented than verbal skills and thus may be less at risk in aphasia.

In a sense the term 'nonverbal communication' has become a 'waste-paper basket' term to include numerous distinct behavioral features (Behrmann and Penn, 1984).

Just as the types of nonverbal behaviors differ, so do their functions in relation to the verbal components of communication. Several functions have been identified. For eg. it may substitute for verbal output, it may act as a complementary device by paralleling the verbal output or it may extend beyond the verbal aspect, thereby providing additional information for the interlocutor. (Argyle, 1979).

According to Behrmann and Penn (1984) nonverbal communication is of particular relevance to the researcher concerned with characterizing language from a pragmatic perspective.

They feel that the most relevant context in which to observe, describe and remediate nonverbal behavior in aphasia is the conversational setting, since this is a national opportunity to observe the patient's adaptation to his problem and to the communication task. Furthermore it enables one to note the type and functions of nonverbal skills in relation to verbal abilities.

Behrmann and Penn (1984) attempted to identify a) the types of nonverbal behaviors used b) the appropriateness of these behaviors in context and c) the functions of these behaviors in relation to the verbal message.

Their study was descriptive and was concerned with an in-depth appraisal of a communicative behavior within a naturalistic context.

Their sample size was small and the analysis was qualitative rather than statistical. This may allow for a fuller insight into the more 'dynamic complex components of functional spontaneous language'.

They studied language in 11 aphasic subjects. 20 minute interactional language sample was videotaped and analysed into two scales.

a) Scale A: This scale identifies 12 behaviors falling into the paralinguistic, kinesic and proxemic class.

b) Scale B: This scale is designed to assess the function of the observed nonverbal behaviors in relation to the verbal output. Functions include supporting, providing additional information, substituting, interfering with or aiding production of verbal output.

Each subject was interviewed and three themes were discussed,
i) Social conversation.
ii) How the subjects speech problem started,
iii) How to make a cup of tea (for females)
a
    How to change a flat tyre (for males)

This type of interaction was used, as it would facilitate the use of nonverbal communication and encourage a free flow of spontaneous language.

Behrmann and Penn (1984) observed the following results.

In the fluent and mixed groups, the 'support' function played a dominant role to the exclusion of other functions. In the nonfluent subgroup, however, the 'substitution' and 'yield additional information' classes also played prominent roles, While the 'interfere' function occurred less frequently than in the fluent and mixed group. This Implied that the nonfluent aphasics were actively utilising their nonverbal behavior in the transmission of the message, while in the more fluent and mixed subjects, nonverbal skills are passive and coincidental with their verbal output.

Certain vocal aspects were felt to be intrinsic to the actual aphasic syndrome and were sometimes seen as affecting overall appropriateness of the message. For example, the non-fluent subjects tended to present with a low pitch and monotonous intonation poor intensity and quality control and slow rate while the more posterior patients demonstrated aspects such as rapid, quiet output on the other hand, a further dimension to these aspects was whether or not the subjects used them actively to supplement or enhance the verbal message on the whole, nonfluent (anterior) subjects used prosodic features such as intonation and rate in a compensatory fashion on many occasions. Gesture, pantomime and facial expression were similarly frequently actively used as a compensatory strategy in the non-fluent subjects sample. Fluent (Posterior) patients, however demonstrated there behaviors as coincidental concomitants of the verbal message.

Thus, there results confirm those of Cicone et al (1979).

The main results of Behrmann and Penns study may be summarized as follows.

- That not only do differences occur in types and appropriateness of nonverbal behaviors in the different subgroups of aphasics, but also in the functions of the nonverbal behaviors utilised.

The focus of the two scales was specifically on the dyadic transmission of the message and the aphasics effectiveness in realizing this aim. The writers suggest that fluent or posterior aphasics often show receptive difficulties and a lack of self-monitoring. Results of nonverbal testing imply that the lack of monitoring applies to global communication skills.

The results unreveal a lack of awareness of the interlocutors' needs and their own communicative effectiveness, thus a passive rather than an active involvement in the communication process. Resultant motivation to adapt to the situation is queried. By contrast, the nonfluent expressive (anterior) aphasics with relatively intact reception seem acutely aware of the situational demands, their listener's needs and the shortcomings of their own verbal abilities. Nonverbal communication is judged to bevaore appropriate and to function'in a more active and content based form than is the case in their fluent counter parts.

It is possible to suggest from the above study that appro-
priateness and functions of nonverbal skills parallel verbal
output not in the sense of severity but rather in the typolo-
gical way. The underlying neuropathology was clearly important
in determining nonverbal skills of aphasics. Two subjects who
had obtained correct score on verbal assessment were found to
have sustained right hemispheric damage in addition to the left
hemispheric lesion. This supports, the notion that nonverbal
behavior may be processed bilaterally and highlights the need
to consider neurological information when assessing symptomato-
logy. Subjects with a more global difficulty are less flexible
in utilising vocal and nonvocal channels in a communicative con-
text. Their behaviors are intrinsic, incidental and passive as
opposed to those, of subjects who are concerned with adapting
maximally to the sociolinguistic expectations of the situation.

- The clinical implications to Behrmann and Penn's study are as
fallows. The clinician by attending to the subcomponents of
communication can encourage the active utilisation of there
behaviors especially in patients who will never regain their
pramorbid linguistic skills.

- Therapeutic evergies should be directed towards a global rehabi-
litation program rather than concentrating only on verbal skills
and should focus on facilitating adaptive and appropriate (especi-
fically nonverbal) behaviors.

Self-correctional_strategies_in_Aphasia:

Whitney (1975) included associated on related word cues, circumlocutive descriptions, gestures and graphies as word,finding strategies.

Marshall (1975) analysed word retrieval strategies - delay, association, description and generalization.

Delay: Here the patient takes or requests extraprocessing or for-mulation time to let the listener know he is not ready to relinguisl the conversational ball.

Association: The aphasic produces a word or a series of words which are semantically related to the desired word and these include synonyms, opposites, rhymes.

Description: The aphasic attempts to produce the desired word by describing what he is talking about and ordinarily uses more words and revisions in doing so.

Generalizations: Here the aphasic uses 'empty' or general words to produce the denied word.

Marshall's study indicated that his aphasic population employed from most to least frequency, association, description, delay and generalization. Most to least frequent success occurred in the order, delay association, description and generalization. Also,

less severe aphasics were seen to employ delay as a strategy while more severe aphasics employed generalizations. Thus strategy success was related to severity.

Farmer (1977) did a similar study but to the four strategies given by Marshall (1975), Farmer included a fifth, that of sound revision i.e. part of the word was repeated in an attempt to produce the target word correctly.

In Farmer's study, both groups i.e. aphasics and nonaphasics more frequently employed the delay strategy than all other strategies combined. Nonaphasics used association more frequently than aphasics, while description and generalization were used more often by aphasics, found revisions occured as 9.1% of the strategies only in the aphasic group. Nonaphasics were generally successful in self-correction while aphasics produced correct target words on less than half of their attempts. Aphasics employed the delay strategy more frequently, with more success than other strategies. However the aphasics used the other four strategies substantially more often than did the nonaphasic. Association was second most successful. Generalization, though frequently employed, was least successful. Although more successful than generalization description resulted in successful retrieval less than one quarter of the frequency employed. Sound eevisions were more successful one third of attempts.

Farmer (1977) also compared strategies within subgroup of aphasia. Broca's,Wernicke's, Anomic and Conduction types. They are given from most to least, frequency of occurrence and are as follows:

Broca's – Delay, Sound Revision, Association, Description, Gene-
        ralization.

Anomics – Delay, Description, Generalization, Association, Sound
        Revision.

Wemicke's – Delay, Sound Revision, Description, Generalization,
        Association.

Conduction – Delay, sound Revision, Description, Generalization,
        Association.

The strategies given from most to least successful are as follows*

Broca's – Delay, Association, Sound Revision, Description, Genera-
        lization.

Anomic – Delay, Sound Revision, Association, Description, Generali-
        zation.

Conduction – Delay, Sound Revision, Association, Description, Gene-
        ralization.

If sound revisions are ignored, most to least successful strategies rank from Delay, Description, Association and Generalization.

Most frequent use of delay strategy by the aphasic subjects may be related to their overall moderate level of severity.

Self-correctional strategies have diagnostic, therapeutic, as well as Prognostic implications. (Farmer (1977). This review of literature discusses the studies that have been carried out to identify the pragmatic features in aphasia and the role they play in overcoming the linguistic constraints. But there has been no study which has identified and explained a variety of these feature the differential roles they play,and the interactions between them.

Such an attempt has been made in the present study.

METHODOLOGY

METHODOLOGY

(A) Selection_of_Subjects:

10 subjects, 9 males and 1 female, were selected for the present study, based upon two criteria which are as follows:

(1) Type of aphasia: Expressive type of aphasic subjects were selected. On the basis of their medical findings and WAR test scores.

(2) Language spoken by the subjects; Marathi and Hindi speaking subjects were selected.

There were 6 Marathi speaking subjects (5 males, 1 female) and 4 Hindi speaking subjects (4 males).

Subjects ages ranges from 25 years - 50 years (mean age was 40.6 years).

(B) Instrument_used:

The entire conversational sample was audiorecorded. The tape recorder that was used for the recording was National Panasonic Model No.RQ 2157 EHO 76339.

(C) Procedure:

The subjects were seated comfortably on the same side of the table as the tester.

Through casual talking, the subjects were made to feel at ease and the procedure was explained before the evaluation and recording began.

Environment was made as distraction See as possible by carrying out the procedure in a quiet room (with the door closed) and by the removal of any potential visual distractive stimulus. The duration of the entire procedure ranged from 45 mins - 1 hour.

The subjects' verbal responses were audio-recorded and their extraverbal responses observed in course of the interview such as gestures, facial expressions, facial grimaces etc, were noted down by the tester in detail.

Procedure_to_carrg_out_Language_Eyaluation:

The purport of this language evaluation procedure was to establish the diagnostic category of the subjects.

Four subtests were selected from the Western Aphasia Battery (Kertesz and Ppole, 1974) namely,

   i) Spontaneous speech

  ii) Comprehension

 iii) Repetition

  iv) Naming

These subtests were translated into Marathi and Hindi. The original subtests, in English are given below: Scoring of these was done based upon the scoring procedures of WAB.

Subtests for Language Evaluation:

I. Spontaneous speech:

1. How are you today?
2. Have you been here before? Or have I tested you before?
3. What is your full name?
4. What is your full address?
5. What kind of work did you do before you became ill?
6. Tell me a little about why you are here? Or what seems to be the trouble?
7. Picture description:
   Now I will show you a picture. Tell me what you see in it. Try to talk in sentences.
   Maximum score   –   20
   Minimum score   —

   (See

II. Auditory-verbal comprehension:

A. Yes/No questions:

I am going to ask you some questions. Answer them with only 'Yes' or 'No'.

	Verbal	Gestural	Eye blink	Correct-ness
	1.	2.	3.	4.

1. Is your name Ramakrishna?
2. Is your name Gopal?
3. Is your name. . . . . . .?
4. Do you live in Bangalore?
5. Do you live in . . . .?
6. Do you live in Calcutta?

1.   2.   3.   4.

7. Are you a Man/Woman?

8. Are you a doctor?

9. Am I a Man/Woman?

10. Are the lights on in this room?

11. Is the door closed?

12. Is this a hotel?

13. Is this a hospital?

14. Are you wearing a red dhoti/sari?

15. Will a paper burn in fire?

16. Does March come before .June?

17. Do you eat a banana before you
     peel it?

18. Does it rain in July?

19. Is a horse larger than a dog?

20. Do you cut grass with a hammer?

Maximum score   -   60
Patient's score   -

II (B) <u>Word Discrimination Task (or) Auditory Word Recoanition</u>

Ask patient to point to each object or picture or his own body part by saying 'show me the .... or point to the......'.

1. Real objects: Key   watch   pencil   tape   comb   light bulb

2. Furniture: Window   chair   table   light   door   ceiling

3. Colours: Red   Blue   Brown   Green   Black   Yellow

4. Body parts: Thumb   Left shoulder
                 Right finger   Left knee
                 Index finger   Right Ankle
                 Little finger   Right wrist
                 Middle finger   Left elbow
                 Right ear   Right Cheek.

Maximum score   -   60

Patient's score

C) Sequential Commands:

Now, do as I tell you

	Maximum score
Make a salaam	2
Shut your eyes	2
Point to the chair	2
Point to the ceiling then to the floor	4
(Line up a pencil, watch and card in that order, on the table before the patient)	
Point to the pencil and the card	4
Point with the pencil to the card	8
Point to the pencil with the card	8
Point to the watch with the pencil	8
With the card point to the watch	8
Put the pencil on top of the card then put it back	14
Put the watch on the other side of the pencil, and turn over the card.	20

Maximum score   -   80

Patient's score -

III. Repetition:

Now whatever I say, you repeat after me

1. Ball (2) Nose   (3) Hand   (4) Window   (5) Banana

6. Wrist watch (7) Two   (8) Fortyfive (9) Ninety five percent

(10) Sixty two and a half (11) The farmer is ploughing the field

(12) He is not coming back (13) The spy fled to china

(14) First Indian Army (15) Not all that glotters is gold

(16) If. time comes for an elephant time will also come for a cat.

Maximum Score   -   100

Patient's score

IV. Naming:

(A) Object Naming:

Tell me the name of this 'or' 'what is this'?

1. Coin   (2) Bag   (3) Pin   (4) Card   (5) Look

6. Watch   (7) Ink bottle   (8) Comb   (9) Spoon   (10) light bulb

11. Ball   (121 Cup   (13) Hammer   (14) Rubber   (15) Pencil

16. Key (17) Book   (18) Mirror   (19) Measuring tape

20. Match stick.

Maximum score   -   20
Patient's score   -

(B) Word Fluency:

'Name as many animals as you can in 1 minute'.

Maximum score   - 20
Patient's score

(C) Sentence completion: Complete the following sentences

1. The glass is . . . .(green)
2. Sugar is . . . .(sweet)
3. Roses are red. Jasmines are . . . .(white)
4. United we stand, divided we . . . .(fal)
5. We two. Ours . . . . . (two)
Maximum score   - 10
Patient's score

(D) Responsive speech:

Answer the questions that I will be asking you.

1. What do you tell time with? (Watch, Clock)
2. What colour is coal? (Black)
3. How many things are there in a dozen? (Twelve)
4. What do you do with soap (Wash)
5. Where do you go to buy medicine (Pharmacy, Drugstore)

Maximum score   -   10
Patient's score   -

Procedure_used_to_obtain_conversational sample:

In addition to the 4 WAB subtests, the following procedures were used.

V. story Narration:

Subjects were shown a chart having 5 sequential pictures depicting the story of 'The Lion and the Mouse'. Based upon these, the subjects were asked to narrate the story.

A similar type of chart depicting the story of 'The Thirsty Crow' was used as an alternative.

VI. Communicational Interaction:between the Aphasic, subject and his conversational partner.

The selection of the subject's conversational partner was based only upon one criteria namely he/she was required to be untrained in language pathology and without the specialists knowledge in aphasia. Generally, it was the person who accompanied the subject to the hospital.

In four instances the partner was the subject's spouse. In one instance, the subject's for participated. In three instance a friend was the subject's conversational partner. In one instance, a student engaged in conversation with the subject and in one instance/nurse .

The aphasic subjects and their conversational partners were asked to discuss about their family size (number of members), their names, occupation etc. for 5 minutes.

VII.   Conversation between the_Aphasic subiects and the tester:

In this case, the subjects were asked to explain the rules of any game that they knew.

Initially they were presented with a pack of cards, and asked whether they knew and could explain the card game 'Rummy'. If the subjects were unfamiliar with that game, they chose to explain any other card game that they knew. If they were unfamiliar with any card game, they explained about any outdoor game that they were familiar with, such as cricket, football etc.

From this topic, conversation was shifted to other topics regarding their other interests, current situation, their immediate environment, family, occupation, etc.

The conversation between the aphasic subjects and tester ranged from 5-10 mins.

DATA ANALYSIS

.DATA ANALYSIS

The data that is presented below comprises of the con-
versational samples of the 10 anterior aphasic subjects,
which has been analyzed in terms of the linguistic constraints,
the choices made to over-come these constraints and the effect
of their use of language on nonaphasic listeners.

Case 1: B.J (Tested in Marathi)

(A) Linguistic Constraints encountered in subject's use of
language:

N.B. In the illustrations of the subjects' utterances, 'A'
represents the utterance in verbatim. Line 'B' consists of
English glosses for 'A', 'c' is a literal English translation
and 'D' gives the normalized English translation for the utte-
rances. The illustrations have been transcribed in general
phonemic script.

(I) Phonological constraints:

Few phonological errors were observed in his speech,
comprising of errors of omission type (eg (i)) and substitution
type (eg. (ii)).

eg. (i) In subtest III Repetition, he said
A: /vuttachitra/-___>/vruttachitra/ (Target word)
B: -   -   newspaper
The consonant /r/ was omitted.

eg (ii) In subtest 1(7), picture description, he said:

A: /dekāv/———>   /dukan/ (Target word)
B: -   shop

The vowel /u/ was substituted by /e/ and consonant /n/ was substituted by /v/.

(2) **Syntactic constraints:**

Incorrect and/or incomplete sentence structures were seen to occur frequently in his speech. The syntactic features that were affected were: Casemarkers (eg.(i)); morphophonemic structures (eg.(ii)); predicates (eg.(iii)); sentence types (eg.(iv)); subject omission (eg.(v));object omission (eg(vi); verb omission (eg(vii); incorrect word order(eg(viii).

eg.(i): In subtest 1(7) Picture Description, the subject said
A: /pustaka khardi kharedi karnyāsāthi āle āhet/
B: Books   -   purchase   to do   come have(they).
C: Books to do purchase (they) have come.
D: (They) have come to purchase books.

Here the case marker is wrong, as the picture shows only one lady at the shop who has come to purchase books. So the last phrase should have been :.

A: /- āli āhe/
B: Come has
C: Has come
D: same as C.

eg.(ii) In subtest 1(5) Spontaneous Speech, when he was asked
as to what work he used to do he replied,

A: /paekarmadhye hoto/

B: Packer in   was (I).

C: (I) was in packer.

The sentence should have been

A: /paekarmhanun hoto/

B: packer as   was there (I).

C: (I) was there as packer.

D: Same as C.

eg.(iii) In subtest 1(7) Picture Description, subject said

A: /bāi āni mulgi — kharedi karnyāsāṭhi/

B: Woman and girl — purchases to do .

C: Woman and girl to do purchases.

D: Woman and girl to do shopping.

The predicate A: /zāt ā het/   has been omitted.

          B: Going are (they).

          C: (They) are going.

eg.(iv) During subtest VII, conversation with Tester, he was
asked to explain the function of joker in the card game 'Rummy'.
He said,

A: /samzā yāchāmadhye—āplyālā khecun ālitar ashic ashic
    āli —- tirrl —- cavkā—panzā /

B: Consider, in this —- for us --- by picking if it comes just
    just comes (it)——three four five .(The numbers are only used
    in the context of cards).

C: Consider, in this——if it just just comes for us by picking
   three four five.

D: Same as C.

Here the case does not specify as to what he is referring to
when he says "Just by picking ifit comes". If he is referring
to the joker, the gender markers are incorrect as the correct
structure would have been, A: /khecun alatar/

                              B: By picking if it comes.

The sentence is incomplete and he does not make it clear as to
what he means by three - four - five. Here meaning is not clear.
In this context he had a card designating Three, and another
Five. It is possible that, he means that if he pulls out a card
which is a ,joker, then he would insert it between the two,
to have a sequence Three - Four - Five. But his sentence does
not convey this meaning.

eg. (v) as in eg (i). The utterance does not specify the subject
as to who is purchasing books.

eg. (vi) In the subtest VII, Conversation with the tester, the
card game was being discussed. In this game, cards such as
Three - Four - Five (of same colour and type) are needed to make
a sequence. In this situation, the subject had a Three, and at
Five,but needed Four, to make a sequence. In this context he said,
A: /he zodi āni cavkā tirri āni cavkā hyāchāmadhye madhli ek dōn/
B: This pair and four, three and four, in the middle of this
   in-between one, two.

C: In the middle of this, pair, and four, three and four, one
   and two.

D: Same as C.

The sentences is incorrect and incomplete. Based upon the context
it should have been:

A: /tirri āni panzā hyāchāmadhla ek pān nāhi/

B: Three and five, in the middle of these, one card is not there.

C: Between one and five, one card is not there.

D: Same as C.

In the patient's utterance, he has not mentioned the object of
his sentence which indicates that one card is not there.

eg.(vii) In subtest 1(6) Spontaneous Speech, he was asked why
he had come to the Department, to which he replied:

A: /hā -- hātāni kartā yet nhavta— hāt modlā/

B: — with hands do could not —- hand broken.

C: With hands could not do hand broken.

D: Same as C.

In his utterance,he has omitted the verb as to what he could not
do, and in the predicate too, the verb phrase is not complete.
Conjuctive is absent. The target sentence might have been:

A: /hātāni kām kartā yet nhavta kāran hat modlā hotā/

B: With hands work do could not because hand broken had.

C: With hands could not do work because hand had broken.

D: Work using hands could not be done because hand was broken.

eg. viii) Incorrect word order was seen in subtests 1(7)

　　　　　Picture Description when he said

A: /thevleli pustaka āhet/

B: Kept　　　books　　are

The correct word order would be:

A: /pustaka thevleli āhet/

B: Books　　kept　　　are

C: Books are kept.

Of the syntactic constraints, maximum errors were seen of sentence types.　Incorrect syntactic structures were observed to lead to semantic confusions.

3) <u>Semantic Constraints:</u>

　　Semantic errors due to incorrect choice of words from lexical categories were observed in-frequently.

eg.i) In subtest IV(C) Word Completion when he was asked the colour

　　　of grass, he said:

A: /gavat — safed rangace/

B: (grass　　white of colour

C: Grass of white colour.

D: White colour grass

　　Syntactic errors comprised most of the linguistic constraints and errors in sentence type occurred most frequently.

(B) Choices made bY sub^ect to overcome these linguistic constraints.

Verbal choices:

(1) Repetitions: They were very frequently observed in B.J's speech, at the syllabic level eg.(vii) of syntactic constraint: and at the word level as in eg.(iv) of syntactic constraints. Repetitions may be present for various reasons. They were observed to occur as:

(i) - Fillers-in -- eg (i) in Fillers-in

(ii) - The various attempts seen before reaching the target word, as in subtest 1(7) Picture Description, he said:

At /kad kad -- kaddhanyace dukan/

B: -   -   provisional store.

C: Provisions store.

(iii) - Efforts in propositionalizing, when he asked questions repetitions increased as in subtest VI conversation with listeners, he asked:

A: /dō — dō —- dōn nambarchi mulgi-—shā -- shālet zāte?/

B: -   -   Two numbered daughter -- to school goes?

C: Second daughter goes to school?

(iv) - Attempts at elaboration: In subtest 1(5) Spontaneous Speech he replied:

A: /zipioiā -- zipiolā paekar mhannun/

B: At GPO   at GPO   packer as

C: At GPO as packer.

(v) - Attempts at self-correction: In Subtest V Story Narration
   he said:

A: /to   to   to   to   te   doghe   zan/

B: He   he   he   he   they two of them.

C: -do-

D: He(4)————they both.

2) <u>Self-Corrections</u>: The Self-corrections only of a verbal nature
   are discussed herein. They were observed mostly in cases of
   phonological errors, and, in order to reach the target word, the
   subject word - (i) either repeat part of the utterance as illu-
   strated in Repetition eg.(v); or (ii) through revision or modifi-
   cation of incorrect utterance,
   eg. in subtest (v) Story Narration, he said:

A: /undīr kartur   undīr   kartu --- kurtar --- kurtaḍto/

B: Mouse   -   mouse   -   -   tears apart
                                                  (using teeth).

C: Mouse -— mouse tears apart.

D: Mouse --- mouse chews.

Self corrections were in most instances, successful.

3) <u>Fillers-in</u>:

    They were used to gain time for the subject till he could
express himself appropriately.

eg.(i) In subtest VII, Conversation with the tester, while discussing
       the card game, Rummy, when he was asked, what he would do if
       given a joker, he said:

A: /ā -- ā—- ālātar -— āttā——āttā/

B: -   - If it comes now   now.

4) <u>Hesitations:</u>

Lot of hesitations, seen as pauses, or sounds like /am/ were observed throughout the sample, and they were used to gain time.

Of the verbal choices, Repititions were observed most frequently, to overcome the constraints in language.

<u>Extraverbal choices:</u>

(1) <u>Gestures:</u> Few information-carrying gestures were observed. Iconic gestures were comprised of Pantomime (eg.(i)); Emblems (eg.ii)) and Gestures which indicated numbers (eg.(iii)). Noniconic specific gestures were used Other type of gestures were also used (eg.(.v)) which also were information-carrying. On the other hand,there were three occasions where the use of gestures would have clarified the meaning of ambiguous sentences, but where they were not used (eg.(v).

eg(i) Pantomime was used in subtest IV(A)- Object Naming, when he was asked to name the inch tape, he said:

A: /māp/

B: Measurement

He then gestured measuring himself around the waist.

eg.(ii) In subtest I(1) Spontaneous Speech, when he was asked about his health, he said: A: /bari ahe/

                 B: O.K. is

                 C: Is O.K

                 D: Is fine.

He then nodded his head.

eg.(iii) In subtest IV(B) Word Fluency, he named animals, to
keept track of the number, he counted them on his fingers as
he recalled them.

eg.(iv); In subtest VII Spontaneous Speech, when he was asked
about his problem, he said:

A: /pāy āni hāt/

B: Leg   and   hand.

He then paused and pointed to his leg and hand before he went
on to say:

A: /cāltā yet nhavta āni hā -- hātāni kartā yet nhavta/

B: walk   could not   and - hands with do   could not

C: Could not walk and could not do with hands.

eg. (v): When the subject was groping for a word, he closed his
eyes, and touched his forehead in an effort to recall and concentra
Other gestures such as movements of hands were seen to accompany
speech which is a feature of normal conversation.

eg.(vi): In subtest 1(7) Picture Description, he said:

A: /hī   bhāzi   āhe/

B: These vegetables   are.

C: These are vegetables.

But later on, he identified them as fruits. Thus he did not identif
his error and did not use any gesture to negate it, as he said
/bhāzi/.

     Thus it was observed that, in (i), gesture was used to add more
information i.e. to supplement speech. In (iv), gesture was used to
emphasise his utterance, but gave no extra information. In (v)

gestures were used as in normal conversation. Gestures, at times, were not used even if it was necessary, to clarify the meaning as in(vi). Thus gestures were not used as a substitute for speech, in spite of deficits seen in the latter, and his self - correctional strategies were not based upon gestures. He did not resort to gestures even when the meaning of the sentenc< was not clear .

2) <u>Intonation</u>: Certain normal characteristics were well preserved, such as interrogatives were spoken with the rising tone, declaratives were ended with the falling tone. Besides, the intonation patterns were used for various reasons.

- Rising tone was used when subject was unsure of his utterance (eg.(i)); when he gropes for a word (eg.(ii)); to indicate denial (eg.(iii)); to indicate information above that conveyed by the verbal utterance (eg.(iv)); to clarify his utterance (eg.(v)).

- Falling tone was used by this subject, to demarcate utterances (eg.(vi); to indicate confirmation of utterance (eg.(i))- above)* to indicate that the word has been found after attempts at word finding (eg.(ii) above).

eg.(i) In subtest V, Story Narration, he said:

A: /ek   hotā   am———mākad———mākad   āhe   ńā   undir   ek — ek
   ek   hotā   undir/.

B: One   was there --- monkey-- monkey it is no, mouse — one - on
   - one was there mouse.

C: There was a monkey, it is monkey no, mouse, there was one
    mouse.

Thus, when he was unsure of his utterance, the rising tone accom-
panied speech whereas, when he confirmed his utterance, as when
he said /undīr/ for the second time, falling tone was observed.

eg.(ii): In subtest I(7) Picture Description, he said:

A: /drāksha -- drāksha --- ā - āmbe/

B: Grapes   grapes   mangoes.

Thus, when he groped for a word, his utterance was accompanied by
a rising tone and when the appropriate word was found, by a
falling tone.

eg.(iii): In subtest I(7), when he was asked whether the place
was a market, he spoke about it being a market as we buy vegetables
there. But then he pointed to the hawker on the road, to the
sweet shop, and continued:

A: /bhazi   āni   ithe   khānyāce   padārth/

3: Pakoras   and   here   for eating items.

C: Pakoras, and here items for eating.

D: Pakoras, and here eatables.

The last word was spoken with a high tone and left open, with
a pause and conveyed the information, that the subject denied
the presence of these in a market.

eg.(iv): In subtest VII,Conversation with tester, when he was
asked whether he agreed with a rule of a card-game, incorrectly,
stated by tester, he said:

A: /barobar/

B: Correct.

But the rising tone conveyed information that he did not agree with his utterance and his next phrase indicated his knowledge of the rule.

eg.(v): In subtest I(7), he said:

A: /hi   Íāibri——lāibri——pustakānchi Íāibri/
B: This libry——libry——of books libry.
C: This(is) lib(ra)ry (2) — having books.

The first time he said /laibri/ and was asked/to what it was as

he did not self-correct,but repeated it with a rising tone,

then clarified it again by extending his utterance accompanied

with the falling.tone and stressed for emphasis.

eg.(vi): In subtest V, he said:

A: /ek ek   hotā   am————si vha/

B: One one was there -- lion.

C: There was one lion.

The characteristic of accompanying end of utterances with a falling tone served to demarcate between utterances, and was specially useful as pauses, which also normally, provide this information were inappropriately used in the subject.

Eg.(i) also indicates confirmation of utterance with a falling tone or when subject is sure of his utterance.

Eg.(ii) So also, when a word has been sought which subject was groping for, falling tone is observed to accompany the utterance. Thus, the subjects intonation patterns conveyed a lot of information.

(C) **Effects the subject's use of language has upon his listeners:**

The subject was accompanied with his wife.He had no apparent difficulty in replying to questions but only when he had to ini-tiate the conversation.

a) Relative dominance of speaker:

The number of utterances were 8, for both. The mean number of morphemes/utterance was 2 for the wife and 3 for the subject. This was because the wife asked short precise questions which required longer replies and also when the subject initiated the conversation, he would frame long questions which required single or two word replies.

b) Turn-taking:

Each of them took one turn each. The wife had 4 utterances/turn while the subject had 3. The subject was seen to take turns when he was prompted to do so.

c) Topic maintenance/switching:

Only one topic regarding their family was discussed and within the topic, the focus was switched appropriately by the subject and his wife 3 and 4 times respectively.

d) Communication breakdown:

Within the short span of their conversation, they had/breakdown one

The Wife after asking 4 questions said : A: /bolā/

B: Speak

To this, the subject replied A: /kāy bolnār/

                             B: What to speak.

After this, there was a pause and then subject effortfully initiated the conversation and thus, this was a verbal 'same' to restart the conversation.

They conversed for only 2 minutes or so, may be because of subjects linguistic constraints, the structured conversational situation, the wife's self-consiousness. The wife was the dominant speaker but as she was ill-at-ease, she did not attempt to sustain the conversation for more than 2 minutes.

This subject was seem to have moderate linguistic constraints comprising mostly of syntactic errors and to overcome these he made use of extraverbal and verbal choices in almost the same proportion. Referential gestures. Intonation, Repetitions and self-corrections were the frequently used choices. Though, the subject could participate in a conversational interaction, he could not sustain conversation for a long duration.

Case-2: s.C.

A) Linguistic_constraints_observed in_the subject's use of language

1) Phonological constraints:

Errors were seen of substitution type (eg.(i)) and omission type (eg.ii).

eg.(i): In subtest V, he could not elicit the word /undir/ for
        mouse, and made substitution errors such as:

A: /chutīt   udīr   mutīr   un———(pause) ---- undīr/

B: -   -   -   -   -   Mouse.

Here he has self-corrected through modification of his utterance.

eg.(ii): In subtest I(7), he said:

A: /bāi   porilā   ubo   gheun   zāte/

B: Woman   girl to   -   takes   goes (she) .

C: Woman to girl takes goes.

Here, the word /ubo/ which does not mean anything, may have been
used instead of the target /barobar/ which means (along with'.
So the sentence might have been: 'woman goes taking girl along with
her'.

Thus, few phonological constraints were observed.

2) Syntactic constraints:

They comprised most of the linguistic constraints. Errors
were observed in the following syntactic features? Case markers;
Morphophonemic structures; Sentence types; Subject/object/verb,
omissions; Word order.

Besides these, errors were seen in the following features:
PNG markers: (eg.i)y Tenses: (eg.ii); Conjunctives: (eg.iii)
and plurals:(eg.lv).

eg.(i) During subtest 1(7), he said:

A: /te   pru——purivālā   ahe/

B: They   -   puri seller is.

C: He is puri-seller.

D: He sells puris'.

eg.(ii) In subtest VII, he was asked how spends his time to
which he replied:

A: /mulānnā   pocvāyce——am --—   lāin——lāin   pocvun
    pudhe   zāto   firāylā/

B: To children to leave line -- line having left — further
    30 (I) for walk.

C: To leave to children, line, having left(I) go further for walk.

Here the tense as in /pocvāyce/ is incorrect. So also the morpho-
phonemic structure is missing in /lāin/. It should have been
/lāinīt/ which means 'in the line'. So target utterance might have
been: A: /mulānnā lāinīt pocvun pudhe zāto firāylā/

        B: To children in the line having left, further go(I) for wal

        C: Having left children in the line (I) go further for walk.

eg.(iii) In subtest I(7), he said:

A: /te   dukān   ahe   hī   bāī——mulgi/

B: That   shop   is   this   woman -   girl.

C: That is shop, this woman, girl.

Conjunctive 'and' is missing. So also predicate is absent, as
to what the woman and girl did. The target utterance might have
been: A: /te dukān āhe ā i bāi ā i mulgi dukānāt zātāt/
                                  in
    B: That shop is and woman and girl shop/side go (they),
     C: That is (a) shop, and woman and girl, they go inside shop.
     D: That is a shop and woman and girl go inside that shop.

eg.(iv) In subtest 1(7), he said:
A: /ek he lediz She lediz/
B: One this ladies is   ladies,
   (inanimate)

   Here the word /ek/ and /lediz/ contradict each other. The
first indicates singular category and the second, plural. Thus,
the English word has been used in appropriately. Also the gender
/he/ only refers to inanimate, it should have been /hī/ for singu-
lar feminine gender. The target may have been:
A: /hī ek bāi āhe/
B: This(she)is one lady.
C: This is one lady.
Many syntactic errors were observed in the subjects speech and they
also led to semantic ambiguity.

C) <u>Semantic Constraints:</u>

   Few errors were observed which were purely semantic innnature.
eg(i): In subtest I(7), while he was talking about the aspect of
the picture which shows a woman buying fruits, he seemed to have
a wrong concept of it, or had perceived it incorrectly. Syntax
too was involved. Repetition of phrases were observed which indicat

that he knew he was incorrect, but he was not able to self-correct, he said:

A: /bāi kāhi kacrā kādhte- kāi bāi kashi kacrā kādhte —kacrā nahi kādhte — kacrā nāhi kādhat/

B: Woman some garbage removes,some woman how garbage removes garbage does not removes,garbage is not removing.

C: Woman removes some garbage; how some woman removes garbage; garbage does not remove; garbage is not removing.

Thus, the verb phrase /kacrā kādhte/ is totally inappropriate and semantically unrelated.

B) Choices made bY subject to overcome these linguistic constraints

Verbal choices:

1) Repetitions: They were commonly used and were observed at the syllabic level (eg.i); word level (eg.ii); phrase level (eg.iii),

eg.i) In subtest IV-B, he said: A: /gho -- ghoda/

                                B: -   Horse.

eg.ii) This is illustrated in eg.(ii) of syntactic constraints,

eg.iii) This is illustrated in eg.(i) of semantic constraints.

Repetitions were seen to occur as:

i) Device to feedback his defective utterances to his auditory system and check for any errors. Eg.(i) in semantic constraints illustrates this function.

ii) Filler-in while he groped for words to elaborate his utterance further.

eg. In subtest I(7) he said:

A: /puri — purl taḷtoy /

B: Puri — puri frying is (he).

C: (He) is frying puri.

iii) Self-correction strategy:

Eg. In subtest I(5) he said:

A: /pyu————mha ze pyun————pyun/

B: -   Means   pune —- pune.

He repeated at the syllabic level and reached the target word
'pune'.

iv) Efforts in propositionalizing speech.

v) Perseverative responses.

eg. In subtest VI he said, in course of speaking,

A: /māzhi sister————sis - sis/

B: My   sister   -   -

2) <u>Self-correction</u>:   Self-corrections occured mostly in cases of
phonological errors. Subject self-corrected either through modifi-
cation of his utterance as in eg.(i) from phonological constraints,
or through repetition of part of utterance, as in eg.(i) in semantic
constraints. Most of his self-correctional attempts were successful

eg.: In subtest I(7), describing the picture of balloon seller,
     he said:

A:/mulgā vikat ghote ghote gavat ghāit ghete gavat gho
    ghete ghete/

B: Boy purchase -   -   grass in a hurry takes (she) grass
    - takes(she) takes (he).

C: Boy purchase - - - takes (he).

D: Boy purchases.

3) <u>Hesitations and pauses</u>: They were commonly observed when subject had to initiate speech, grope for words, had word finding difficulties etc.

Among the verbal choices, repetitions were used most frequently to overcome linguistic constraints and to correct errors.

Extraverbal choices:

1) <u>Gestures</u>: Few information carrying gestures were used. Among the Iconic gestures,Emblems were observed (eg.i) and gestures indicating numbers (eg.li). Among the Moniconic gestures were apecific (eg.iii) and General (eg.iv). Other gestures were also used (eg.v).

eg.(i) In subtest 1(6), he pointed to his right forefinger to the side of his head, as he said:

A: /māzhi tabbet bari nāhi/

B: My   health well is not.

C: My health is not well.

D: My health is not OK.

He appeared to indicate that his brain functions (mental functions?) were involved in the problem. This gesture supported his speech.

eg.(ii) In subtest VI, when asked the number of his offspring, he said: A: /chār/

B: Four.

But here he indicated 2 fingers. The gesture was inappropriately used and it interfered with his speech.

eg.(iii) In subtest VI, when asked about his problem, he pointed to his throat, but speech was incoherent. He thus indicated through the gesture that he had some problem in speaking. Thus, it substituted speech.

eg.(iv) In subtest VII, when he was explaining the game of 'Cricket and the number of members in each team, he said:

A: /akrā za a   ek āt akr ā za a   ek āt/

B: Eleven individuals in one, eleven individuals in one.

In this instance, there was no verbal cue that he was/repeating
not
the phrase but was talking about two teams. But as he spoke the first half of the sentence he indicated a point in space, and when he spoke the second half, he shifted this point to indicate another. This conveyed the information. Also, the intonationpattem, which was a rising tone for first half and falling tone for the second, supported that he was actually, referring to two teams. Thus, the gesture provided additional information.

eg.(v) Movements of hands were observed while speaking. He would shake his head while speaking, to indicate frustration when he could not find a word.

On the other hand, there were certain instances where appropriate use of gestures would have clarified meaning in an otherwise unclear sentence, but where gestures were not used.

2) <u>Facial expressions</u>: He was observed to blink his eyes during speaking. No exaggerated facial grimaces, were observed.

as
3) <u>Intonation</u>: Besides the features/observed in normal intonation pattern, other features were observed such as: repetitions were accompanied with a rising tone (eg.i): during self-corrections in-correct attempts were spoken with a rising tone whereas the correct one with a falling tone, (eg.ii); conveyed meaning to the utterance, (eg.iii).

eg.(i) In subtest 1(7), he said:

A: /puŕl — puŕi taltòy/

B: Puri puri frying is (he).

C: (He) is frying puri.

eg.(ii) In subtest V he said:

A: /dīr - dari nāhi --- chutīr — udīr mutir un undir undir/

B: -   -   -   -   -   -   -   -   - mouse mouse.

eg.(iii) As illustrated in eg.(iv) in Gestures.

In the extraverbal choices, referential gestures were used maxi-mally. They substituted speech, supported it, added extra infor-mation and even interfered with speech.

C) <u>Effects the subject's use of language has ugon his listener:</u>

The subject conversed with a nurse from the hospital,

a) Dominance of the speaker:

The nurse was the dominant speaker. She had 21 utterances with mean number of 4 morphemes/utterance, while the aphasic subject had 17 utterances with mean of 2 morphemes/utterance.

b) Turn-taking:

The subject did not take any turns and it was a one sided conversation, where turn-taking was considered, with the non-aphasic conversational partner taking the lead throughout.

c) Topic Maintenance/Switching:

The aphasics conversational partner did not shift the topic, but shifted the focus within the topic, back and forth 16 times.

d) Communication Breakdown:

This occurred in 2 instances and in both cases, the subject was responsible for it. When he was asked a question he did not respond and there were long pauses.
In both instances, the verbal 'saves' were carried out by the conversational partner which were in the form of questions simplified in nature, and despite them, if no response was forth-coming from the aphasic subject then she shifted the focus. She then asked a different question altogether.
Though the aphasic subject participated in the conversational inter-action with the non-aphasic, the responsibility of initiating and sustaining the conversation lay with his nonaphasic conversational partner. He took a passive role in the interaction.

This subject was observed to have a moderate degree of linguist constraints which constituted mostly syntactic errors. To overcome these he used both verbal choices particularly repetitions, and extraverbal choices particularly referential gestures to an almost same proportion. These gestures were used to substitute support, carry extra information or interfere with speech. In conversational interaction he took a passive role.

<u>Case 3 : D.P</u> (Tested in Marathi)

A) <u>Linguistic constraints encountered in the subject's use of language:</u>

1) <u>Phonological Contraintst</u>

The few errors that were observed were of substitution and addition type (eg.i).

eg.i) In subtest III, he said:

A: /vruttrachitra/———>   /vruttachitra/ (Target word)

B: -   Newspaper.

Thus consonant /r/ has been added by the subject.

2) <u>Syntactic Constraints:</u>

They comprised most of the linguistic constraints and were seen in Case markers? in Participle constructions; Sentence types; Predicates; and in Conjunctives.

The incorrect syntax of the utterances led to semantic ambiguity.

3) <u>Semantic Constraints:</u>

They were observed to a much lesser extent,

eg.i) During subtest VI, he said:

A: /vandanā mha ze bahi

B: Vandana means sister.

But, the later utterances indicated that 'Vandana' was his sister-in-law. Thus he has chosen the incorrect word from the lexical category.

Most of the linguistic constraints were seen, as a result of syntactic errors which also were seen to affect the meaning of utterances.

B) **Choices made by the subiect to avercome these linguistic constraints:**

Verbal choices:

1) Repetitions: They were observed at the syllabic level and word level. Repetitions were observed to occur frequently. They may be observed in various situations:

- As efforts in initiating propositional speech.

- As attempts to elaborate the utterance further.

- As attempts in reaching the target word.

- As filler-in and,

- As attempts at self-correction.

2) Self-corrections: Only one successful attempt at self-correction was observed in this subject where the error was semantic ip nature.

eg.i) During subtest I(7), while pointing to the fruit-stall in the picture, and the bunch of bananas shown in it, he said:

A: /āmbā a   keḻi/

B: Mango   -   bananas.

Here the incorrect word was followed by a short stressed utterance /a/ accompanied by a sharp falling tone which indicated that the subject had identified his error, and then he said the correct word.

3) Fillers-in: Such as /a/ or /mha ze/ were seen as being significant to difficulties in initiating speech.

4) <u>Self-cuing</u>: This was observed in one instance. The subject
gave himself a verbal cue to progress to/target word. This was
different from self-corrections.

eg.i) in subtest IV(D), Responsive Speech, when he was asked the
number of items in a dozen, he said:

A: /pāc -- dahā —- bārā/

B: Five   Ten   twelve.

The two words /pāc, dahā/ were spoken very softly and/aphasic
subject appeared to be counting aloud as he approached the target
word.

Extraverbal Choices:

1) <u>Gestures:</u> Iconic gestures were used more frequently than non-
iconic gestures. But on the whole, very few gestures were used
by the subject, which are as follows: Pantomimes (eg.i)) Gestures
indicating numbers (eg.ii); Noniconic specific gesture (eg.iii).

eg.(i) During subtest IV (C), Word Completion, when he was asked
to complete the Marathi equivalent of the sentence 'Sugar is —-',
he gestured with forefinger and thumb of right hand, rubbing against
each other as if he were passing grains through his fingers. And
he said: A: /bārīk/

        B: Tiny.

Here, this gesture supported speech.

eg.(ii) During subtest I(7), when he was counting the balloons
verbally, he also indicated the number on his fingers. Here too,
gesture supported the verbal output.

eg.(iii): In subtest I(7), as he described each aspect of the picture, he would point it, and then move on to the next aspect, systematically. This supported verbal output, in that, the listener had a clue as to what the subject was attempting to describe even if the verbal output was unclear.

Gestures were observed such as shaking or moving of hands as in normal conversation. They were not information carrying. Gestures were used in this subject to support speech.

2) Facial Expressions: These were observed:

i) When subject was not able to find a suitable word, or wanted to elaborate the utterance and was groping for a word, he would close his eyes and think.

ii) If he was not successful in finding a particular word, or could not convey his intent to his listener, he would knit his eyebrows and make a facial grimace in an expression of his frustration.

3) Intonation: This was relatively well-preserved. Apart from characteristics observed in normal intonation, in this subject, intonation was used for a variety of reasons:

- To convey differential intent in same utterance in different contexts (eg.i);
- To use rising tone to convey the interrogative nature of one word utterances (eg.ii);
- As an indication that subject has identified his error and is attempting to correct himself eg(iii).

eg.(i) The same utterance /ã/ used many times throughout the sample, was used to convey a range of meanings. When accompanied by rising tone, it would be used to query, voice a doubt, or to ask for repetition, whereas the utterance when accompanied by a falling tone was used to state agreement.

eg.ii) In subtest VI, when subject asked questions of his conversational partners, he said only one word which because of its rising tone indicated its interrogative nature.

eg. A: /ńāv /   ;   A: /bhāu/

   B: Name?   B: Brothers?

eg.iii) This has been illustrated in eg.(i) in Self-corrections. Thus intonation was used to convey information.

Of the choices made by subject, Repetitions among the verbal; Gestures and Intonation among nonverbal, were used maximally. Gestures were used to support speech.

C) Effects the subject's use of language has upon his listener:

Subject conversed with his friend who had accompanied him.

a) Relative Dominance of Speaker:

The subject and his friend, who served as his conversational partner, both had 19 utterances each. The friend had 3 morphemes/utterance, while the subject had 2 morphemes/utterance. The friend initiated the conversation.

b) Turn-taking:

Both the aphasic subject and his conversational partner took

one turn each. The friend had 12 utterances/turn, while the aphasic had 8. They did not take turns as normals do. The nonaphasic partner asked all the questions initially and the subject initiated speech only when he was told to.

c) Topic Maintenance/Switching:

No shifts in topic were observed, but the focus within the topic was shifted altogether 16 times; 9 times by the nonaphasic partner and 7 times by the subject. The shifts initiated by the aphasic subject were appropriate.

d) Communication Breakdowns:

They were observed twice and both times the aphasic subject was responsible for the breakdown. Once he could not respond adequately and effectively to the question asked. The second time he was not able to initiate the conversation when he was told to. On both occasions the 'save' following the breakdowns were carried out by the conversational partner.

e) Another feature observed in this case was the difference in the formulation of questions. The aphasic subject would ask contracted forms of similar questions previously asked by his conversational partner. Only the rising tone would give an indication about the interrogative nature of subject's utterances.

f) Conversation could not be sustained for a length of time probably because of the structured situation and the artificiality of the Conversational situation.

The nonaphasic conversational partner was observed to take an active role in the conversational interaction and was the dominant speaker. He took into account the subject's linguistic constraints and attempted to simplify his questions so that the subject would have less difficulty.

This subject was seem to have moderately severe Linguistic constraints and to overcome these,he used verbal choices more frequently than extraverbal choices. Repetitions and Self-correc-tions occurred most frequently as verbal choices, and Gestures and Intonation were used most frequently as/verbal choices. Gestures were seen to support speech. The subject was seen to take a passive role in the conversational interaction was respon-sible for breakdowns, initiated conversation only when asked to, and his nonaphasic conversational partner was seen to be sensitive to his linguistic constraints and simplified utterances till he encountered no difficulty.

<u>Case 4 : B.A:</u> (Tested in Hindi)

A) <u>Linguistic constraints encountered in the subject's use of</u>

  <u>language:</u>

Subject's verbal output was very limited and speech by itself, was not effective for meaningful communication.

1) <u>Phonological Constraints:</u>

Only substitution type of errors were observed.

2) <u>Syntactic Constraints:</u>

Very few of the phrases and sentences which the patient uttered were syntactically correct, except those he used frequently such as: A: /patā nahi/

   B: Know   donot

   C: Donot know.

   D: Don't know.

Errors were observed in certain syntactic features, such as: Participle constructions: Sentence types; and Predicates. Communicative effectiveness decreased because of the incorrect syntactical structures, which also resulted at times in unclarity of meaning.

3) <u>Semantic Constraints:</u>

Few errors were observed in his diminished verbal output.

This subject's verbal output itself was diminished, but of the errors seen in speech, syntactic errors were maximally observed.

B) <u>Choices made by the subject to overcome these linguistic</u>

<u>constraints</u>:

<u>Verbal choices:</u>

1) <u>Repetitions</u>: They were observed at the level of word occa-
ssionally. The Repetitions were much more frequent at the phrase
level. It was observed in this subject that a few phrases would
be frequently repeated.(eg. i).

eg.i) Mostly when he was asked a question he would say:
A: /mālum nahi/ or /patā nahi/ or /ātā nahi/

All 3 mean the same 'Don't know'.
When asked to describe the picture, in subtest I(7) he would
repeat the above phrases.

2) <u>Self-corrections</u>: Only one attempt at Self-correction was
observed which was successful.
eg(i) During subtest VII, he was shown the pack of cards, given the
prompt: A: /khelt hãi/
        B: playwith it.
He was then asked what they were. He said:
A: /khe --- khe — pattā nā/
B: -   -   Cards, no ?
He started repeating the testers utterance which served as a prompt
to him.

     In this subject, the verbal choices made to overcome the
constraints observed in speech, were not effective enough to have
a meaningful communication interaction.

Extraverbal Choices:

1) <u>Gestures</u>: Most of the subject's meaningful communication was carried out through the use of gestures. A lot of gestures were observed in his speech. Iconic gestures exceeded the number of Noniconic gestures. Former were comprised of Emblems eg.(i); Pantomimes eg.(ii); and Gestures indicating numbers eg.(iii). The Noniconic gestures comprised of Specific gestures eg.(iv) and General gestures eg.(v).

eg.(i) In subtest I(7) he identified his mistakes and laughed and shook his head as if to indicate that he was wrong.

eg.(ii) In subtest IV (A) When he was shown the comb, spoon, cup, ball and mirror, he didnot verbally name them but gestured appropri ately the function or characteristics of speech. Thus, Pantomimes were used by subject to substitute speech.

eg.(iii) During subtest VII, when he was asked how many people play a particular card-game, he pointed to four places indicated number 4 on fingers to indicate the number of participants.

Thus, gestures to indicate numbers were used to substitute speed

eg.iv)These gestures were used to support or substitute speech. During subtest I(6) when asked about his problem he said:
Ai /ek   do   tīn——ye   ye   purā/
B: One two three   this this   full.
He accompanied this, by pointing towards his entire right side, hands and legs and conveyed the information that his problem involved the right side functioning of his body. Thus, he supported his verba output.

- Then in subtest IV(A) also, when he was asked to name the bulb, he looked upwards to convey the information that it usually is fixed there. Here it was a substitute for speech.

eg.(v) In subtest V, he pointed   to the picture of the mouse and looked down on the floor and indicated that his concept about the mouse was intact.

The subject was observed to communicate meaningfully through the use of gestures whereas little meaningful communication took place using only spoken speech. Gestures either supported his limited speech or substituted it. It was observed that gesturing was maximum during the object naming subtest IV(A) and effective, but when the subtests became more complex requiring more elaborate speech such as story Narration or Conversation with tester/conversational partner, then few Iconic gestures were observed. Thus when complexity of communicative task increased, even gestures failed to render effective and meaningful communication.

2) Facial expressions: They did not carry any information. No facial grimaces, etc. were observed.

3) Intonation: Besides, some of the characteristics of normal intonation, when subject seemed to be aware of the inadequacy of his verbal responses, his utterance would be accompanied by a rising tone to convey that his utterance was incomplete and he wanted it to be followed by appropriate and relevant speech.
He would say the following utterance throughout his speech sample.
A: /ýe⎯ýe--–   ýe/
B: This   this   this.

Extraverbal choices, particularly referential gestures
played a major role in overcoming linguistic constraints and
Pantomimes conveyed a lot of information. Gestures substituted
and supported speech.

C) Effects_the_subject's_use_of_language_has_ugon_his_listener:

The subject conversed with a student subject could not
communicate effectively inspite of the familiarity of the topic
which rewoled around his family.

a) Relative Dominance of Speaker:

The number of utterances were not significant injudging
the dominance, as the nonaphasic partner had 26 utterances while
the subject had 25. But whereas the former had 4 morphemes/
utterances the latter had only morpheme/utterance and the responses
were mostly monosyllabic. Thus, the nonaphasic conversational
partner was the dominant speaker.

b) Topic Maintenance/switching:

The topic was shifted twice, both times by the nonaphasic
participant.

c) Turn-taking:

It was a totally one-sided conversation, when turn-taking was
considered, as the subject did not take his turn at all during the
whole span of the conversation.

d) Communication Breakdown:

This subjects verbal output was severely affected and this was also exhibited through his poor abilities in conversing. There were in all 8 breakdowns where he would generally produce the same monosyllabic response: A: /ye   ye/

B: This this.

All the 'saves' verbal in nature were carried out by the nonaphasic partner. When the breakdowns occurred, the nonaphasic partner would either modify the question, or repeat the question. If the subject still did not respond, she would move on to some other question which mostly was a shift in focus within the same topic.

e) As a result of this, another feature was observed, that, because of the breakdowns, the questions would be simplified to such an extent that finally they would require only monosyllabic responses.

The conversational interaction, was observed to be totally onesided, where the subject would not initiate or sustain conversation, and would respond to monosyllables and the entire responsibility of the conversation lay with the nonaphasic oonversational partner.

This subject had severe linguistic constraints and his verbal output was very limited, but errors identified were predominantly syntactic in nature. Extraverbal choices exceeded the verbal

choices, in attempting to overcome these constraints. Eventhough gestures were not used so extensively as to overcome his constraint completely, they occurred more than the other choices. The subject could not communicate effectively in conversational interaction and his responses were monosyllabic. The responsibility of the conver-sation lay with the nonaphasic speaker.

Case 5: A.A. (Tested in Hindi)

A) Linguistic Constraints Encountered in the subject's use of language:

1) Phonological constraints:

Phonological errors comprised most of the errors in the subject's speech. Speech was indistinct and unclear in many instances. Speech was slurred to a certain extent and is slightly nasalized. Errors of substitution (eg.i) and omission (eg.ii) were most frequent. PermMtational errors were also seen (eg.iii).

eg.i) In subtest 1(4) when he was telling his address he said:

A: /aekado   aekado   aeka o qo/

The target word was 'Station Road'. Thus all the consonants of the target word were substituted.

       also
So/shown in subtest I(7) he said: A: /andun/—->/angur/(Target word)

                                  B: -   grapes.

In subtest V he said:

A: /kurā/——>/chuhā/   (Target word)

B: -   mouse.

eg.ii) In subtest I(7) he said:

A: /ek   āmi/——>/ek   ādmi/   (Target word)

B: One -   One man.

- So also, A: /buk hau/——>/buk   haus/   (Target words)

          B: Book -   Book house.

Here the consonants from target word are omitted in the subject's utterances.

eg.iii) The position of phonemes were interchanged. In subtest

VII he said: A: /kaemar kaemar   kaeram/

                B: -   -   Carrom .

In this instance he corrected himself.

2) Syntactic constraints:

The syntactic errors were less compared to the phonological

errors. Errors were observed in the following features: Casemarker

participle constructions; PNG markers (person); and predicate

structures. Syntactic errors also led to semantic ambiguity.

3) Semantic constraints:

No pure semantic errors were observed in this subject.

Phonological errors exceeded the syntactic errors in this subje

The latter affected semantics but no pure semantic errors were

observed.

B) Choices made by subject to overcome these linguistic constraints.

Verbal choices:

1) Repetitions: They were a common and frequently occiaring feature

in the subject's speech and were observed at the syllabic level, word

level and at phrase level. They were used for different reasons and

were observed to occur as:——indication of the fact that subject had

identified his error;—— attempts at self-corrections following identi

fication of phonological errors;-- fillers-in;— device to stress on

emphasize the utterance.

2) Self-corrections: The strategy for self-correction through modifi-

cation and repetition of utterance was observed primarily and most

frequently at the level of phonological errors and occasionally
self-corrections were observed in case of syntactic errors, or
semantic errors.

eg.i) In subtest IV(A) he said:

A: /hāvrā havrā hātorā hātodā/

B: -   -   -   Hammer.

Another example has been stated in eg.(iii) of phonological constra
Here the phonological errors has been self-corrected.

eg.ii) In subtest I(3) he said:

A:/mae mae merā nām hai abdullā/

B: I   I   my name   is   Abdullah.

Here the subject has corrected the syntactic structure.

eg.iii) In subtest I(7) he said:

A: /ek ladki buk dekh rahi hai -- ek ladki buk le rahi hai/

B: One girl book looking is   - —one girl book taking is.

C: One girl is looking (at a) book-- one girl is taking (the) book.

Here the subject has replaced a word from previous utterance which
changes the meaning.

Repetitions and Self-corrections were seen to occur as choices
to overcome constraints through the sample and latter occurred more
in instances of phonological errors.

Extraverbal choices:

1) Gestures: Iconic gestures were used more frequently than noniconi<
gestures. In the Iconic type of gestures, Emblems eg.(i) and
Pantomimes (eg.ii) were seen- In the noniconic type of gestures.
Specific gesture was used.eg(iii).

eg.i) In subtest IV, he would ask a question to his conversational partner and then acknowledge her reply with a nod. Here he did no1 accompany the gesture with the verbal response to acknowledge the reply. So here, gesture was used to substitute speech.

eg.ii) Pantomime was used to support speech as in subtest IV(A), illustrated in eg.(i) of Self-correction, when he was shown the hammer, wheredhe gestured the use of hammer by rising his fist and then sharply bringing it down, to accompany his utterance.

Or it was used as a substitute for verbal output as in subtest VII when he was asked how Carrom was played he madea gesture with his thumb and index finger and flicked it as if he were striking to hit acoin and said: A: /aise/

                     B: Like this.

eg.iii) In subtest IV(D), he was asked what he used to tell the time he pointed to his watch as he said: A: /ghadi/

                              B: Watch.

Thus here speech was accompanied by gesture.

Though gestures were not used frequently, from those observed iconic gestures exceeded noniconic gestures. They were used as extraverbal choices to substitute as well as support speech.

2) <u>Intonation</u>: Besides the characteristics that are also present in normal intonation pattern, the following feature was observed in Subject's intonation.

- Rising tone accompanied the subject's utterance to indicate that he wanted to elaborate his utterance further and that he was groping a word.

eg.in subtest VI, the subject said:

A: /áur toŕā toŕā toŕā toŕā bhāi/

B: And ─(Younger-4 times brother.
        (incorrectly
         pronounced)

In subtest VII when he was asked what was necessary to play carrom,

he said: A: /bord bord aur ko ko ko/

        B: Board board and co co co.

Here he was groping for the word 'coins' and the rising tone seems
to indicate this.

Thus intonation carried information.

In this subject, use of verbal choices deeded the extraverbal
choices. In the formed Repetitions and Self-corrections were used
and in the latter, Gestures and Intonation were used. In Gestures,
Pantomimes were used maximally.

C) <u>Effects, the subject's use of language has upon his listener:</u>

The subject conversed with his wife.

a) Relative Dominance of Speaker:

Both speakers appeared to be equally dominant. The subject had
38 utterances while the wife had 34. But a lot of the subject's
utterances were monosyllabic such as /h / which were used to acknow-
ledge a reply from his wife to his question. The wife had 4 morphen
utterance while the subject had 3 morphemes/utterance.

A feature that was observed in this subject was that, when they were
asked to converse, he took the initiative and started asking question
to his wife.

b) Turn-taking:

It was not as it takes place in normals. They did not exchan<
roles so frequently. Initially the subject asked the questions an<
only when he finished, the wife took her turn and initiated the
questions. Thus both took one turn each.   The number of utterance
turn differed. The subject had 20 utterances/turn while his wife
had 12.

c) Topic maintenance/swiitching:

Both the aphasic subject and his wife did not shift the topic
but only the focus within the topic. The wife shifted the focus
12 times whereas the subject did so 8 times.

d) Communication breakdown:

When the subject finished asking questions he said: A:/h hm/

                                                    B: OK HM.

This was said with the following tone as if handing over the 'Conver
sational ball' to the wife. She took up from there and started asking
questions thus preventing a breakdown. Also when the subject replie
to questions asked by his wife, if there was a pause before he was
asked the next, he would say: A: /h aur/

                             B: OK and--.

Thus he would prompt his wife to continue the conversation. Thus
no breakdown were seen.

e) Another feature that was observed was that when the patient would
make a phonological error, wife would correct the utterance and then
repeat it.

eg. When she asked him where their son had gone, he said:

A: /kode kode/

B: College (incorrect pronunciation).

She repeated: A: /kollez gayā/

                 B: College has gone to?

                 C: Has gone to college?

This was also seen when the subject's utterance was incomplete, which she would complete.

Though the subject was the recessive conversational partner he nevertheless was able to function in the interaction. No break-down were observed. His wife was observed to correct his errors through her speech.

Among the linguistic constraints, phonological errors exceeded syntactic errors. Erros in the latter led to unclarity of meaning. The subject used verbal choices such as Repetitions and Self-correct more than extraverbal choices such as Gestures and Intonation. The subject participated in the conversational interaction with his wife and prevented breakdowns by prompting the partner to initiate the conversation.

Case 6: P.P (Tested in Marathi)

A) Linguistic constraints encountered in the subjects use of language:

1) Phonological Errors:

Many phonological errors were observed in the subject's speech which were of the types substitution, addition and permutation. Of these, the substitutions were observed most frequently.

2) Syntactic constraints:

These comprised the maximum linguistic constraints and errors were observed in the syntactic features ennumerated: Morphophonemic structures; Case markers; Plurals, Sentence types and Predicates. Maximum errors occurred in sentence types.
The incorrect syntactic structures frequently masked the meaning of the utterance.

3) Semantic constraints:

Few semantic errors were seen as compared to phonological and syntactic errors, (eg.i):
eg.i) During subtest V Story Narration she said:
A: /undir jāla tākūn basto/
B: Mouse   net having thrown sits.
C: Mouse having thrown net sits.
D: Mouse sits after having thrown net.
Here, in the story it is the hunter who has set the trap and the mouse who comes to the lion's rescue. So, the meaning is affected in the subject's structure.

Thus, syntactic errors were most frequently observed among linguistic constraints and among phonological errors, errors of substitution were most frequent.

B) <u>Choice made by subject to over come these linguistic constraint</u>

<u>Verbal choices</u>:

1) <u>Repetitions</u>: They were observed only at the word level. They were used as: fillers-in; indication that subject wants to elaborate the utterance further and also as indication of identification of mistakes and techniques for self-correction.

2) <u>Self-correction</u>: The subject attempted Self-correction through repetition and modifications of incorrect utterances.

3) <u>Pauses</u> were observed many times throughout the sample and they were used to gain time as the patient groped for words.

<u>Extraverbal choices:</u>

1) <u>Gestures</u>:

a) <u>Iconic Gestures</u>:

- Emblems: The type of Emblems that were observed were nodding of head to affirm speech? shaking head to indicate that she did not know, or that she could not formulate an appropriate reply? or facial grimace associated with movement of left hand to indicate that she did not know. Emblems were observed to support speech.

- Pantomimes: They were observed to serve the functions of supporting speech eg(i) as well as substituting speech eg.(ii).
eg.i) During subtest IV(A), when she was asked to name the hammer, she said: A: /tivdā / -----> /hātodā/ (Target word)

She identified her utterance as incorrect and supported her speech by demonstrating the use of hammer.

eg.ii) During subtest I(7), to indicate that the man was frying, she extended her right hand, with palm cupped, facing upwards, and moved it up and down and demonstrated the action6f frying. Here it served as a substitute for speech.

- Indicating numbers through gestures: This was used to support speech and was used occasionally.

b) Non-Iconic gestures;
- Specific: This gesture used occasionally was used to support subjects verbal output.

- General: This gesture too, was used occasionally and served the function of supporting speech.

c) Other gestures:

While speaking she would move her hands,at times, hold it near her chin, Onceduring subtest VI, she interwined her hands, as thoug she were nervous or tense, when she could not reply to a question asked.

2) **Facial Expressions:**

Frequently, she was observed to have a puzzled or confused expression on her face as though the best items confused her. Facial grimaces were observed when she could not answer appropriately. She also, smiled if she identified the error she had made.

Thus in this subject, iconic exceeded the noniconic gestures, and most of these were Emblems. Gestures were used mostly to suppo: speech and rarely ax a substitute for it.

There were instances where use of gestures would have clarified the meaning but were not used.
eg.(i) In subtest I(6) when she was asked why she had come, she said
A: /batyātkari āktāy batātari āk ti ālav/
The entire phrase was meaning-less but no gestures were used at this junction to clarify her intent. Also in the situations where incorrect syntax led to semantic errors,or in case of pure semantic errors, gestures were not used for clarification. So also gestures were not used to fill in the omissions in speech, such as in subtest V, she did not speak about the second picture about lion threatening to eat the mouse.

Thus gestures ware used more to support existing verbal output but rarely to substitute for it.

3) **Intonation:**

Most characteristics of normal intonation patterns were well-preserved.Besides these, intonation patterns were used as: indicatio that the subject wanted to elaborate her utterance further; with the rising tone at the end of utterance; indication that utterance was incomplete, with a rising tone, and that utterance was complete, wit] a falling tone and when she was unsure of her utterance, with a fall tone, spoken with low intensity.

The subject's characteristic intonation pattern was a sharp rising and sharp falling tone within a single utterance or two word utterances.

Among the choices used by this subject, extraverbal exceeded the verbalvQestures exceeded the other extraverbal choices. Iconi< gestures were used more frequently than noniconic, specifically the Emblems and Pantomimes which were used to support, speech and occasionally to substitute.it.

C) **Effects the aphasics use of languagehas upon her listener:**

The subject conversed with her husband who accompanied her.

a) Relative Dominance of speaker:

Both the subject and her husband had 25 utterances each, but even so, the latter was the dominant speaker as he had 5 morphemes per utterance whereas the subject had 2 morphemes/utterance.

b) Turn-taking:

It was observed that this conversational interaction was totall onesided when turn-taking was considered. The aphasic subject did not take any turns, and the conversation was initiated by the non-aphasic partner throughout.

c) Topic Maintenance/swictching:

The 4 topic shifts observed were done by the nonaphasic partner and within topics, there were many shifts in the focus.

d) Communication breakdown:

 3 Breakdowns were observed. In all 3 cases, it was the subject

who was responsible for it as she could not initiate the conversa-
tion, was not able to reply effectively to a question asked to her.
The 3rd time, even the nonaphasic conversational partner did not
sustain the conversation and only when prompted by tester that some
time was still left, he again initiated the conversation. All the
3 saves following breakdowns were done by the subjects conversation!
partner.

Thus the nonaphasic conversational partner, in this case the
subject's husband, was the dominant speaker in all the features
analysed in their interaction.

In this subject to overcome the linguistic.constraints compris-
ing mostly of syntactic errors, extraverbal choices, particularly
iconic gestures were used. Pantomimes and Emblems were used to
support speech primarily and also to substitute it. In the
conversational interaction, owing to the linguistic constraints, it
was the nonaphasic conversational partner who initiated and sustains
the flow of conversation.

Case 7: A.G (Tested in Marathi)

A) Linguistic_constraints_encountered_in_aghasics use of language:

1) No phonological constraints were observed in terms of substitu-
   tions, omissions, etc, and though his speech had a slight slurre
   quality, it was intelligible.

2) Syntactic constraints: They comprised most of the subject's
   linguistic constraints andeerrors were seen in Casemarkers; PNG
   markers; Tenses; Predicates; Sentence type and Conjuctives.

3) Semantic constraints: Few semantic errors were observed through-
   out the sample.
   Syntactic errors formed the bulk of the linguistic constraints,
   but even so, they were lesser than in the other subjects and this
   subject was observed to have relatively milder linguistic
   constraints.

B) Choices_made_by_the_subject_overcome_linguistic constraints:

Verbal choices:

1) Repetitions: They were observed at the level of the syllable,
word and phrase, but infrequently. They were not used for a variety
of reasons as in the other cases.

2) Self-correction: Few self-correctional attempts were observed,
in the form of repetitions or modifications of the spoken utterance.

3)Language shifting: A lot of English words/occasionally Hindi words
                                                                  and
were observed to be used when the subject had word finding difficulty

and could not find an appropriate word in the language be was being tested in, that is Marathi.

Extraverbal choices:

1) Gestures:- Few gestures were used throughout the interactional sample and it was observed that the subject could convey information to the listener without resorting the gestures.

No referential gestures were observed throughout the sample, and only gestures such as moving hands etc, such as accompany normal conversation were observed.

2) Intonation:- Besides the normal characteristics of the Intonatio pattern that were observed, it was observed that, in this subject, the same monosyllable would be used as an interrogative or as an utterance indicate agreement with the speaker, by a /discriminative use of rising and falling tone respectively.
eg. In subtext VII, subject would say /Hm/ with the rising tone (as indicated), when he wanted the tester to repeat, or when he did not comprehend her utterance, when he said /Hm/ with a falling tone, this indicated that he agreed with the tester's utterance.

So also, rising tone was used by subject to indicate that his sentence was not complete, and that he wanted to elaborate his utterance further.

In this subject since the linguistic constraints were relativel mild, few choices were made understandably, to overcome them. From the choices made, verbal choices exceeded the extraverbal.

C) Effects_the_subjects_use_of_language_has_upon his listener:

The conversational interaction was between the aphasic subjec and his friend who had accompanied him, who became the conversation partner.

a) Relative Dominance of speaker:

The aphasic subject had 12 utterances while his conversational partner had 11. The mean number of morphemes per utterance was 3 each.

Thus there was not much difference between the performance of the aphasic and nonaphasic. This could also be due to the fact that the ponaphasic partner appeared self-conscious audillate-ease. In the case of the aphasic, factors such as language recovery and familiarity of topic could have played a role.

b) Turn-taking:

The monaphasic partner took only one turn whereas the aphasic subject took two turns in the brief span of their conversational exchange. The turns taken by the aphasic were verbal in nature.

The number of utterances per turn was 5 each.

c) Topic Maintenance/switching:

Topic was retained, but the focus was shifted within the topic by both the aphasic and his nonaphasic partner, and these were appropriate in nature.

d) Communication Breakdowns:

Two breakdowns were Observed, and in both cases it was the nonaphasic who was responsible for it. The one 'save' that was observed was carried out by the aphasic and was verbal in nature. The conversation lasted for a very short duration.

Thus, this aphasic subject was seen to have relatively few linguistic constraints, and the choices he made to overcome these were primarily verbal innature. He could participate effectively in a conversational interaction with a nonaphasic person and infact was observed to perform better than him.

Case N0.8-V.T: (Tested in Marathi):

(A) Linguistic_Constraints_encountered_in_the_subject's use of Language:

1) Phonological Constraints:

Substitution of phonemes was the only type of phonological errors that was observed frequently throughout the subjects speech sample.

2) Syntactic Constraints:

Again, .they were observed to the maximum extent among the linguistic constraints. Syntactic errors were seen in the following syntactic features - Tenses; PNG markers; Participle
But
Constructions and Predicates, /these errors were few when compared to other subjects both with reference to the types of features affected and the number of errors in each.

3) Semantic Constraints:

Very few semantic errors were observed. Thus, in this subject, though the syntactic constraints exceed the others, overall, very few linguistic constraints were observed.

(B) Choices_made_by_the_subject_to_overcome_these_linguistic_constraints:

Verbal Choices:

i) Repetitions: Subjects speech was characterised by the extensive use of repetitions at the level of sound, syllable, word and phrase.

Repetitions were used when the subject wanted to emphasize his utterance, when he was ensure about his utterance, when he wanted to elborate his utterance. Further and was groping for words, and when he wanted to correct his utterance having identified his error.

ii) Self-Corrections: He made attempts at self-correction through repetitions and modifications of his previous utterances and all of these attempts were not successful.

iii) Pauses: He used pauses throughout the conversational sample, to gain time, as he was groping for words. Among these,repetitions were used most frequently.

Extraverbal choices:

1) Gestures: Few gestures were observed throughout the sample and this could be due to the fact that subject could effectively convey meaning through speech alone.

Iconic Gesture:

Pantomime: was the only iconic gesture used in one occasion, and it supported speech.

Non-iconic gesture:

General gesture was used once to support speech.

Other gestures: He was observed to use gestures such as those that accompany normal conversation which were eye movements. While thinking? movements of head while speaking, moving fingers of both hands.

Thus in this subject, gestures were few in number and were used to support speech and accompany it, but not as a substitute for speech.

2) No facial expressions were observed to carry information.

3) Intonation: Besides the normal well-preserved characteristics of intonation pattern. They were also used to indicate that the subject wanted to elaborate his utterance further and clarify it.

In this subject, verbal choices, particularly repetitions were used to a great extent and exceeded the extraverbal choices, the latter, referential gestures were rarely observed.

(C) Effects_the_subject's_use_of_language_has_upon_his_listener:

The subject conversed with his son who had accompanied him to the hospital.

a) Relative Dominance of Speaker: The number of utterances for the son was 16 and for the subject 19. The subject and his son, who served as the conversational partner, both had 4 morphemes per utterance. The aphasic subject was observed to have initiated the conversation.
Here the dominant speaker was the subject himself.

b) Turn-taking: The nonaphasic conversational partner took 9 turns during the conversation, while the subject took only 5 turns. So also, the conversational partner had a mean of 3 utterances/turn, whereas the aphasic subject had 2.

All the turns were verbal in nature.

c) Topic Maintenance switchg: The 6 topic shifts that were observed were done by the non-aphasic partner, when he took turns in the conversation. Although the subject took turns, he only shifted the focus within the same topic and these shift were appropriate.

d) Communication Breakdown: These were 4 breakdowns in the communication. Thrice the non-aphasic partner 'saved(the conversation. The fourth break in conversation ended the interaction and conversation was not revived.

Thus, though considering the number of utterances and the number of morphemes par utterance indicated the aphasic subject to be the dominant speaker, but later on when the characteristics such as furn-taking, topic switching and 'saves' following breakdowns, were considered, it was the non-aphasic who took the active role in sustaining the conversation.

This subject had mild linguistic constraints, and he used verbal choices and specifically repetitions to overcome them. Extraverbal strategies were used to a much lesser extent, and the gestures observed supported and accompanied speech. Although communication could be carried out effectively between the aphasic subject and his nonaphasic partner despite the aphasics mild linguistic constraints, the more active role was taken by the nonaphasic partner.

Case 9: A.K **(Tested in Hindi)**

A) **Linguistic constraints encountered in the subject's use of**
   language:

   Severe linguistic constraints were observed in this subject's
Conversation sample. It was observed that though the subject
verbalized a great deal, few utterances, even so, were relevant
to the context. There was a small number of single meaningful
words. Little meaningful speech was present.
At his target utterances themselves were unidentifiable, his Phono-
logical constraints could not be identified. So also Syntactic and
Semantic errors though present could not be identified. His intent
was not clear in his utterances.

   The predominant characteristic observed in his speech was
Perseveration. A few phrases and sentences were repeated over and
again. When the questions put forth to the subject concerned his
immediate environment as in subtest I(1-6), he replied relatively
correctly and relevantly, and in the midst of his utterances, the
tester could given his intent. But when the response required longe
sentence constructions, he had severe constraints,
eg. in Subtest 1(7), though he verbalized extensively the only
relevant words that were identified were:
A: /aurat/; /ladki/; /kapdā/; /dukān/
B: Lady ; Girl ; Cloth ; Shop.
These words were inthe midst of perseverative responses. The phrase;
and sentences he repeated mostly were as follows.

i) A: /dimāg m   hai vo/

   B: Brain   in is there that.

   C: In brain, that is there.

   D: That is there in brain.

ii) A: /rasullā   kyā   bāt   hai/

    B: Muslim prophets name   what matter is.

    C: Rasulla, what is (the) matter?

But here there was no pause between the 1st and 2nd word,

iii) A: /dukān se/

     B: Shop   from.

     C: From shop.

iv) A: /kaunsibhi   bāt   hai/

    B: Whatever matter is.

    C: Whatever is matter

    D: Whatever be the matter.

v)   A:/Kyā   hai/

    B: What   is

    C: What is (it)?

It was observed that this subject had severe linguistic constraints,
to over come which he used gestures mainly.

B) Choices made by the subject to overcome these linguistic contraints:

<u>Verbal choices:</u>

1) <u>Repetitions</u>: They were observed at the level of syllable, word,
phrase and sentence. They were in the form of perseverative respons

and constituted most of the subjects speech sample.

2) <u>Self-correction</u>: They were seen infrequently. When the subject did attempt Self-correction it was through modification of the utterance and reached the target word.

3) Another strategy observed in this subject's sample, was that the would indicate the nature of the referent through the sounds it mad to convey information. This was seen in subtest V where he was observed to make a loud deep rumbling sound to indicate the roar of the lion and made soft /chuchu/ sounds to indicate the mouse sequeking. Thus through one of the characteristics of the referent he would explain its nature.

In this subject. Repetitions, which were perseverative served no purpose in carrying information. The other two choices made by him were infrequently used and hence the verbal choices did not play a major role in overcoming the linguistic constraints.

Extraverbal choices:

1) Gesture: In this subject a lot of gestures were used throughout the speech sample which substituted or supported speech. Most of the information was conveyed and meaningful communication was carrie< out through the use of gestures.

a) <u>Iconic Gestures</u>:
- Emblems - The subject would used his Read to indicate affirmation and shake his head to indicate negation. Emblems were used to accom-pany speech.

- Pantomimes: They were used maximally as an extraverbal choice, by the subject, to substitute speech, or accompany the perseverative speech, or accompany the perseverative responses which were not relevant to the context.

They were observed mostly during subtest IV(A), 1(7) and V. eg. in subtest V, he pointed to the picture of lion, sat back in bis chair and made a fierce expression of his face. This was accmpanied by a roaring sound which referred to the lion. Then he gestured as it something small, made /ch ch / sounds along with the gesture to refer to the mouse.

- Indicating numbers through gestures:

This gesture was used to support speech and was not used as extensively as pantomimes.

B) Noniconic gestures:

- Specific: There gestures were used to substitute speech, and also to support it.

- General: This gesture, observed only on one occasion was used to support speech.

c) Gestures were observed such as he would touch his hand to his forehead while speaking, or would move hands and/or fingers. There gestures which accompanied speech did not carry information.

2) Facial Expressions:

He conveyed information through his facial expression, as in subtest V when he pointed to the picture which showed the lion

threatening to eat the mouse, he expressed anger on his face and conveyed the information that lion was angry. Then in the last picture he expressed a happy look on his face to convey the information that lion was happy because he was get free: These facial expressions substituted speech, and accompanied the verbal output which was not relevant to the context.

3) Intonation:

Though certain normal characteristics of intonation were preserved, the subjects intonation pattern did not provide any information other than what was conveyed through speech.

In this subject, among the choices made to overcome linguistic constraints, it was the extraverbal choices which carried information over and above the speech, particularly. Pantomimes, Facial expressions, too conveyed information, tut Intonation patterns did not.

C) Effects_the_subject's_use_of_language_has_upon_his_listener:

The subject conversed with his wife. Who served as the conversational partner.

a) Relative Dominance of Speaker: The nonaphasic conversational partner had 30 utterances while the subject had 28. Both the subject and his partner had 5 morphemes for utterance. Though the subject's number of utterances and mean length of utterance were almost same, his utterances had little or no relevance to the questions asked. His responses were incorrect and perseverative. Thus the nonaphasic partner was the dominant speaker.

b) Turn-taking: No turns were taken by the subject. He responded to the questions asked to him, but rarely appropriately. His conversational partner initiated all the questions and sustained the conversation.

c) Topic Maintenance/switching: There were no shifts to topic. The subject's wife. Only asked him questions regarding their family, particularly pertaining to names of family members. Thus there were only shifts in focus within the topic.

d) Communication Breakdown: No breakdowns were observed in terms of lengthening pauses in the course of their conversation. But it wag not a normal interaction. Most of the subject's replies were irrelevant and perseverative. His conversational partner would the: ask another question and continue the conversation. But she was not observed to correct his incorrect utterances through her speech and would ask other questions irrespective of whether the replies to them were appropriate or not.

But of his replies were correct appropriate, she would nod her head encouragingly. The conversation was one-sided interms of turn-taking, and the nonaphasic speaker was dominant, and took an active role in the interaction.

The subject was observed to have severe linguistic constraints, his speech comprising mainly of perseverative responses, which carried little information. He was thus seen to use extraverbal

choices, particularly pantomimes to substitute or accompany speech. The subject could not participate affectively in conversational Interaction and took a passive role, and let the nonaphasic speaker take the lead.

Case 10: S.R: (Tested in Hindi):

(A) Linguistic_constraints_encountered_in_the subjects use of language:

1) Phonological Constraints:

Phonological errors were mostly of substitution type and few were of omission type.

2) Syntactic Constraints:

Syntactic errors which comprised most of the subject's linguistic constraints were seen to occur in the following features - PNG Markers, Case markets and Sentence types. Maximum errors were seen of sentence types.

The subject was also seen to use direct speech during story Nattation, that is he used first person while narrating what the mouse said to the lion and vice versa.

Syntactic errors were also seen to mark the meaning of the utterances.

3) Semantic Constraints;

Few semantic errors were observed in the sample where for target words, he substituted other words from the same lexical category.

(B) Choices made by subject_to_overcome these linguistic_constraints:

Verbal Choices:

I) Repetitions: They were observed at the level of the syllable, word, phrase and sentence. Repetitions were observed when the subject wanted to elaborate his utterance and was groping for the appropriate words; as fillers-in, that is, to fill in the pauses when he was experiencing word-finding difficulty, and repetitions were used when he identified his incorrect utterances and attempte to correct them.

ii) Self-Corrections: These were observed extensively throughout the sample, but mostly his self-corrections aimed at correcting the phonological errors,and occasionally syntactic and semantic errors. He was observed on one occasion to correct his utterance where he had used a word from a language different than the one he was being tested in eg. in subtest VI, he said:

A: /kitnā ho gayā, duddu-— paisā/

B: How much has become/money   money .

                        in kannada) (Hindi)

C: How much has the money become?

D: How much money has been collected?

iii) Another verbal choice that was observed in this subjects sample was that, he used words from languages other than the one he was being tested in. While speaking Hindi, he was observed to use both English and Kannada words, when he could not find appropriate words in Hindi.

Among the verbal choices, Repetitions were used maximally.

Extraverbal choices:

(1) Gestures:

A great deal of gestures were used by the subject to overcome his linguistic constraints.

A) Iconic Gestures:

- Emblems : He would shake his head to indicate negation and nod his head to indicate affirmation frequently throught the sample. He once shrugged his shoulders, as it to indicate what to do. He was also seen to make a fist, to indicate strength.

Emblems were used to support speech and emphasize his verbal output.

- Pantomimes: They were used maximally among the gestures, observed They supported spaach most of the time, classified the meaning or emphasized the utterance, added more information to the utterance and at times substituted for speech.

- Indicating numbers through gestures: This was observed infre- quently and was used to substitute and support, speech.

B) Non-iconic_Gestures:

- Specific - They were observed throughout the sample and was used to substitute and support speech.

- General: No general gestures were observed.

C) Other_gestures:

Were used such as:

- he would rut his chin while concentrating.

- he would move his hand up and down as he sppke.

- he would move his fingers, while speaking.

- he would move his index fingers in circular motions on the table to emphasize his atterance.

2) **Facial Expressions:**

He was observed to make facial grimaces as he spoke, though not frequently.

3) Intonation:

Normal characteristics of interaction pattern were preserved in the subjects speech. Besides this, he used a rising tone, to indicate that the sentence or utterance was not complete and that he wanted to elaborate.

The subject was observed to make use of extraverbal choices, particularly Pantomimes, to carry information not conveyed through speech. By supporting speech, adding extra information or by substituting speech.

C) **Effects the subjects use_of_languaaes has upon his listener:**

The subject conversed with his friend who accompanied him.

a) Relative Dominance of the speaker: The subject had 45 utterances while his conversational partner had 33. The subject had 8 mor-phemes per utterances while his partner had 5. Thus the aphasic subject appeared to be the dominant speaker.

b) Turn-Taking: The aphasic took 3 turns while the conversational partner took 2 turns. Considering the number of utterances per

turn, the nonaphasic partner had 12 while the subject had 6 utterances.

c) Topic Maintenance/Switching: The nonaphasic conversational partner shifted topic 6 times whereas the subject did so 4 times. The shifts made by subject were verbal and appropriate.

From the turn-taking and topic shifting, the friend, i.e. the nonaphasic conversational partner appared to be more superior in his conversational characteristics though the length,and number of his utterances were shorter and lesser than the subject respectively.

d) Communication Breakdown:- In two occasions the subject prevents occurrence of breakdown by giving cues to the conversational partner to ask questions about him and his family. Thus he passed the 'conversational ball' voluntarily to his partner, and indicated his knowledge of rules in a conversational interaction.

Besides these, there were 3 breakdowns 1st time there was a long pause, and when the tester prompted saying that time was left, twice the subject prodded the nonaphasic partner to initiate the conversation and when no response was forthcoming, he shouted speqking about his daily routine and this was an instance while he saved the conversation. The 'save' was verbal in nature.

At the next breakdown, the nonaphasic partner 'saved' it and at the third breakdown, when there was a long pause, the subject himself said: A: /ho gayā/
      B: Became over.
      C: Finished.

Thus the active part in the conversational exchange was taken by the subject. This also could be because his friend was feeling ill-at-ease, and was not very fluent in Hindi though he could converse in that language.

Another feature observed in this exchange was that the subjec could guage listener reaction because once when his utterance was unclear and there was no response from his conversational partner, he stopped and asked whether he was being understood, and when the partner answered in the negative, he attempted to clarify hims This again is a characteristic of normal conversational exchange.

This subject was seen to have moderate linguistic constraints comprised mostly of syntactic errors, and to overcome there he used extraverbal choices to a greater extent. Pantomimes were used in particular to accompany verbal output, add extra information to it and to substitute it. This subject was seen to take an active part in conversational interaction and possessed most rules of normal conversational exchange.

RESULTS

RESULTS

Language in the conversational samples was analysed in terms of Crystal's (1981) definition of pragmatics.— 'Pragmatics' refers to the study of language from the point of view of the user especially the choices he makes and the constraints he encounters in using language in social interaction, and the effects his use of language has on other participants in an act of communication'. The few studies that have been done, regarding the pragmatic aspects in aphasia,have considered only one or two features. This study covers a number of pragmatics features in anterior aphasics. Thus verbal language was analysed as given below:

(A) The linguistic constraints encountered by aphasics were studied under the following headings:

- phonological Constraints.

- syntactic Constraints.

- Semantic Constraints.

(B) The choices he makes to overcome the linguistic constraints wei studied under the following subsections:

- Verbal Choices,

(i) Repetition

(ii) Self-correction

(iii) Other verbal choices.

- Extraverbal Choices

(i) Gestures

(ii) Facial Expressions

(iii) Intonation.

Finally, in view of (A) and (B),

(C) The effects the aphasics use of language has upon his listener,
    was looked into.

The following methods used in different studies were made use
of to analyse the above mentioned aspects.

The analysis of Syntactic Constraints was done on the basis of
certain syntactic features, which were taken from the Test of Psy-
cholinguistic Abilities in Kannada, given by Karanth (1981). The
syntactic features tested in TPAK were as follows*

(A) Morphophonemic Structures. (B) Plural Forms. (C) Case Markers
(D) PNG Markers. (E) Tenses. (F) Transitives, Intransitives and
Causatives. (G) Conjunctives, Comparatives and Quotations. (H)
Conditional Clauses. (I) Participle Constructions. (J) Sentence
Types and (K) Predicates.

The analysis of gestural behaviors was based upon Cicone et al
(1979) classification of referential gestures which is as follows:

(A) Iconic Gestures:
    (i) Emblems (ii) Pantomimes (iii) Numbers (iv) Writing in the at

(B) Noniconic Gestures:
    (i) Specific (ii) General.

(C) Other Gestures.
The analysis of function of nonverbal communication was done, based
on the procedure followed by Behrmann and Penn (1984) which is as
follows:

1. NVC substitutes for VC.
2. NVC supports VC.
3. NVC yields additional information.
4. NVC interferes with speech.
5. NVC aids the production of speech.

(NVC - Nonverbal Communication; VC - Verbal Communication).

- The pragmatic analysis of the communication interaction between the aphasic and his conversational partner was done, based upon a method given by Miller (1978). This method was designed originally to analyse the pragmatic features in communication interactionoof language disordered children. The pragmatic analysis is as follow:

a) Relative Dominance of Speaker:

   i) Number of utterances.

  ii) Mean number of morphemes/utterance,

 iii) Total speaking time.

b) Turn-taking;

   i) Total number of turns,

  ii) Number of verbal turns,

 iii) Number of nonverbal turns,

  iv) Ratio: Verbal/Nonverbal turns.

   v) Number of utterances/turn.

c) Topic Maintenance/switching:

   i) Total number of switches.

  ii) Percentage of appropriate switches.

d) Communication Breakdown:

   i) Total number of breakdowns,

  ii) Number of 'saves' following breakdown,

 iii) Number of verbal 'saves'.

iv) Number of nonverbal 'saves'.

A) Constraints_the_aphasic_encountered_in_using_language.

- Phonological Constraints:

TABLE-1

Type of phono- logical error	Case No. and initials	Frequency of error
1. Substitution	2 - S.C	4
	3 - D.P	2
	4 - B.A	5
	5 - A.A	5
	6 - P.P	18
	8 - V.T	11
	10 - G.R	9
2. Omission	1 - B.J	3
	2 - S.C	2
	3 - D.P	2
	5 - A.A	4
	10 - G.R	3
3. Addition	3 - D.P	2
	8 - V.T	7
4. Permutation	4 - B.A	2
	6 - P.P	2

Besides these, other constraints were observed.

-Incoherent speech: some of the utterances in the subjects conver

tional samples were incoherent and could not be transcribed. This

feature was observed in cases: 2-S.C; 9-A.K; 10-G.R.

- Slurred speech: A very slight dysarthric quality of speech was noted in case-7-A.G. Though no misarticulation were observed the speech had a slurred quality.

- Perseveration: This feature was observed in case-9-A.K. Most of his responses were perseverative in nature. This patient had maximum linguistic constraints. Target utterances could not be identified and hence specific linguistic errors could not be pin-pointed.

- Syntactical Constraints:

TABLE-II(i)

Case No. & initials	Morphopho-nemic struc-tures.	Case Markers	PNG Markers	Tenses
1-B.J	1	2	1 (Gender)	
2-S.C	-	4	4 (Gender)	
3-D.P	-	2	-	
4-B.A	-	2	-	
5-A.A		-	1 (Person)	
6-P.P	1	4	-	
7-A.G	-	5	1 (Gender)	
8-V.T	—	2	1 (Gender)	
9-A.K	-	-	-	
10-G.R	-	2	3 (Gender) 7 (Person)	

TABLE-II(ii)

Case No.& initials.	Conjunctives	Participle constructions	Sentence types	Predicates
1-B.J			3	
2-S.C	1	–	2	2
3-D.P	–	3	2	3
4-B.A	–	1	2	2
5-A.A	–		–	3
6-P.P	–	–	8	2
7-A.G	1	–	2	2
8-V.T		1	–	1
9.A.K	–	–	–	–
10-G.R	–	–	8	–

Besides these another feature that was observed in Case-10-G.R was

Direct speech, or speaking in 1st person during Story Narration.

- <u>Semantic Constraints:</u>

In most of the cases very few errors of semantic categories

was observed.

TABLE-III

Case No. and initials	Frequency of errors
1-B.J	3
2-S.C –	1
3-D.P	2
4-B.A	2
6-P.P	5
7-A.G	3
8-V.T	2

Semantic errors were least in all 10 cases as compared to their pho-

nological and syntactic errors. When semantic ambiguity was obserced

it was a result of incorrect syntax.

(B) **Choices_the_aphasic_subject_makes_to overcome the linguistic constraints.**

- Verbal Choices:

(i) Repetition: Repetitions were a common feature in the speech of these aphasics and were observed at the level of the phoneme, syllable, word, phrase and sentence.

TABLE-IV

Level at which Repeti- tions occurred.	Case No. and initials
1. Phoneme	8-V.T.
2. Syllable	1-B.J; 2-S.C; 3-D.P; 5-R.A; 7-A.G; 8-V.T; 9-A.K; 10-G.R.
3. Word	1-B.J; 2-S.C; 3-D.P; 4-B.A; 5-A.A; 6-P.P; 7-A.G; 8-V.T; 9-A.K; 10-G.R.
4. Phrase	2-S.C; 4-B.A; 5-A.A; 7-A.G; 8-V.T; 9-A.K; 10-G.R.
5. Sentence	9-A.K; 10-G.R.

All the subjects were seen to have Repetition at the word level; next frequent level was the syllable (observed in 8 cases); then the phrase (observed in 7 cases); then sentence (in 2 cases) and lastly the Repetition of phoneme (which was observed only in one case). Repetitions were seen to occur in these subjects for a variety of reasons as given:

TABLE-V

Reasons for which Repetitions were used	Case No. & initials
i) As fillers-in, to fill the pauses in conversation.	1-B.J; 2-S.C; 4-B.A; 5-A.A; 6-P.P; 8-V.T; 10-G.R.
ii) As attempts in reaching the target word.	1-B.J; 3-D.P.
iii) As efforts in initiating preposi-tional speech.	1-B.J; 2-S.C; 3-D.P
iv) As an indication that pnbjecti want to elaborate the utterance.	1-B.Jy 3-D.P; 6-P.P; 8-V.T; 10-G.R.
v) As indicators to identification of errors.	5-A.A; 6-P.P;
vi) As subject's attempts at Self-correc-tions	1-B.J; 2-S.C; 3-D.P; 5-A.A; 6-P.P; 8-V.T; 10-G.R.
vii) To emphasize spoken utterance	5-A.A; 8-V.T.
viii) When subject attempts to talk fast	2-S.C.
ix) A feedback to help identify subject to identify erros.	2-S.C.
x) When subject is unsure of his utte-rance.	8-V.T.
xi) As perseverative responses	9-A.K -

(ii) Self-corrections: This has been observed in all 10 subjects. They were carried out either through repetition of his incorrect utterance of modification of the same, or through both.

TABLED -VI

Type of error		Case No.and initials			
Phonological	1-B.J;	2-S.C;	5-A.A;	8-V.T;	10-G.R.
Syntactic	1-B.J;		5-A.A;		10-G.R.
Semantic	3-D.P;		5-A.A;		10-G.R

Most of the self-corrections were successful and ended in the targe utterances.

(iii) Fillers-in: Some utterances were used in some subjects to fill the pauses to gain time. This was seen in case 1-B.j; 2-S.C; 6-P.P and 8-V.T.

(iv) Pauses and hesitations were seen to help the subjects search for appropriate words, and were observed in cases 1-B.J; 2-S.C; 3-D.P? 6-P.P.

(v) Self-cuing: was observed in one case 3-D.p to reach the target utterance.

(vi) Indicating referent through one of its characteristics: This strategy was observed in case 9-A.K during Story Narration where t! sounds of lion and mouse were used by him, while referring to them,

(vii) Switching towards of language other than the one used in test ing. This was observed in 2 cases - 7-A.G; 10-G.R. When searching for words, they used words from languages other than the one used: in testing.

Extraverbal Choices:

(i) Gestures: The gestural behaviors will be identified in terms of their presence and frequency of occurrence in the aphasic subjects tested.

TABLE-VII

Case No.& initials	Iconic Gestures			Non-iconic Gestures		
	Emblem	Pantomine	Gestures indicat-ing Nos.	Specific	General	Other
1-B.J	4	1	1	5	1	3
2-S.C	4	–	2	2	1	2
3-DvP		2	2	1	–	–
4-B.A	4	8	3	3	2	–
5-A.A	1	2	–	1	–	2
6-P.P	18	4	1	1	1	1
7-A.G	–			–	–	–
8-V.T	–	1	–	–	1	1
9-A.K	7	17	4	6	1	1
10-G.R	10	14	4	9	–	1

Other gestures were observed which cannot be classified into the above category. These are hand movements, moving head, moving body posture, which though are not information carrying are also seen to accompany normal conversation. These were observed in cases: 1-B, 2-S.C; 3-D.P; 5-A.A; 6-P.P; 7-A.G; and 8-V.T.

(ii) Facial expressions: Frowning, eyeblinking, eyeclosing, knittinst of eyebrows, facial grimaces and smiles were the facial expressions that were observed. They may reflect the concentration of the patie while word-finding or indicate frustration while unsuccessful at tas Thewe, i.e. some of the above mentioned, were seen in each of the fo ing cases - 1-B.J; 2-S.C; 3-D.P; 6-P.P; 9-A.K and 10G.R.

(iii) Intonation: This was used for a variety of reasons and was information carrying.

TABLE-VIII 127

Intonation used for various reasons	Case No. & initials
Rising tone was used:	
(i) At the end of the sentence when they wanted to elaborate their utterance further.	4-B.J; 5-A,.A; 6-P.P; 7-A.Gy 8-V,,T; 9-A.K; 10-G.R.
(ii) When subject felt he was not being understood and this was accompanied with stress.	1-B.J.
(iii) To aid the subject in Self-correction.	1-B.J.
(iv) To indicate denial	1-B.J.
Falling tone was used:	
(v) When subject was unsure"of utterance which was also spoken with a low intensity.	6-P.P
(vi) To demarcate utterances.	1-B.J.
Rising and falling tones were used:	
(vii) When groping for a word and when the word was found at the end of utterance, respectively.	1-B.J; 2-S.C; 5-A.A.
(viii) When unsure of utterance, and when confirmed it, respectively.	1-B.J; 2-S.,C; 3-D.P
(ix) To discriminate between the same utterance to stand for different intent in different contexts.	7-A.G; 8-V.,T.
(x) To give additional information	1-B.J

Functions of nonverbal behaviors were analysed as in the study by Behrmann and Penn (1984). The function of the observed nonverbal behaviors were assessed in relation to the verbal output. Functions included supporting, providing additional information, substituting interfering with or aiding the production of verbal output.

TABLE-IX

Type of nonverbal communication (NVC)	Case No.and initials
-NVC substitutes for VC i.e. No verbalization accompanies the gestu	
-Emblem	1-B.J; 4-B.A; 5-A.A; 6-P.P; 9-A.K; 10-G.R.
-Pantomime	3-D.P; 4-B.A; 5-A.A; 6-P.P; 9-A-K; 10-G.R.
-Indicating numbers through gestures	4-B.A; 10-G.R;
-Noniconic Specific gesture	2-S.C; 4-B.A; 9-A.K.
-Noniconic General gesture	4-B.A; 9-A.K;
-Facial Expression	9-A.K.
-NVC supports VC i.e. the gesture parallels the verbal utterance.	
-Emblem	1-B.J; 4-B.A? 10-G.R,
-Pantomime	3-D.P; 5-A.A? 6-P.P? 8-V.T; 10-G.R,
-Indicating number through gestures	1-B.J; 2-S.C; 3-D.P; 4-B.A; 6-P.P; 9-A.K.
-Noniconic Specific gesture	1-B.J; 4-B.A; 5-A.A? 10-G.R.
-Noniconic General gesture	4-B.A; 8-V.Tp 9-A.K.
-Intonation	1-B.J
-NVC yields additional information i.e. Gesture adds information over and above the verbal message.	
-Pantomime	1-B.J; 4-B.A; 9-A.K;? 10-G.R.
-Noniconic/Gesture General	2-S.C;
-Intonation	1-B.J; 3-D.P

(Contdt...)

NVC Interferes with speech i.e. gesture contradicts the verbal utterance.

-Indicating numbers through gestures   2-S.C.

-NVC aids production of speech i.e. gesture may be used in an attempt to retrieve words.

-Pantomime   5-A.A.

C) **Effects_the_aghasics_use_of_language_has_upon_his listener;**

a) Relative Dominance of Speaker:

i) Number of utterances

TABLE-X(i)

L's no.=S'sno.		L's No.;' S's No		S'S no. > L's no.	
1-B.J 8	8	2-S.C 21	17	5-A.A 38	34
3-D.P 19	19	4-B.A 26	25	7-A.G 12	11
6-P.P 25	25	9-A.K 30	28	8-V.T 19	16
				10-G.R 45	33

L=Listner; s=Subject; No.= Number of utterances,

TABLE-X(ii)

ii) Number of morphemes/utterance.

L L's no=S's no.		L's no > S's no.		S's no. > L's no	
7-A.G 3	3	2-S.C 4	2	1-B.J 3	2
8-V.T 4	4	3-D.P 3	2	10-G.R 8	5
9-A.K 5	5	4-B.A 4	1		
		5-A.A 4	3		
		6-P.P 5	2		

b) Turn-taking:

TABLE-X(iii)

	L'S no.=S's no.			L's no > S's no.			S's no > L's no
1-B .J	1	1	2-S.C	1	0	7-A.G	2	1
3-D .P	1	1	4-B.A	1	0	10-G.R	3	2
5-A .A	1	1	6-P.P	1	0		
			8-V.T	9	5		
			9-G.R	1	0		

(i) All the turns were verbal in nature.

(ii) No nonverbal turns were used.

(iii) Number of utterances/turn.

TABLE-X(iv)

	L's no.=S's no.			L's no> S's no.			S's no. > L's no
7-A.G	5	5	1-B.J	4	3	5-A.A	20	16
			2-S.C	21	0		
			3-D.P	12	8		
			4-B.A	26	0		
			6-P.P	25	0		
			8-V.T	33	2		
			9-A.K	30	0		
			10-G.R	12	6		

c) Topic Maintenance/switching : In 4 cases topic switches were
observed.

TABLE-x(v)

Case No. & initials	No.of topics switches		
		L	3
4-B.A.	2	2	0
6-P.P.	4	4	0
8-V.T.	6	4	2
10-G.R.	10	6	4

In 6 cases, there was no switch in the topic though switch in focus within the case topic were observed several times.

TABLE-X(vi)

Case No. & initials	No.of switches in focus		
			S
1-B.J	7	4	3
2-S.C.	16	16	0
3-D.P.	16	9	7
5-A.A.	20	12	8
7-A.G.	10	6	4
9-A.K	23	23	0

d) Communieation Breakdown.

i) Total number of breakdowns. In two cases: 5-A.A; 9-A.K, there were no breakdowns observed, in that, there were no awkward pauses or gap as in the other cases.

TABLE-X(Vii)

Case No. and initials	No.of breakdowns
1-B.J	1
2-S.C	2
3-D.P	2
4-B.A	8
6-P.P	3
7-A.G	2
8-V.T	4
1O-G.R	5

Person responsible for breakdown: In cases: 2-S.Cy 3-D.P; 4-B.A; 6-P.P; it was the subject; while in cases: 1-B.J; 7-A.G; 10-G.R; it was the listener who being ill-at-ease could not sustain the conversation.

(ii) Number of 'saves' following breakdowns.

Case No. & initials.	No.of 'saves' (Total)	No.of 'saves' by listener	No.of 'saves' by subject
1-B.J	1	0	1
2-S.C	2	2	0
3-D.P	1	1	0
4-B.A	8	a	0
6-P.P	3	3	0
7-A.G	1	0	1
8-V.T	3	3	0
10-G.R	5	1	4

(iii) All the 'saves' were of verbal nature.

(iv) No non-verbal 'saves' were used.

In case 5-A.A. breakdowns were prevented by the subject, as everytime, he or his wife completed an utterance, he would prompt his wife to ask questions and thus conversation was sustained. In case 9-A.K.breakdowns in the form of pauses or long silences were not observed but the interaction was not as in normals, as most of the patient's responses were preseverative and irrelevant but his wife would ask another question and sustain the conversation

Other features observed:

- In many instances the conversation lasted for a very short time, eg. In cases 1-B.Jy 3-D.P; 7-A.G and 10-G.R. Here the listener appeared to be very ill-at-ease probably because they were being consious of speech being recorded.

- Difference in questions: Leading questions, were asked by listener in case 4-B.R: i.e. questions were being honed down such that final]

only monosyllabie responses on part of the subjects were required. In general, questions requiring short answer were asked to the subject. There was a difference in the listener's and subject's way of formulating questions, eg. in case 3-D.P, listener's questio were long, while subjects questions were one word or two word struc tures, which being accompanied by rising tone, revealed their inte- rrogative intent.

- Corrections of subject's errors through listener's utterances was observed in case 5-A.A.

- Case 10- G.R, could guage listener reactions and was sensitive to them, and modified his utterance if was not understood.

The following table compares between the extraverbal and verbal choices made by subjects to overcome their linguistic constraints, in relation to the severity of deficits in verbal output.
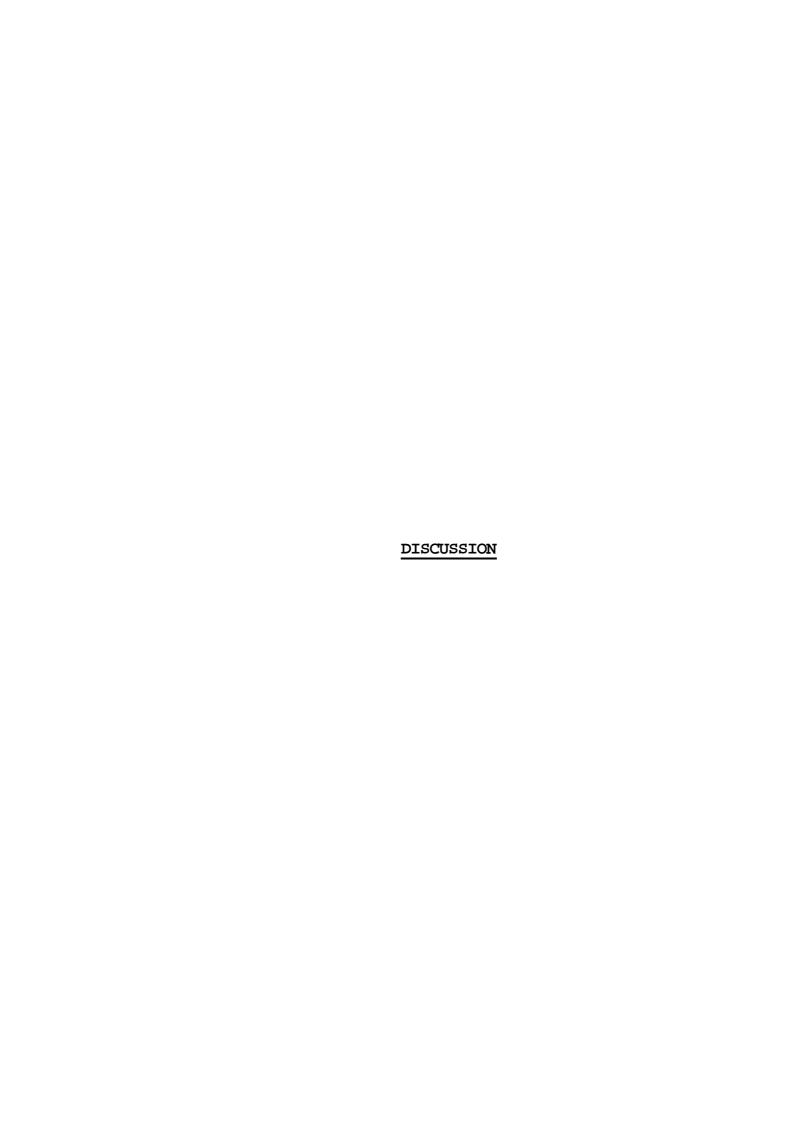
TABLE-XI (continued on following page)

TABLE-XI

Case No. & initials.	Aphasia quotient	Extraverbal choices			Verbal choices			
		Gestures	Intonation (in terms of functions)	Repetitions (in terms of functions)	Self corrections.	Fillers-in	Pauses and hesitations.	Others
8-V.T	80.8	2	2	5	✓	✓	✓	-
7-A.G	80.7	none	2	-	-	-	-	Borrowed words from other language.
1-B.J	73.4	12	7	5	✓	✓	-	-
2-S.C	72.3	9	2	5	✓	✓	✓	Borrowed words from other language.& self-cuing.
5-A.A	71.0	5	2	4	✓	-	-	-
6-P.P	65.6	25	2	4	-	✓	✓	-
10-G.R	64.7	34	1	3	✓	-	-	Borrowed words from other languages.
3-D.P	53.7	6	1	4	✓	-	✓	-
9-A.K	37.6	35	1	1	-	-	-	Indicates the nature of referent thr' its sounds.
4-B.A	31.7	20	1	1	-	-	▼	-

Results can be summarized as follows:

- In Phonological constraints, substitution type of errors were maximum, followed by omission type, addition type and occasionally permutation type.

- In case of the Syntactic constraints, errors were observed in Case-markers, Sentence types. Predicates and PNG markers, which exceeded the errors in participle constructions. Tenses, Morpho-phonemic structures and Conjunctives.

- Majority of subjects were observed to have syntactic errors exceeding phonological errors.

- Semantic constraints were few in comparison to the above, and few semantic paraphasias were observed. In most cases, semantic ambi-guity was a result of syntactic errors.

- Regarding the verbal choices made by the subjects Repetitions wer most frequent. In order of their frequency of occurrence. Repeti-tions were observed at the word level, syllabic level, phrase level occasionally sentence level? for a variety of functions and most frequently they served as fillers-in.

- Self-corrections; carried out through repetition of part of utte-rance or modification of incorrect utterance were observed in all the subjects, were mostly successful and occurred more frequently in case of phonological errors than in syntactic or semantic errors

- Pauses and hesitations were observed to help the subjects search for appropriate words.

- Other features were observed in individual subjects, such as self-cuing, switching to words in languages other than the one used in testing, and indicating referent through one of its characteristics such as sound made by referent.

- Regarding the extraverbal choices, gestures. Intonation and facial expressions were used, in the decreasing order of frequency

- Incase of gestures, Iconic gestures exceeded Moniconic.

- Pantomimes occurred almost as frequently as emblems and exceeded gestures indicating numbers.

- Specific gestures exceeded the nonspecific gestures which in turn exceeded general gestures.

- Intonation patterns were relatively well preserved, rising and falling tone served various pragmatic functions and carried information*

- Facial expressions revealed concentration of subjects, indicated frustration, and occasionally provided additional information to verbal output.

- Nonverbal communication was used to substitute verbal communicatic and support it; it yielded extra information but to a lesser extent, Rarely did NVC interfere with speech or aid speech production.

- In the communication interaction between the aphasic subjects and their conversational partners, in all the major features consi- dered for analysis, the nonaphasic conversational partner took the leading role.

DISCUSSION

DISCUSSION

Linguistic Constraints:

In the aphasic subjects tested for the present study, syntactic errors formed a predominant characteristic of their language and exceeded phonological errors which is true of the language of Broca's aphasics, as is evident from published lite-rature. Though semantic errors are not characteristic of language of Broca's aphasics, these subjects showed a few semantic paraphasias.

Phonological errors of substitution type were maximum followed by omission type, addition type and occasionally permu-tation type. This finding is in agreement with that of Albert et al (1981), who have observed incorrect target production to be usually phonemic substitutions and additions. Consonant clusterswere found to be more difficult than single consonants. Trost and Canter (1974) observed errors to represent close approximations of target sounds, errors of place being the most common.

Errors were observed in various syntactic features thus rendering the language of these subjects agrammatic. Albert et al (1981) attribute agrammatism to be a major component of impaired spontaneous speech which is characterized by a reduction and simplification of grammatical forms, manifested by the use of short sentences usually restricted to single declarative forms and uninflected verbs.

The syntactic features which involved a large number of errors, or the ones which were omitted were Case markers, PNG markers. Sentence types, and Predicates. Errors were also observed, though to a lesser extent in the use of Participle Constructions, Tenses, Conjunctives and Morphophonemic structures. The precision in speech was lost due to these syntactic errors and led to confusion in the listener (tester/conversational partner) while comprehending the aphasic person's speech, if the context was not clear.

Semantic errors occurring through in correct choice of words from lexical categories were very few and in the instances where they occurred, they were semantically associated with the target words. The linguistic constraints have not been dealt with here in detail because the focus of the present study lies in studying the pragmatic aspect of aphasic communication, that is how an aphasic person makes use of language available to him, what choices he makes to overcome/ the linguistic constraints and what effects, his use of language has upon his listner. There aspects will be discussed in detail.

(B) <u>Choices made by the aphasic subjects to overcome the linguistic</u> constraints;Repetitions were used as a verbal choice most frequently In decreasing order of frequency, Repetitions were observed at the word level, syllabic level, phrase level and occasionally at the sentence level.

Repetitions were found to have various functions in those subjects. They were observed to occur as fillers-in attempts at self-correction or elaboration - efforts in proposltionailzing speech - attempts in reaching target word - indicators to error identification - emphasizer of utterances - result of fast rate of speech - feedback to analyse errors - indication of subjects unsureness about utterance - perseverative responses. Repetitions were used most frequently as fillers-in, and as attempts at self-correction and elaboration.

Self-corrections were observed to be next in frequency of occurrence to Repetitionsas a verbal choice to overcome constraints in verbal output. According to Albert et al (1981), Self-corrections are very prominent and indicate active self-monitoring of errors, a sign of intact auditory comprehension, in Broca's aphasics.

Self-corrections were observed in all these aphasic subjects and they were carried out through modification of incorrect utterances or through repetition of part of the utterance to reach the target word. The latter strategy has been observed by Farmer (1977) when ha studied the self-correctional strategies in aphasia. He identified the strategy as 'sound revision' where part of the word was repeated in an attempt to produce the target word correctly and found this to occur as 911% of the strategies he tested in the aphasic group. The self-corrections seen in the subjects of present study were mostly successful and were seen to occur more frequently in case of phonological errors than in syntactic or semantic errors.

Pauses and hesitations were observed in the aphasic subjects tested, to assist them to search for appropriate words. This feature has been identified as a word retrieval strategy by Marshall (1975). He terms it as 'delay' where the patient takes or requests extraprocessing or formulation time to let the listene: know that he is not ready to relinguish the conversational ball.

Other features were seen to occur in a minority of or indi-vidual cases. Language switching was observed in three subjects where they would resort to words of languages other than the one used in testing, when they experienced word-finding difficulties. A feature observed in one subject was indication of referent through one of its characteristics. He indicated the nature of the referent through the sound it produced. Self-cuing in the form of counting - aloud, was observed in one subject.

Gestures that were observed in these aphasic subjects showed certain traits. Iconic gestures that is those which in some spe-cifiable way capture the nature of the referent, were seen to occur more frequently than the Non-iconic gestures which are those that simply point out a referent. Thus, gestures that carried more information were used to a greater extent than the ones that carried less information.
The rhythmic gestures that normally accompany speech were observed in these cases but to a much lesser extent as compared to the referential gestures. This observation matched with that of

Cicone et al's (1979) study where they observed a higher propo-
rtion of 'referential' gestures in anterior aphasics than in
posteriors and normal controls which they felt could he due to
the lack in anteriors of the 'rhythmic' and 'emphatic' gestures
that typically accompany fluent speech, or as a reflection of
the anterior's overall orientation towards communicating
referential meaning.

Among the Iconic gestures observed in these subjects pantomimes
and emblems represented the bulk. Maximum number of pantomimes
were observed in subtests of naming, picture description and
Story Narration but few were observed in the conversational inte-
raction with the tester/listener.

Emblems were mostly nodding of head, to indicate in the affirma-
tive and shaking head to indicate in the negative. Another
Emblem was shrugging of shoulders to indicate that subject did
not know a particular thing. Emblems were used throughout the
sample but more during the conversational interactions.

Specific gestures, which carried more information, were used more
frequently than general gestures which carried less information.

    The functions of nonverbal behaviors were assessed in relation
to their verbal output. It was observed in these aphasics, that,
nonverbal communication was substituted, for verbal communication
to a large extent. Thus gestures were used to compensate the
deficit in verbal output. Cicone et al (1979) also observed that
anteriors made greater of gesture alone, which seems to indicate

that gestures may be compensating for their lack of verbal
communication. But they observed that normals and anteriors
overall produced the same amount of gestures which suggests
that the anterior patients were not actively compensating for
their verbal deficits or else they would have gestured 'more'
than control subjects substituting gestures for what would be
normally spoken information. They also observed that normals
used a significantly larger proportion of pantomimes than
anteriors, and least number were produced by posteriors.

These points could not be counterchecked in this study,
as normal controls were not tested.

Another function that nonverbal communication served, was
to support the verbal communication. Here, pantomimes and
gestures to indicate numbers were used most frequently. To
a lesser extent, nonverbal behaviors yielded additional infor-
mation most frequently through pantomimes. Thus, the 3 main
functions served by nonverbal communications were to substitute,
support or to add extra information to verbal communication.
Behrmann and Penn's (1984) study showed that nonfluent (anterior)
subgroup used the 'substitution' and 'yield additional information'
classes more prominently, while 'support' function of nonverbal
communication was more common in the fluent/subgroup. Nonverbal
communication was seldom used in these aphasics, to aid production
of speech and it rarely interfered with speech. The latter obser-
vation does not agree with Cicone et al's (1979) observation that
confusions, when they occurred in the anterior aphasic's speech
were the result of speech and contradicting gesture.

In most studies regarding gestures in aphasia (Duffy, Duffy and Pearson,(1975), Pickett (1982); Gainotti and Ibba (1972); Duffy and Duffy (1981)) it has been observed that, the gestural deficit runs parallel to the deficit in speech. Thus it appears that speech; functions as the major and dominant channel with the nature and quality of the gesture as secondary reflections of the speech properties, so there arises a view from these studies, that there exists, a single 'central organizer' which initiates and determines the complexity and clarity of both speech gesture.

But, inthe other hand, there have been studies which have shown that gestures are not affected in aphasics to the same extent as speech (Duffy and McEwen (1978); Daniloff et al (1982)). Duffy and McEwen (1978) who studied pantomime symbolism and re-cognition indicated that it is not the degree of symbolism (arbi-trariness) of the pantomime which accounts for the increased errors in the aphasics pantomime recognition.
Daniloff et al (1982) inferred from their study of gesture recog-nition in aphasia that, although the ability to recognize gestural symbols may not be completely normal in aphasic patients, it is less impaired than recognition of verbal signals.
In the present study, gestures were studied in contrast to speech, but only in terms of expression. Gestural recognition was not considered. But here too, similar inference canbe drawn as in the study mentioned above. It was observed that gestures did compen-

sate for the deficit in speech, but there were some instances where though the deficits in speech were present, and utterances were ambiguous, gestures were not used by the subjects. Thus, the gestural symbols may not be completely normal although they are less impaired than speech.

This could be explained in terms of Chester and Egolf's (1974) theory, wherein they purpose that nonverbal messages like gestures are more primitive both phylogenetically and ontogenetically than linguistic and verbal messages. They believed gestures to be far less arbitrary than spoken language and to have far less linguistic structures.

Duffy and Buck (1979),studied gestures in another dimension based on Critchley's (1939- 1975) proposition which states that 'like their verbal behaviors, the extraverbal prepositional and auto-matic behaviors of aphasics show different degree of impairment' - and observed that, in aphasics, both verbal and extraverbal propo-sitional behaviors seem to be impaired to about the same degree as a result of left hemispheric damage, and that subpropositional facial expression seemed to bear no significant linear relationship to the impairment of prepositional behavior, either verbal or non-verbal. Though the differential impairment of extraverbal prepo-sitional as against subpropositional behaviors was not directly studied here, it appeared that both these types of behaviors were observed in these subjects. However the extent to which they were affected was opposite to that mentioned in above study. The extra-verbal prepositional gestures, in this study identified as 'referen-tial gestures' were Used more frequently than the subpropositional

ones such as facial expressions movements of hands etc. The former were seen more often to substitute for speech or to support the defective, incomplete or unclear spoken utterances. The latter served the purpose of emphasizing correct utterances in spoken speech and they accompanied speech.

Thus, gestures do not appear to be entirely 'parasitic' upon speech, and there are patients in whom, the gestures are qualitatively better than speech. This correlates with the observation of the present study.

It is therefore suggested that gestures, can sometimes take the lead, or that the 'central organizer' retains some flexibility about which modality to employ preferentially. The findings in the current study are not in agreement with the notion that gestures seem to be as clear - or as unclear - as speech, in aphasics.

The intonation patterns in these subjects being relatively wellpreserved, they served as an extraverbal choice and had various pragmatic functions in different subjects.

A rising tone was observed in an utterance - when subject wanted to elaborate utterances - when groping for a word - when subject felt he was not being understood- to indicate denial - when self-correcting.

A falling tone was used in an utterance - when the target utterance was arrived at successfully - when subject was unsure about utterance (observed in one individual) and accompanied by a low Volume - to indicate different utterances, that is, to demorcate the utterances.

Some utterances which were verbally superficially identical but different in intent, were distinguished through, the use of a rising and falling tone, in different contexts, to indicate their respective meaning.

Behrmann and Penn (1984) observed monotonous intonation in non-fluent subjects which was contrary to findings in present study which indicated many characteristics of normal intonation pattern to be well-preserved.

Facial expressions were not used so much as a compensatory strategy as they were, to express the subject's feelings and the struggle they were through during speech. Knitting of eyebrows, eyeblinking, frowning, closing eyes tightly, were expressions depicting the concentration of subjects during attempts at word retrieval, or during initiating speech.

Facial grimaces were seen as expressions of subject's frustration if they could not find a word, or were unsuccessful in their attempts at self-correction. Albert et al (1981) have also observed a great deal of facial grimacing and struggle behavior with repeated attempts at self-correction in anterior aphasics.

Observations of the choices, made to overcome the linguistic constraints, by the aphasics tested in this study, revealed certain patterns, that have not been mentioned in the published literature regarding pragmatic strategies employed by anterior aphasics.

Choices-extraverbal and verbal were seen to vary with respect to the severity of linguistic constraints. The subjects with relatively mild linguistic constraints employed verbal strategies to overcome them, and used extraverbal choices to a much lesser extent. This group with milder linguistic constraints used verbal strategies such as Repetitions, Self-corrections, Fillers-in, Pauses and Hesitations and Other types such as Borrowing words from languages other than the one used in testing. In this group, the variety of verbal choices was greater and they were used extensively. Among the verbal choices Repetitions were observed most frequently.

These characteristics were observed in cases 8-V.T? 7-A.G? In case 7-A.G even verbal choices were made little use of. Thus it suggests that when language was mildly impaired, the aphasic subjects made no alternative, compensatory choices at all and if they did then they used verbal choices. Extraverbal choices played a very minor role.

These subjects with milder linguistics constraints made very few extraverbal choices. Intonation played a greater role than gestures in these subjects.

The aphasics who had moderate linguistic constraints, used both extraverbal and verbal choices. But in these subjects, extraverbal choices were used more extensively than verbal choices. Thus as the linguistic constraints increase in severity, both types of choices are made but the subjects depend more upon extraverbal

choices which are more easily accessible to them. The extra-verbal choices they used were gestures, Intonation and to a lesser degree, facial expressions. Among the Gestures, Referential gestures, particularly the Iconic type, and specifically Pantomimes and Emblems were used.

Among the verbal choices, Repetition, Self-corrections, Fillers-in, Pauses and Other types such as self-cuing etc. were used. Of these the first two were used by all the subjects and the others were observed variably.

In the group of aphasic subjects who had severe linguistic constraints the choices made by them, were extra-verbal in nature and the verbal choices showed a sharp decline and played a very minor role. The Referential gestures, particularly the Iconic type constituted the bulk of the subjects' choices. Of these. Pantomimes and Emblems were used maximally. Even Intonation was used to a very small extent, as an extraverbal choice by these subjects.

In the subject with maximum linguistic constraints, extraverbal choices were also used to a lesser extent, but even so they exceeded the verbal choices. This subject made use of Pantomimes and Emblems mainly and non-iconic gestures too, but these were to a lesser extent. The fact that in this subject even verbal choices were made little use of suggests what even though gestures are impaired in the severly impaired aphasics, they are less impaired than speech and are relatively better preserved.

Thus from these findings, the inference canbe drawn those gestural symbols may not be completely normal but they are less impaired than speech, and are drawn upon extensively by the aphasic with verbal impairment in order to convey meaning in conversation. This overdependence upon extraverbal choices seems to reduce, as his language improves.

The only subject who does not fall in with the pattern that was observed was case 3-D.P who was observed to use verbal choices more than extraverbal, inspite of his moderately severe linguistic constraints.

(c) Effects_the_aphasic's_use_of language_has_upon_his_listener:

The number of utterances, by the subjects and their conversational partners were not significant as whether the listener had a larger number of utterances or the patient, the difference was very small between them. There was an exception to this, in one subject where the aphasic subject's utterances were significantly greater than his listener's, which could be due to the latter's uneasiness, self-consiousness at the conversation being recorded.

Though the aphasic subjects had an almost equal number of utteranc as their listeners,their utterances were short and contracted. In the majority of cases,the nonaphasic conversational partner had a greater number of morphemes/utterance. Thus the nonaphasics, in a majority of the cases,were the dominant speakers. It was also the listener who took more turns in the conversational interaction. In some cases, it was a totally one-sided conversation with the aphasic subjects taking a completely passive role.

only answering to the questions put forth, but not asking any, themselves. The turns were all verbal in nature.

The number of utterances per turn was significantly more in the conversational partners thus emphasizing their dominance in the interaction.

Topic switching was observed in only a few cases and the number of topics switched by the nonaphasic partners exceeded that of the aphasic subjects. In most of the cases, though no switches in topic were observed, switches in focus, within the same topic were observed and these were again carried out more by the non-aphasic partners than the subjects.

According to Cicone et al (1979), relatively effective communication in real life situations as compared to formal test-ing situations, may be observed because of the important contri-butions of the capacities of the normal conversers to structure discussion appropriately and to make shrewd inferences about the topics and comments which the aphasics seek to convey. They observed a strong tendency, particularly in the case of anterior patients, on the part of the other conversants to supply contexts where the aphasics can successfully exploit their meagre linguistic and gestural repertoire.

Communication breakdowns occured in the majority of subjects tested in this study, and the saves which were all verbal in nature were in most cases, carried out by the nonaphasic.

Thus, the nonaphasic conversational partner, understandably, was the dominant speaker and took the responsibility in initiating the conversation, in most cases and in sustaining it.

In many cases, the conversation tended to last for a very short duration. This could be an inherent characteristic of aphasic, nonaphasic conversation, or it could be the fact that it was a continued situation where they were 'asked' to talk and was not a spontaneous situation.

If it is the first alternative, then the reason may be that the responsibility of the conversation lies with the nonaphasic partner as the aphasic subject is a passive participant, and the 'give and take' characteristic of normal conversation is lost. Hence, only, one participant is depended upon to sustain the conversation and thus it may tend to last for a very short duration.

In some cases, the nonaphasic partners appeared to be ill-at-ease, and self-consious, The conversation lasted for a short duration in these subjects because here the dominant speaker or the active participant appeared to be constrained.

Cicone et al (1979) analysed conversation between aphasics and tester and his results reflected the greater dependence of the anteriors on the interviewer for taking the lead in the conversation. For the most part, they observed, the interchange with the anteriors consisted of questions put to the patient to which he could simply.disagree agree or answer with one word.

In the present study too, it was observed that questions addressed to the patient required short answers. One feature that was also seen in this study was that questions were being put forth to the subject but if he could not answer, then the question was simplified and asked till finally, only monosyllabic responses were required of the subject.

Cicone et al (1979) also observed that anteriors uttered much less words than normals. In the present study too, the number of morphemes per utterance is less in the anteriors as compared to their nonaphasic conversational partners. Cicone et al attribute this to the interviewer's tendency to structure the conversations with anteriors so that the patient need only state a minimum amount of information to be understood. They also observed that the anterior aphasic's speech came across as clear to the listener and they feel that it could have been that, much of the information communicated by anteriors was inferred from questions asked by the interviewer. This holds good for the findings of the present study too.

Another feature observed in the present study was that, in some subjects their errors were corrected through their conversational partner's utterances. Thus not only were they structuring the conversations such that the subjects had minimum difficulty, but some of them also corrected the aphasic's incorrect utterances through their own.

Few aphasic subjects could guage their listeners reactions, but when they did, and observed that they were not being understood, they modified their utterance so that the listener was able to comprehend them. This finding does not agree with the findings of Behrmann and Penn (1984) who observed that in contrast to fluent aphasics the nonfluent (anterior) aphasics, with relatively intact reception seem acutely aware of the situational demands, their listener's needs and the short comings of their own verbal abilities.

In some of the subjects who had not taken turns to initiate conversation and whose utterances are confined only to replies to questions asked by the nonaphasics, it appears that the Recipro-city Rule of face-to-face conversation, is confined to replying but not initiating speech. The Reciprocity Rule given by Jaffe (1978) states that "when one participant is the speaker, the other synchrononsly becomes the listener".

Thus, it can be said that despite of the linguistic constraint; encountered by the aphasics, communication can exist between them and nonaphasics, primarily because of the active role taken by the nonaphasic in initiating and sustaining the conversation, and the pragmatic strategies used by the aphasics to overcome their linguist constraints.

Most of the published literature deals with any one of the pragmatic features. As a rule, several pragmatic features have

not been studied together in a single study. This is probably because, as yet pragmatics in aphasia, is a topic which is in its infancy and the features have not yet been identified or studied extensively in normal language itself. Understandably, it is even more difficult to study them in language pathology. The attempts that have been made in this field have identified any one feature and studied it extensively. But theinteraaction of various pragmatic strategies that aphasics employ has not been studied. In this study, an attempt has been made to study the various pragmatic strategies employed by anterior aphasics extra-verbal such as gestures, facial expressions and intonation, and verbal such as, Repetitions, Self-corrections, fillers-in, Pauses and Hesitations. The interaction between these have been studied in relation to the extent of linguistic constraints encountered by these subjects.

The study suggests that anterior aphasics use extraverbal choices - referential gestures in particular, to overcome the deficits encountered in verbal output.

Extraverbal choice, and gestures in particular were used maxi-mally in the subjects with moderate to severe linguistic constraint: and less in the subjects with mild and linguistic constraints. On the other hand, verbal choices were seen in all the subjects, but were seen more extensively in the subjects with mild to mode-rate linguistic constraints and less, in the subjects with severe linguistic constraints.
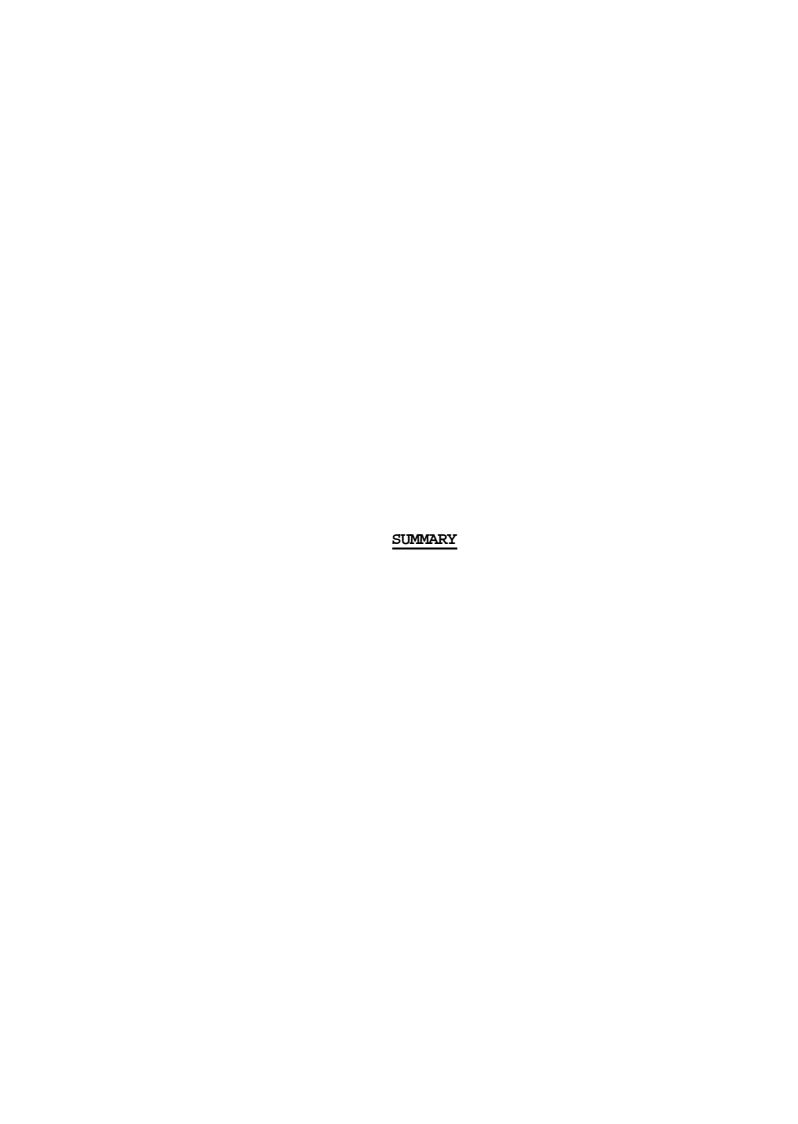
This suggests that, the aphasics who have milder linguistic constraints resort to verbal choices in overcoming them, but as the severity of verbal deficits (linguistic constraints) increases verbal choices may be play a minor role in overcoming constraints. These aphasics depend heavily upon extraverbal choices, and referential gestures in particular. In the subject with maximum linguistic constraints, though gestures were reduced in comparison to other subjects they exceeded the verbal choices, and also the other extraverbal choices such as intonation or facial expression.

Thus the study suggests that nonverbal communication is more broadly represented than verbal skills and is thus less at risk in anterior aphasia.

The clinical implications of the study seem to be that these extraverbal propositional and subpropositional behaviors can be encouraged by the clinician during rehabilitation, specially in the anterior patients with severe linguistic constraints*

Thus verbal skills should not be the only focus in rehabilitation. A more global approach should be attempted taking into account the extraverbal skills also. In the less severe anterior aphasic verbal strategies may be attended to and encouraged in rehabilitation to help him overcome the linguistic constraints.

In the more severe anterior aphasic the extraverbal choices particularly the referential gestures, and specifically the Pantomimes and Emblems can be made use of in strategies for language rehabilitation.

<u>SUMMARY</u>

SUMMARY

The smooth flow of thoughts and ideas that is characteristic of communication between normal individuals may be absent incase of aphasics and a communication gap may exist between an aphasic person and his interlocutor. Despite this fact it is also known that the aphasic person retains the functional use of language to some extent.

An attempt has been made here to identify the pragmatic strategies extraverbal and verbal, that anterior aphasics may employ to overcome this linguistic deficits which enables them to make functional use of the language available to them.

A number of studies have been carried out to study the strategies employed by aphasics; such as Cicone et al (1979); Prlnz(1980); Duffy, Duffy and Pearson (1975); Gainotti and Ibba (1972); Duffy and Duffy (1981); Duffy and McEwen (1978); Daniloff et al (1982); Behrmann and Penn (1984), but each of these have studied any one strategy. In contrast this study deals with several pragmatic features.

9 males and 1 females expressive aphasics were selected as a sample for the study. They were administered the first four subtest of the Western Aphasic Battery viz. Spontaneous Speech, Comprehensio Repetition and Naming, for differential diagnosis. In addition the conversational sample, was elicited through the following procedures

- Story Narration.

- Communication Interaction between the aphasic subject and his conversational partner.

- Conversation with the tester.

The entire conversational sample was recorded, and along with it, the different gestural behaviors of the subjects were noted- down. The data was analysed in terms of linguistic.

A) The linguistic constraints encountered by the subject.

B) The choices made by subject to overcome these constraints.

C) The effects the aphasics use of language had upon his conversant

As in published literature on expressive aphasics, syntactic errors were found to exceed phonological errors; and<few semantic errors were observed.

Extraverbal choices, particularly gestures, specifically the Pantomimes and Emblems were used as a compensatory and supportive strategy to the defective verbal output and the extent to which they are made use of is in direct proportion to the degree of linguistic constraints.

Verbal choices, particularly Repetitions, were used in inverse relation to the degree of linguistic constraints.
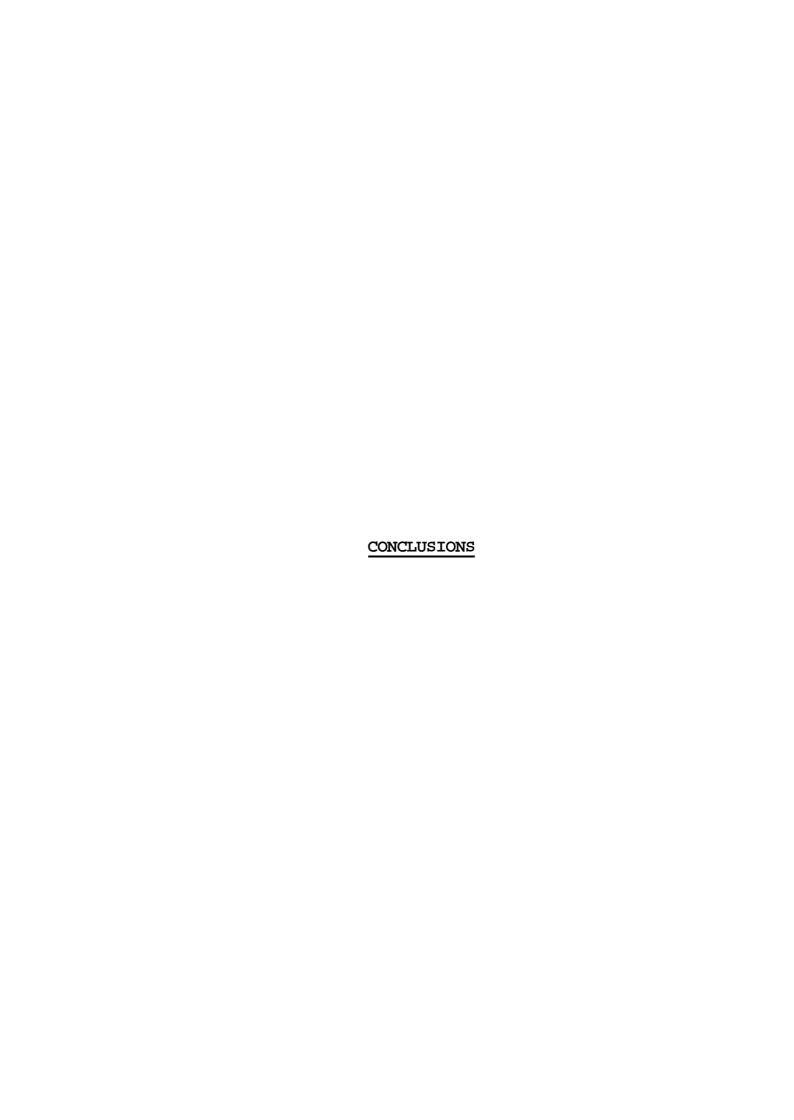
Thus nonverbal strategies do not appear to be 'parasitic' upon speech. They can sometimes take the lead. The central organizer which is supposed to determine the complexity and clarity of both speech and gesture may retain some flexibility about which modality to employ preferentially.

In the interaction between the aphasic and his conversant, the conversant, was the dominant conversational partner.

The number of morphemes/utterance used by his were more; he took more number of turns; he shifted the topic and/or shifted focus more often; he was responsible for communication breakdown less often and used more conversational saves. The duration of the interaction was very short, which could be due to the fact that the 'give and take' characteristic of normal conversation was missing.

The aphasics speech came across as clear to the listener, and as has been observed in the study carried out by Cicone et al (1979) and so also in this study, it could have been that much of the information communicated by anteriors was inferred from questions asked by the interlocutors, so also the conversants tend to make shrewed inferences about topics and comments which the aphasics are seeking to convey. The conversants are likely to supply contexts where the aphasics can successfully exploit their meagre linguistic and gestural repertoire.

Thus this study suggests that anterior aphasics can communicate effectively to a large extent in communicative situations, because of the 'pragmatic strategies, they use to overcome the linguistic deficits and the contributions made by conversers to their normal capacities, in structuring discussion and supplying contexts where these expressive aphasics can successfully perform.

CONCLUSIONS

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Linguistic constraints encountered by these aphasics.

i)   Syntactic errors exceeded phonological errors.

ii) Semantic paraphasics were very few in number and semantic
     ambiguity was more a result of syntactic errors.

iii) In phonological constraints, substitution type of errors
     were maximum followed by omission type, addition type
     and occasionally permutation type.

iv) §In the syntactic constraints, errors were observed in Case
   4a
     markers. Sentence type, Predicates and PNG markers which
     exceeded the errors in participle constructions. Tenses,
     h(prphophonemic structures and Conjunctives.

 ^   Choices made by these aphasics to overcome the linguistic
constraints: Verbal choices:

i)   Verbal choices made by the subjects indicated repetitions
     to be most frequent.

ii) In decreasing order of frequency, Repetitions were observed at
     the word level, syllabic level, phrase level and occasionally
     sentence level.

iii) Repetitions were observed to occur as:
     Fillers-in; attempts at Self-correction or elaboration; efforts
     in propositionalizing speech; attempts in reaching the target
     word; indications to error identifications; emphasize utterances

result of fast rate of speech; feedback to analyse errors; indication of subjects unsureness about utterance; perseverative responses.

iv) Self-corrections were carried out through modification of incorrect utterances or through repetition of part of the utterance to reach the target word.

v) Use of verbal choices were in inverse relation with the degree of deficits in speech.

Extraverbal choices:

i) Choices extraverbal and verbal vary according to the severity of linguistic constraints.

ii) Extraverbal choices are employed to a lesser degree in subjects with milder linguistic constraints; and to a large degree in subjects with moderate to severe linguistic constraints.

iii) Extraverbal choices are made use of to compensate for the verbal deficits and/or to support speech.

iv) The amount of extraverbal choices again were found to decrease for the subject whose degree of linguistic constraint was maximum.

v) Pantomimes and Emblems were used most frequently and exten-sively to substitute for, and/or to support speech.

vi) Gestures as accompanying normal speech were observed in all the subjects except the one with maximum linguistic constraint:

vii)   Facial expressions are not used frequently as choices to
       overcome linguistic constraints.

viii) Intonation patterns were relatively well-preserved, and
       besides they also served various pragmatic functions. A
       rising tone was observed in an utterance.
   - When subject wanted to elaborate utterances.
   - When groping for a word.
   - When subjects felt they were not being understood.
   - To indicate denial.
   - When self-correcting.

A falling tone was used in an utterance:
- When the target utterance was arrived at successfully.
- When subject was unsure about utterance (observed in one subject
  where it was accompanied by a low volume).
- To demarcate the utterances.
- Some identical utterances which were identical but different in
  intent, were distinguished through the use of a rising or falling
  tone, in different contexts to indicate their respective meanings.

ix)   Nonverbal communications (NVC) was used to substitute verbal
      communication (VC) and to support it, it yielded additional
      information but to a lesser extent. Rarely did NVC interfere
      with speech or aid production of speech.

Effects aphasic's use of language has upon his nonaphasic conversa-
tional partner.
- The nonaphasic interlocutor had a greater number of morphemes/
  utterance.

ii) She nonaphasic took more burns in the conversational interaction.

iii) Topic shifting and/or focus shifting were mostly carried out by the nonaphasic.

iv) When communication breakdowns occured, the 'saves' all of which were verbal in nature, were carried out by the non-aphasic.

v) Conversation between the two lasted for a very short duration Clinical Implications.

- The clinician by attending to the subcomponents of communication can encourage active utilisation of there behaviors especially in aphasics with severe linguistic deficits.

(Behrmann & Penn, 1984).

- Therapeutic energies should be directed towards a global rehabiliration program rather than concentrating on verbal skills and facilitating adaptive and appropriate (specifically nonverbal) behaviors.

(Behrmann & Penn, 1984).

- In the less severe expressive aphasic, verbal strategies may be used in rehabilitation to help him overcome the linguistic constraints.

- In the more severe expressive aphasic, the extraverbal choices particularly the referential gestures and specifically the Pantomimes and Emblems, can be used in language rehabilitation.
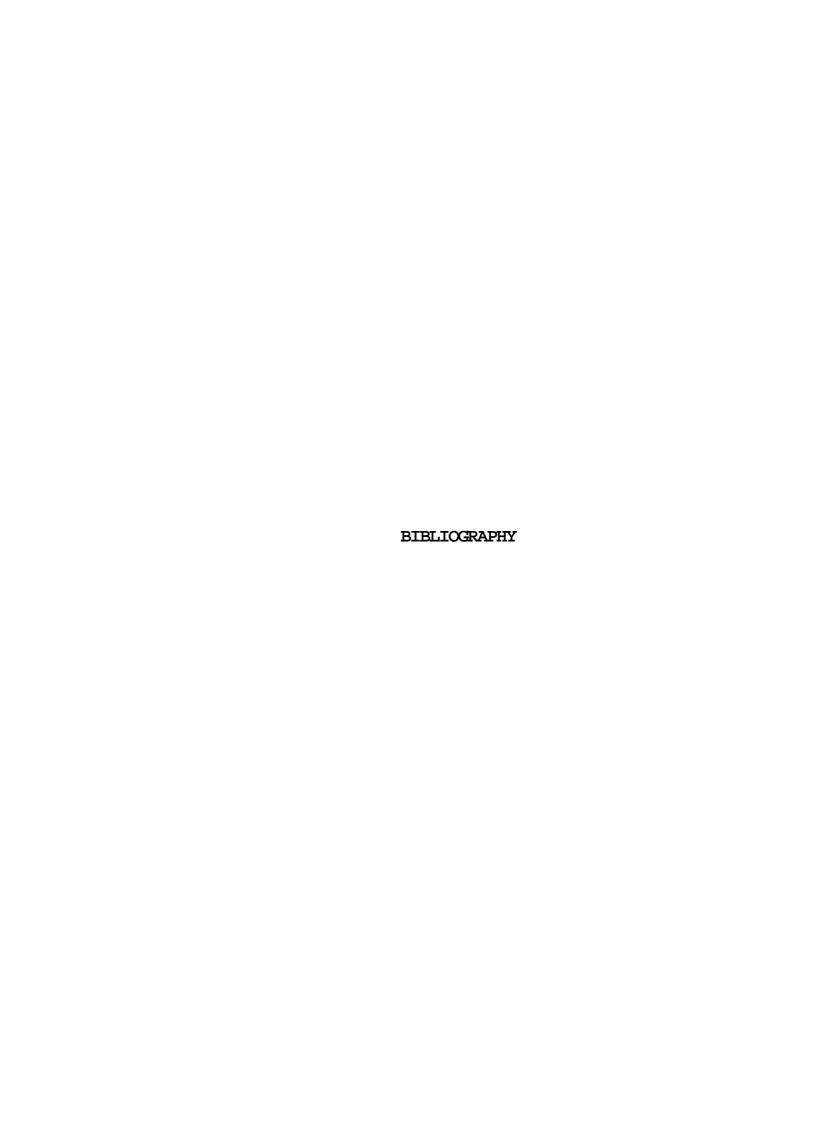
Limitations:

i)   The study was carried out only on expressive group of
     aphasics due to lack of availability of cases with other
     types of aphasia. Thus the pragmatic strategies observed
     within the subjects could not be compared between diffe-
     rent types of aphasia.

ii) The sample of subjects tested was too small to be able
     to make any firm conclusions from the study.

iii) Video-recording could not be carried out, due to inavail-
     ability of equipment, to objectively record the nonverbal
     behaviors of the subject and the tester made observations
     throughout the senion. Owing to this, some nonverbal
     behaviors may have been overlooked.

iv) Only the expressive aphasics were tested. They were not
     matched against a set of normal controls.

v)   All decisions were taken by the tester only. No judges
     were called upon to judge the extraverbal and verbal
     behaviors. Thus subjectivity is more.

Recommendations for future research:

1)   A similar study can be carried out in a wider group of
     subjects representing different types of aphasia. The
     pragmatic strategies could be identified among expressive,

receptive and global types of aphasia and comparisons - intergroup and intragroup - can be drawn.

2) If a similar study is carried out in a larger sample of aphasics, the findings or observations will carry more weight so also the conclusions can be drawn with a greater degree of confidence.

3) A study of nonverbal behaviors should be carried out, using an audio-videorecording so that none of the nonverbal behaviors are overlooked, or missed. This reduces the subjectivity.

4) A control group, when taken to watch with the aphasic groups, will give us an idea about how aphasics differ from the normals in nonverbal communication.

5) In a similar study, judges should be called to judge the verbal and nonverbal behaviors, so that the subjectivity reduces, the bias of the tester is not allowed to affect the results.

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