COMPREHENSION DEFICITS IN BILINGUAL APHASICS

REG NO. M 9721
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A dissertation submitted as part fulfilment of Final Year M.Sc, (Speech and Hearing), Mysore

All India Institute of Speech and Hearing, Mysore

May, 1999

CERTIFICATE

This is to certify that this dissertation entitled **"COMPREHENSION DEFICITS IN BILINGUAL APHASICS"** is the bonafide work in part fulfilment for the degree of **Master of Science** (Speech and Hearing) of the student with Register Number M 9721.

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This is to certify that this dissertation entitled **"COMPREHENSION DEFICITS IN BILINGUAL APHASICS"** has been prepared under my supervision and guidance.

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DECLARATION

I here by declare that this dissertation entitled "COMPREHENSION DEFICITS IN BILINGUAL APHASICS" is the result of my own study under the guidance of Dr. Shyamala Chengappa, Reader and HOD, Department of Speech Pathology, All India Institute of Speech and Hearing, Mysore and has not been submitted earlier at any University for any other Diploma or Degree.

Register Number M 9721

DEDICATED

TO MY PARENTS

To you I humbly owe what I am today Not a volume of words would suffice to say of my pride and joy in being of you

To the very end of my existence, I will love you

ACKNOWLEDGEMENT

I am grateful to my teacher and guide, Dr. Shyamala Chengappa, Reader and HOD, Department of Speech Pathology, All India Institute of Speech and Hearing, Mysore, without whose constant interest and inspiration the dissertation could not have achieved its present form. I fall short of words to express my gratitude.

I am very grateful to Dr. (Miss) S. Nikam, Director, All India Institute of Speech and Hearing, Mysore for permitting me to take up this topic as my dissertation.

I also thank Mr. Narandian, Miss Vasvgi Rao Speech and LanguagePathologists & Audiologist, Dr. Prakash for their valuable help.

I also thank my family and friends for being supportive all throughout

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INTRODUCTION

In the vast literature on aphasia, many variables have been investigated for their possible impact on language performance. They include gender, age, handedness, and education level These variables were studied because of possible links to pre-stroke language ability, post-stroke prognosis and/or type of aphasia. The demonstrated effects of these variables on aphasia range from modest to non-existed and results conflict across studies. BENSON and ARADELA conclude that 'Although gender and handedness may be significant variables in large samples, these factors appear to be of limited significance in individual cases' (1996, p. 349). ROSENBEK et aL, state that the impact of the biographical variables on prognosis is uncertain (1989), and point out the difficulty in isolating the effect of a single demographic variables, such as age. Yet one variable with an obvious and direct link to the language ability of individual patients has received little attention in the literature:

Bilingualism is a preparing entity in any human being who posseses it. According to REICH (1986) 47.3% of the world population speaks more than one language. According to 1971 census report 13.04% of India's population is bilingual/multi lingual (MAHAPATRA, 1990).

Inspite of these figures bi/multilingualism is least understood and least appreciated in India. Both in normal and abnormal language processing the studies focussing on bilingual aspects are few and far in between (MOHANTY, 1994). Over the past decades, the main areas of research in adult bilingualism is the organisation of two languages in one brain, recovery patterns and language mixing in bilingual and polyglot aphasics.

To date no universally accepted definition of bilingualism exits but the best criterion for classifying these individuals is still a pragmatic one. People who speak and understand two languages, or two dialects and who are able to avoid mixing the two linguistic systems when writing or speaking can be referred to as "bilinguals" (GIRARDI and FABBRO, 1996).

The term bilingual technically refers only to speakers of two lanugages, and the term polyglot to speakers of more man two languages, some authors have used the term bilingual to refer to speakers of two or more languages. (PERCEMAN, 1984). Bilingualism is broadly defined by WEINREICH (1953) as "the practice of alternatly using two languages".

One of the striking features of bilingual language performance is the apparent ease with which the bilingual manages to keep interference from the non target language at a minimal leveL The fact remains however, that interference from one language to the other language does occur and is observable with respect to both language structure and linguistic processing. For example, in language production, interference from the first language can be noticed born at the phonological level (foreign accents) and at the sentence level (borrowed syntax), as well as in intrusions of words from the other language (accidental lexical borrowings).

When we compare the production vs comprehension though little work has been done in mis direction, there are three fines of evidence that bilinguals have a fairly unified perceptual system and a dual production system ERVIN (1961) tested the categorization of lexical items (color words) in bilingual subjects and monolingual controls. A similar study was conducted by CARAMAZZA et aL, (1973) and ALBERT and OBLER (1978), on the

voice onset time of voiced - voiceless consonant pairs, in all three tests the bnmguals were seen to have hazier boundaries between categories, and these categories were intermediate to those of monolingual speakers of their respective languages, in production in either language, the bilmguals performed more like the respective monolinguals.

KOLERS (1996) timed silent reading (a perception task) and oral reading (a production task) in non fluent bilinguals. Reading aloud mixed sentences took considerably longer man reading aloud the non fluent language, but there were no differences in the silent reading condition. This could be explained by inferring the reading aloud mixed sentences involves shutling back and form between two different production systems.

Finally studies of bilingual children show that they could comprehend the language that they had not been using for a long time, but mere hesitant in producing the language (LEOPOLD, 1949; KINZEL, 1964). That is, when one language is not practiced, production deteriorates more than perception.

The above evidences suggest that the perceptual system of bilmguals is unified whereas production is dual, CARAMAZZA ct aL, (1973) called mis the compounding of input and the co-ordinating of output In other words, comprehension is a more unified heuristic task whereas production is more language specific.

NEED FOR THE STUDY :

As mentioned earlier in the area of language comprehension research, mere has been a debate for several decades about how exactly cross-language interference effects relate to the way words from different languages are stored and processed.

The existing studies on bilinguals' have focussed mainly on production, recovery pattern etc. There is scanty evidence on the performance of bilingual aphasia on comprehension in

cither of the languages. Further the existing studies have been done mainly on the Western population considering languages like English-Spanish, French-German etc. However, studies on combinations like on a Dravidian language and an European (Germanic) language (as considered for this study), Tamil and English are practically ml in the literature.

In the present study "Revised Token Test" (McNEIL and PRESCOTT, 1978) was used to assess aphasia comprehension in two languages (viz. Tamil a Dravidian language and English a European language). The study also had a control group of normal bilinguals (Tamil-English) for comparision between aphasics and normals. Thus the present investigations was been aimed to give an insight in the following aspects of comprehension in bilingual aphasic patients;

1. To investigate comprehension in two languages; ie., Tamil (L 1) and English (L 2) in bilingual aphasic patients.
2. To study the comprehension
   i. Across each language in aphasics
   ii. Among different types of aphasics
   iii.. Between aphasics and normal controls.
3. To see whether these variables had an effect on comprehension of aphasics in both languages.
   i. Age ii. Type of aphasia
   iii. Therapy (duration of therapy session) iv. Education
   v. Duration of exposure of second language

REVIEW OF LITERATURE

Aphasia is a many faceted problem. This has been studied using different frameworks. The complexity of the problem accounts for the great diversity of opinion and approaches found among the investigators. The realization that the problem is complex has persuaded investigators, of the need for communication across disciplines. This field has remainded as a challenging field of enquiry. This complex problem has attracted not only neurologists, but also psychologists, speech pamologists, linguistics.

The diversity of opinion among the people concerned with this problem can be seen even at the level of definition. However, the common element of all the definition is that Aphasia is a language disorder which is due to brain damage.

Similarly aphasics have been classified differently by different people. Thus there arc many classification, but none of mem can be considered as satisfactory either in terms of describing the condition of the case nor in diagnosis nor in therapy. However, it is necessary to have classifications to help the clinician in treating aphasics. Regarding classification, KERTESZ (1979) says that "many of the classifiers describe the same phenomena from a different angle and infect, complement rather than contradict each other".

Objections have always been made to systematic testing of aphasic patients. A common argument is mat aphasic responses are inconsistent and consequently test results are unreliable. Criticisms have been directed at plus-minus scoring and at quantification of data. Some clinicians consider that test procedures are traumatic to patients (SCHUELL, 1965). Aphasia testing has proven to be complex and difficult to

standardize KERTESZ (1979) has given a list of criteria to be considered in an ideal test The criteria are:

A test should:

1. Explore all potentially disturbed modalities
2. Employ subtests that dtsciminate among various clinically meaningful types of aphasia.
3. Included graded test items so that a representative range of severity can be examined.
4. Contain enough items to eliminate variability in subtests performance.
5. Be practical enough in terms of duration required to administer the full test
6. Minimise the effects of inteIHgnece and education and permit to measure language performance as purely as possible.
7. Be standardized as to scoring and administration, so that, the test is reliable.
8. Discriminate between aphasics from normal, brain damaged non aphasics and other problems.
9. Have internal consistency and comparability of scores.
10. Have face and content validity.

Further KERTESZ (1979) states that a test for aphasics should measure the following parameters of language, to be considered as useful.

1. Description of spontaneous or conversational speech.
2. A measure of informational value conveyed by such speech
3. A measure of fluency.
4. Auditory comprehension
5. Naming
6. Repetition

7. Reading comprehension

8. Writing

9. Airthmetic

10. Gestural expression (praxis)

Several tests for assessing aphasic problems have been described since (1926) Head's Serial Test (1926), WEISENBURG and McBRDDES battery 1935, the GOLDSTEIN-Scheered tests of abstract and concrete thinking 1941, HALSTEAD - WEPMAN screening test for Aphasia 1949, Eisensons inventory 1954, LMTA-WEPMAN and JONES 1961, Token Test - De RENZI and VIGNOLO 1962, MTDDA - SCHUELL 1965, NCCEA - SPREAN and BENTON 1968, FCP, SARNO M.T. 1967, PICA - PORCH 1967, ACD EMERICK, L, 1971, ACTS - SCHEWAN and CANTER 1971, The Sklar Aphasic scale - SKLAR 1973, Queensland University Aphasia and Language Test - TYRES et al., 1973 WAB - KERTESZ 1979, BDAE - GOODGLASS and KAPLAN 1982, LPT - KARANTH, P., 1980)

ASSESSMENT OF APHASIA (GENERAL) :

it is necessary to have a test to identify the problem, to describe the problem and to classify the problem into various groups for the purpose of diagnosis, therapy and prognosis. Thus several tests have been proposed and used in various dimes to assess the aphasks. Some of the classifications are also based on the tests. For eg. SCHUELL (1975) and EISENSON (1973) have used their own tests and classified the aphasic cases.

The tests attempt to make the assessment of aphasia in a systematic manner. It has been frequently reported that aphasic responses are inconsistent and consequently test results are unreliable. Criticisms have been directed at phis and minus scoring and

quantification of data. Some clinicians consider that test procedures are traumatic to patients. The most frequent complaint is that comprehensive testing is economically unfeasible because it requires too much time.

Inspitc of these draw backs, die clinicians have been using various tests that have been constructed to assess the abilities and disabilities of different aspects of language in aphasics, as they still help the clinicians in describing their cases, formulating therapy procedures and predicting possible improvement

The testing involves asking questions and making observations. When testing is done under controlled conditions, observations can be repeated and help in comparing patient from time to time.

Briefly the examiner tries to find out the abilities and disabilities of the patient by determining the level of performance on a given test and tries to find the reason for the breakdown in the performance and tries to account for them.

Several workers have constructed tests to assess the aphasic patients and still attempts are going on to construct tests with cautions to overcome drawbacks of previous tests, still constructing a test is considered to be not an easy task, it has been reported that one would face several problems while constructing a test for aphasics.

BENTON, L. A. (1967) states that "if we look to the problem of test (construction and application in the field of aphasia we can say that we are in 1900, (ie.,) in the pre binet state". Several tests for aphasics have been developed and are in use in various clinics. However, only few of these tests can be found in use, either in their original form or in their modification, in some clinics. This may be because (as attributed by BENTON 1967).

They have not been published in usable form.

No standardization information has been given with any of these tests.

Exact scoring methods have not been prescribed

No guidelines have been provided for the interpretation of performance correctly.

Moreover none of them present convincing evidence that the utility is significant greater than any other services of aphasia test which might be assembled.

The concept of language is basic for the development of a language test Review of concepts being used by fee various workers in the field. This variation poses the basic problem in the construction of a test for aphasia. BENTON (1967) very aptly put this problem by stating that "our fundamental preconception of language will determine the nature of an examination and of specific tasks included in it Now we must face the difficult problem of whether it is possible to go beyond the pragmatic level in constructing a standard test battery for aphasia". Given the diversity of conceptual approaches to the problem of aphasics if we do not see the possibility of achieving a single conceptual framework which is satisfactorily to all school of thoughts, then a standardized basic examination can be assembled on pragmatic grounds. Some kinds of solution or at least, understanding of the question must be achieved before a broadly acceptable standard examination for aphasia can be constructed.

Apart from the basic problems of selection of the conceptual frame work one would face other problems also, which can be considered as "technical" problems, in an attempt to construct a test for aphasics. Most frequently faced technical problems are 1) Selection of items for the test battery 2) finding out the reliability and validity of the test 3) developing norms for various test items for various groups. Further it can be stated that

Several tests of aphasia have been developed. An attempt has been made to review some of mem here.

The clinical examining a dysphasic patient has several specific goals in mind, including answers to the following questions :

which parts of the brain are damaged ?

what is the nature of the lesion ? (eg. Vascular, infections, etc.)

which kind of dysphasia is present and what is its pamophysiologic basis ?

which parts of the brain are spared and can these healthy regions of the brain be utilized to compensate for lost verbal abilities ?

The basic clinical aim, then, is a search for some neuro behavioural mechanism by which the dysphasic patient can communicate.

Although a formal language evaluation can provide detailed answers to these questions, such an examination may take from two to twelve hours, depending on the nature of the dysphasic defecit and does not provide the busy clinician with a quick guide to the diagnosis from which an initial series of management steps may be undertaken. For this purpose, a brief examination for dysphasia can be used. This brief examination can be completed in fifteen minutes, can be carried out at the bedside with no need for special testing equipment beyond a pencil and paper and can provide a general guide to initial diagnosis and treatment The same examination, if followed systematically, can also be used on a daily basis to monitor the course and progression of the dysphasic syndrome.

Some basic items of medical history are necessary in the investigation of language disorders.

Handedncss of the patient should always be assertained over 95% of right handers and about 60% of left handers have language organized in the left hemisphere. For the remainder, either the right hemisphere is dominant or language is organised bilaterally.

Native language of the dysphasic patient should be determined. There is suggestive evidence that language may not be organised in the brain of the bilingual in the same manner as in that of a monolingual.

Level of education of the patient is important, since linguistic performance depends on level of academic attainment

In the clinical approach to the dysphasic patient, the examiner should use all available clues to diagnosis, whether they are linguistic or not. Evidence of neurological disease other than the language disorder can be helpful in determining the nature of the dysphasia. Presence of a significant hemiplegia places the lesion in motor pathways and suggests mat serious impairment in spontaneous speech production will be present, and that the dysphasic sundrome will be of a non fluent type. Presence of a significant hemisensory defect or homonymous hemianopia, in the absence of hemiplegia, suggests that the dysphasic syndrome will have been caused by a more posteriorly located lesions and mat the language disorder is likely to be of a fluent type. Presence of all three - hemiplegia, hemisensory deficit, hemianopia - is more Hkehy to be associated with a mixed or global dysphasia.

In evaluating the language disorder itself, me examiner should consider oral and written language separately useful bedside test of oral language should include a sampling of spontaneous speech, repetition, naming and comprehension. Tests of written language

should sample reading and writing. The following examination can be completed in 10-15 minutes at the bed side.

1. SPONTANEOUS SPEECH :

Can be elicited by conversation with the patient The clinician tries to see the form (refers to features of word choice, syntax and presence or absence of paraphasias) of his speech.

A patient with an anterior aphasia is likely to use few highly meaningful, substantive words. A patient with a posterior dysphasia is more likely to be circumlocutory, using many words to talk around a subject without precision. In such patients there may be an excessive drive to continuous speaking.

2. REPETITION:

The examiner utters the words to be repeated and asks the patient to "say what I say" or "repeat after me". items to be tested include single words and sentences of increasing lengths and syntactic complexity.

Repetition may be defective, normal or hypernormal (echolalia).

3. NAMING OR WORD FINDING:

Impaired ability to name an object to find the desired word for production in spontaneous speech is present in every type of dysphasia word finding dcfecit may be detected in the examination of spontaneous speech.

Confrontation naming is testing by presenting a test stimulus with the request to "tell me what this is".

4. COMPREHENSION OF SPOKEN LANGUAGE :

Two approaches are generally successful : ask Hie patient to point to objects in the room, ask the patient questions which can be answered "yes" or "no". A series of questions of grades difficulty can then be presented.

5. READING:

Reading aloud and reading comprehension should be tested separately, since these two language skills can be impaired independently in dysphasia.

Reading aloud can be tested by presenting written material in script or block letter form.

Reading comprehension can be tested by presenting written names of common objects to the patient who may demonstrate comprehension by pointing to the object and also a series of questions of graded difficulty can be presented in written form to the patient, the examiner requesting a "yes" or "no" reply.

6. WRITING:

Writing disorders of a linguistic nature are common in dysphasic syndromes and may be tested by asking the subjects to write single letters and digits, words and multi digit numbers, and sentences of increasing length and complexity. Writing to dictation may be tested independently of writing to command.

Thus before this brief, clinical bedside examination or test, certain other factors also should be checked Lc, If the patient has got any movement problems - dyspraxia and if he has got motor disturbances like hemiplegia or hemiparesis. Associated disorders like visual functions, hearing etc., should also he checked because they might interfere with (he testing if they are involved.

Thus aphasia testing at the stages of descriptive aphasiology often consisted of asking the patient questions. From time to time, other terms were added to mis. HUGHLINGS JACKSON tested sign making, writing comprehension, repetition, reading, and tongue movements, regularly in addition to spontaneous speech. PIERRE MARIE felt that comprehension deficit underlies all aphasia and it is only a matter of using difficult enough tests to detect it He also emphasized that non verbal intellectual functions were also disturbed. He described the now famous three paper test of comprehension in which the patient is asked to do various things with three pieces of paper, in sequence.

Tests developed by HEAD, H. (1926) and WEISENBURG and Me BRIDE (1935) are considered to be two important landmarks in examination of aphasia. The test developed by HEAD, H. (1926) is called the HEAD, SERIAL TEST.

The underlying philosophic principal of Head's serial test is revealed in his statement that "an inconsistent response is one of the most striking results produced by a lesion of cerebral context". Accordingly, HEAD. H (1926) decided that adequate assessment must include testing and retesting of a function in graduated sequence, and in several different ways (through different modalities). Head's serial test consists of the following:

1. NAMING AND RECOGNITION OF COMMON OBJECTS :

Head choose 6 objects - a pencil, a key, a pen, a match box, scissors, and a knife.

2. NAMING AND RECOGNITION OF COLORS

3. THE MAN, CAT AND DOG TESTS:

These tests investigated mainly reading and writing in their most elementary form The patient was asked to read three word sentences and men form these sentences from

pictures only. He was then asked to write them down, and finally, to copy them from print into cursive handwriting.

4. THE CLOCK TESTS:

The tests calls for direct imitation - telling the time, setting the hands of the clock to oral commands and to printed commands.

5. THE COIN-BOWL TEST :

The patient is required to place a coin into one of 4 bowls, according to a series of numerical commands (bom printed and oral commands).

6. THE HAND, EYE AND EAR TESTS :

The patient should imitate a series of movement which consists of touching an eye or an ear with one or the other hand, first on the same side, then crossing the body. Then the patient was placed in front of a large mirror and was asked to imitate the reflected movement of the observer. The patient was then given cards, each of which represented a human figure carrying out one of the target movements. This was the most difficult of all the serial tests. It was also a test of right and left orientation and to some extent, praxis.

Other tests included by HEAD, H. (1926) were :

Writing down the - alphabet

- The days of the week
- The months of the year

- Understanding a paragraph from the newspaper
- Describing a picture
- Counting, taking airthematic tests of various complexity
- Naming coins

- Drawing objects from a model and from a memory
- Sketching a ground plan of a familiar room
- Visual imagery
- Spatial orientation
- Finding the way along some familiar route
- Playing games such as dominoes, chess, cards or billiards.
- Completing JigZaw puzzle

HENRY HEAD (1926) considered his testmg incomplete and capable of improvement He thought that the testing should be adapted to the capacity of the patient and that it should not be applied in a routine manner, even though he described in some detail the way the tests should be applied (KERTESZ, A. 1979). Head's test are time consuming and boring (EISENSON, J. 1973). WEISENBURG and McBRIDE (1935) in commenting on Head's tests say "as their value in differentiating the aphasic from the normal, the simpler tests are satisfactory while the more difficult tests are not, for the latter require complex performances in which many normal persons are not altogether successful. These more difficult tests cannot be used satisfactorily with aphasic patients without knowledge of normal performance, both qualitative and quantitative, which Henry Head did not obtain".

Several brief examinations employing Head's procedure relative to type of task have been published and have attained fairly wide use in U.S.A. These include :

CHESHER'S TEST FOR CLINICAL EXAMINATION IN APHASIA (1937).

THE WELL - RUESH EXAMINATION (1945)

HALSTEAD WEPMAN SCREENING TEST FOR APHASIA (1949)

These examinations are screening instruments intended for determining obvious areas of impairment or of relative abilities in brain damaged persons.

WEISENBURG AND MCBRIDE'S BATTERY :

The assessment procedures presented by WEISENBURG and Mc BRIDE (1935) come considerably closer to a standardized examination man did those of HENRY HEAD, WEISENBURG and Mc BRIDE (1935) did not produce a new list or inventory for assessing aphasic patients. Instead, they constructed a test battery chosen from published and standardized psychological and educational tests.

The principal test used by WEISENBURG and Mc BRIDE consists of:

1. SPEAKING:

a) recording the patients spontaneous speech or reactive speech.

b) Automatic word series of counting and days of the week, months of the year, and the alphabet, reciting a prayer or nursery rhyme.

2. NAMING : Objects and colors as by HENRY HEAD

3. REPEATING : Single words containing all English sounds and a series of short, familiar phrases and easy sentences.

4. TESTING COMPREHENSION - Le., a Test for understanding spoken language.

5. READING - Testing reading by the 'Gates graded word pronounciation test'and the 'Gray oral reading paragraph'.

6. WRITING - Testing writing by using samples of spontaneous writing of the patients name and by having the patient compose letters and reports. They also had the patient write to dictation and also copying.

7. ARITHMETIC - they Tests arithmetical ability with arithmetic tests from the "Standard Achievement Arithmetic Examination", including computation and reasoning.

8. LANGUAGE INTELLIGENCE TESTS - such as Oral opposites, part whole tests. Oral analyogies (horn is to blow as bell is to ring). The printed analogies test, sentence completion test and oral absurdities test

9. REPRODUCTION OF VERBAL MATERIAL - i.e., immediate memory for digits, letters and disconnected words and reproduction of a short story of the "Auditory Verbal Memory Test" were also tested

10. NON LANGUAGE TESTS - They constructed shorter batteries. One for use in "severe" disorders, with a probable time of 2 - 3 hours and one for "slighter" disorders, for the same duration. The GOLD STEIN - SCHEESES tests of abstract and concrete thinking: of GOLDSTEIN SCHEESES (1941):

This constitute an inventory of psychological procedures intended to assess quantitative and qualitative changes in intellectual functioning in brain damaged persons with specific reference to abstract and concrete reasoning.

The battery of tests in GOLD STEIN - SCHEESES inventory includes block designs, color form sorting, a stick test, and one for object sorting.

HALSTEAD - WEPMAN SCREENING TEST FOR APHASIA (1949) :

A simple screening test was developed by Halstead during the world war I and II.

The test consisted of a test board containing a dial or wheel on which the stimulus figures were printed. And the necessary accessories are provided. Two viewing apparatus are affixed on the front side of the test board, each for the patient and examiner. The

instructions were given orally and tactually, in addition to the one appeared on the back side of the board.

EISENSON'S INVENTORY (1954) - EXAMINING FOR APHASIA :

Designed to provide the examiner with a guided judgement for assessing the variety of disturbances in languages and other disturbances closely related to language functions, which may be useful for rehabilitation.

The immediate purpose of this examination is to determine the areas of difficulty and level of speech and language of patient The test has two main parts geared towards eliciting information on receptive and expressive lines within which items range from those intended to test sub symbolic and low symbolic levels to levels of higher symbolic content

1. Receptive disturbances are examined in the first part. Recognition of common objects is tested by either naming, pointing, or selecting choices given by the examiner. Similarly, colors, forms, reduced size pictures, numbers, letters printed words and printed sentences are examined for recognition. Auditory verbal comprehension of sentences followed by a series of questions, allows the patient the choice of four in the response. Reading comprehension is composed of paragraphs adopted from other reading tests.

2. Expressive disturbances are also examined including apraxia, by carrying out actions with the body, with objects and also, to pretend actions. On the verbal aprexia test, the patient is asked to repeat numbers, words and sentences. Automatic speech, writing, spelling, naming, word finding, calculation, clock setting and oral reading are all tested and impairment on each sub test is summarized on a five point scale, as complete, severe, and moderate little or none.

The test is to be administered by a clinician. Testing time can vary from 30 minutes to 90 minutes depending on the severity of the impairment. Testing can be done in one or more sittings. For screening purpose only the first item of each subtest needs to be administered. Not standardized in the usual sense of the term, but it was widely used by clinicians as a guide for treatment (KERTESZ 1979).

THE LANGAUAGE MODALITIES TEST FOR SPHASIA (LMTA) - WEPMAN & JONES (1961):

WEPMAN and JONES (1961) view mis test as an instrument to provide a psychofingustic analysis by a standardized procedure. There is a four way organisation of the presentation of stimuli and responses. The visual stimuli are presented on film strips and the audiotory stimuli by the examiner. Oral and graphic responses are scored for both kinds of stimuli. The stimulus material includes pictures of common objects such as a tree or dog, simple words, numbers, & sentences of three, four or five words. Responses are speaking, writing or matching. The LMTA tests the comprehension of language symbols, as well as the ability to imitate mem when presented both visually and auditorily. Form recognistion, arithmetic. Spelling and articulation are scored as well it also includes four pictures about which the subject is asked to tell a story. The standardized samples of spontenous Speech thus obtained allow examination of the use of syntax and vocabulary. The scoring scale for all oral graphic responses consists of:

1. The correct response.
2. The phonemic or graphic errors.
3. Syntactic errors.
4. Semantic errors.

5. Jargon or illegible response.

6. No response.

The procedure takes about an hour. The scoring system is to differentiate between defective symbol processing and input or output problems and to indicate the therapy needs of the patient

On the basis of oral responses to the LMTA, five classes of aphasie patients can be identified.

1. Syntactic patients whose difficulties are largely with syntactic words such as "of, "with", "in", "singulars", "plurals" and verb endings.
2. Semantic patients who have semantic or word finding problem.
3. Pragmatic patients whose comprehension is usually poor and whose speech conveys little meaning. They often use neologisms and inappropriate substantive words.
4. Jargon patients who, unlike pragmatic patients, use few, if any, meaningful words but unintelligible jargon words instead.
5. Global patients who often have no speech at all except for a few automatic phrases, such as "I don't know" or meaningless combination of sound.

Main advantage is mat it consists of two parallel forms for re-test purposes. This checks the practice effect But (1) it does not cover a wide range of linguistic abilities, (2) the range of difficulty is insufficient to detect minimal language defects, (3) scoring is based on particular aphasic types - syntactic, semantic, pragmatic, jargon and global (TYRES et al, 1971).

THE TOKEN TEST - DE RENZI AND VIGNOLO (1962) :

This is a special test of comprehension, for mild sensory disturbances or to detect such as in expressive syndromes. It consists of 61 commands of graded length and complexity. The patient has to point, touch, or pick up tokens of five different colors, two shapes and two sizes. The fifth part of the test uses prepositions, conjunctions, or adverbs to vary the linguistic complexity of the commands. Redundancy and clues given by the nature of the objects are eliminated. It is generally considered too difficult for many aphasics but a sensitive test for mild or latent comprehension disturbance. Nonaphasic left and right hemisphere ksioned patients had a relatively high "false positive" rate. Quite different types of aphasics obtain similar score. Although it is an excellent research tool, clinicians find it's applicability to the assessment of aphasia limited, a shortened version has been incorporated in the N.C.C.E.A. (16 items). A 36 item short version has been recently recommended by De RENZI (1978).

REVISED TOKEN TEST (RTT) - MC NEIL, M.R. AND RESCOTT, T.E. (1978) :

Designed as a sensitive and quantifiable test battery for the assessment of auditory processing inefficiencies associated with brain damage, aphasia and language and learning disabilities. It is a reconstruction of the original token test (De RENZI and VIGNOLO 1962) in accordance with accepted standards of test construction and standardisation. The RTT includes multidimensional evaluative systems for describing the nature and quantifying the degree of auditory defecits.

A kannada adaptation of the RTT incorporating principles of the RTT (Mc NEIL and PRESCOTT 1978) and "concrete object form to token test" (MARTINO et aL, 1976) was

designed to assess the comprehension ability in normal and disordered adults and children (VEENA, N.R. 1982).

Normative data on 52 children (5-9 years), adults 20-60 years and 11 brain damaged subjects, has been compiled.

THE MINNESOTA TEST FOR DIFFERENTIAL DIAGNOSIS OF APHASIA (MTDDA) - SCHUELL (1965) :

It is one of the most popular tests which is in use. The test has been named after the U.N. Hospital of Minnesota where it was constructed. The MTDDA is a long inventory that in depth and scope enables the examiner to assess the parameters of language and related sensory and motor involvement of aphasic person.

This test consists of 69 items, with more than 595 test items. The main 6 sections are :

1. Test for auditory disturbances - items ranging from word recognition, discrimination to sentence and paragraph comprehension.
2. Tests for visual and reading disturbances - items include malthing of the forms to reading comprehension of paragraphs as well as oral reading of sentences.
3. Tests for speech and language disturbances - items include testing for articulatory movement to naming word defining, picture discretion and paragraph reading.
4. Tests for visuo motor and writing distrubances - items include copying of forms and letters, to writing to dictation and written sentence formulation.
5. Tests for numerical relations and airthmetic processes - items include making change, clock setting, simple numerical combinations and written problems.

6. Tests for body image - This test requires considerably more time to administer. A short version of the test intended primarily as a screening device has been developed. It is a comprehensive list

SCHUELL'S SHORT EXAMINATION FOR APHASIA - SCHUELL (1957) :

This test is based on tests selected from the research edition of the MTDDA. Only tests considered to have high diagnostic and prognostic values are included. The test has 4 parts

SECTION A : Auditory disturbances includes :

1. Auditory recognition : tested by the subject pointing to objects and pictures of objects, after the examiner speaks only the single word and after a pause, repeats it
2. Auditory retention span: consists of pointing to objects called out serially by the examiner.
3. Repetition task where the patient repeat increasingly complex words and sentences.
4. Auditory comprehension : is also tested by following directions, again with increasing complexity including several sequence of relational words between stimuli. Finally, comprehension of a paragraph is tested by the examiner reading a story and asking "yes" and "no" questions about it

SECTION B: Reading disturbances are tested at the word level, where the stimulus is a printed word and the patient has to select a picture from an array.

1. Auditory recognition of words - consists of an auditory stimulus with a pointing response to a choke of printed words.
2. Reading comprehension is tested by reading sentences and a paragraph and asking "yes" and "no" questions.

SECTION C: includes.

1. Examination of cranial nerve involvement:

Initiating and sustaining phonation, deviation of the tongue, inequality of the lateral movements and deviation of the uvula and movements of the soft palate or difficulty in swallowing are included.

2. Sensori motor involvement is tested by repetition tasks and mispronounciations are scored as errors. A naming task is also included here, utilizing line drawings of simple items.

3. Functional speech consists of a vocabulary test, in which the patient has to explain the meaning of words and proverbs.

SECTION D: includes test of visual and writing disturbances, such as drawing a man, reproducing letters, spelfing, writing words and sentences on dictation, and spontaneous writing, tested by writing a paragraph about a picture.

No section has more than 4 items and in many cases all these need not be given. The examination takes 30 or 35 minutes.

THE NEUROSENSORY CENTER COMPREHENSIVE EXAMINATION FOR APHASIA (NCCEA) - SPREEN AND BENTON (1968) :

Purpose: The implicit purpose of NCCEA is the comprehensive examination of the language skills of patients suspected of being dysphasia. This examination helps to assess understanding and production of language, retention of verbal material, reading and writing.

This test consists of 20 language tests and 4 control tests of visual and tactile functions. The subtests of the NCCEA include :

1. Visual naming of common objects.
2. Description of use of the same objects
3 and 4. Tactile naming with right and left hand
5. Sentence repetition of tape recorded sentences.
6. Digit repetition
7. Digit reversal
8. Word fluency, using three one-mimute trials for all the words recalled, beginning with a specific letter.
9. Sentence construction from five sets of upto three words
10. Object identification by name (auditory recognition task, where the patient points to objects named by the examiner).
11. Identification by sentence, using a shortened version (36 items only) of the Token Test (SPREEN and SPELLACY, 1969).
12. Oral reading of names of objects presented before.
13. Oral reading of the 12 command sentences in test 11.
14. S2ent reading of names, which involves matching the written name of an object to a display of objects.
15- Reading sentences for meaning: the patient is instructed to execute 12 of the written commands used in test 11.
16. Visuographic naming requests the patients to write the names of 10 objects presented visually.

17. Writing names, which scores test 16 for coirectness of spelling. If the naming portion is not performed, then the patient is dictated a name and asked to write it.

18. Writing on dictation of two sentences.

19.Copying sentences

20. Articulation (which is also a list of repetition) of 30 meaningful and 8 nonsense words, presented from a tape recording.

Scores are entered on profile sheets and can be compared with norms for normal adults and for an aphasic population as percennles. Corrections for age and educational level are applied for some tests. It has been standardized for 81 patients.

FUNCTIONAL COMMUNICATION PROFILE - SARNO.M.T. 1969) :

Designed to measure "functional performance reflective of natural language use in contrast to the clinical performance" elecited in formal language tests which often sample artificial behaviour.

The FCP consists of a test of 45 communication behaviours considered communication functions of every day life, subgrouped as movement, speaking, understanding reading and other behaviours. The subject is rated on actual use of each behaviour, on the basis of a non-structured inter action in a conversational situation, wim reference to his premorbid skills.

The ratings of each behaviour are made on a continuam along a 9 point scale. Ratings take into account, speed, accuracy, consistancy, voluntary control without external cues and compensatory functions, each rating is converted into percentages in each of the 5 modalities- movement, speaking, understanding, reading and miscellaneous category which includes writing and calculations. An overall score is a single measure of an individual's

communication effectiveness in every day life. A conversion chart is provided. The profile makes no reference to symptomatology or diagnostic categories. It does not suggest a rationale or directions for treatment. It has a descriptive value. That is the ratings suggest patterns of verbal behaviour for the individual patient Information on normative data, reliability and validity is provided.

THE PORCH INDEX OF COMMUNICATIVE ABILITIES - PICA (PORCH, RE. 1967):

This test of aphasia was first proposed by PORCH.B.E. (1967) revised in 1971 and 1981. This clinical tool is designed to assess and qualify certain verbal, gestural, and graphic abilities.

Through its use the clinician may obtain general and specific levels of output ability and make inferences about input and intergative abitity. The index is made up of 18 subtests , four in verbal, eight in gestural and six in graphic response modalities using 10 common objects as stimuli. In the recent edition, porch adjusted subtests categories according to functions - 4 verbal, 2 pantomine, 2 audiotory, 2 reading, 2 visual and 6 writing.

PORCH (1971) suggested that the two major requirements of an aphasia test are high reHablity and a scoring system which spccificcs the nature of the patients response in terms of multiple dimensions. So the patients responses are scored through the use of a multidimensional scoring system, the scores being recorded on the index score sheet This multidimensional scoring system describes a response in terms of several dimensions rather than limiting the description to the phis-minus dichotomy which may be ignoring important information This system includes the following dimensions Accuracy - the degree of correctness or lightness of a response.

Responsiveness - the case with which the response is elicited, especially in terms of how much information the patient requires in order to complete the tasks.

Completeness- is the degree to which the patient carriers out the task in its entirety.

Efficiency - is the degree of facility the patient demonstrates in performing the motoric aspects of the response.

At the completion of testing, the subtest scores are compiled and the computation of gestural, verbal and graphic levels and of the overall communication level is carried out This information is then recorded and graphed on the index response summary for later interpretation.

The test has been standardized, great emphasis is laid on tester training Time of administration can range from 22 to 143 minutes.

Analysis of test results proceeds from general to specific consideration, first referring to the overall and modality levels, then to the subtest means and finally to the item scores. Additional test interpretation is provided by the use of profiles of sub test means plotted on graphs. These profiles when compared with norms arc useful in planning treatment, selection of modalities and measures of progress.

APPRAISAL OF LANGUAGE DISTURBANCES ALD (EMERICK, L. 1971) :

The ALD is a clinical tool designed to permit the clinician to make a systematic inventory of patients communicative abilities both in modalities of input and output and the central integration processes. The clinician receives a description of the patients capacity with respect to the various pathways for stimulation and response. Tasks are arranged in an ascending order of linguistic complexity with in each sub test assessing input and output factors, allowing evaluation of nature and extent of the problem. Additional flexibility is

provided by several open ended items. The ALD also includes a unit designed to assess central language processes and a final segment for evaluating areas of functioning peripheral to symbolic language such as tactile recognition, airthmetic abilities and the oral area.

The 10 sub tests include:

The oral to oral sub tests include automatic speech, repetition, supplying opposites to words, sentence completion, definition and disparities (word finding).

The oral to visual - include pointing to objects, pictures and words, comprehension and reading.

The oral to gesture sub tests are partly tests of praxis, such as shaking the head, coughing, whistling, humming, pointing to body parts and demonstrating actions.

The oral to graphic subtest is writing on auditory stimuli, the subtests are similar to the oral to oral tests, except the patient responds in writing.

The gestural to visual subtest assesses comprehension of gestures, with multiple choice objects, pictures and words.

The visual to gesture sub test examines praxis, with actual objects.

The visual to oral sub test contains reading and naming tasks.

The visual to graphic sub test includes copying, writing the names of objects and writing about a picture.

Central language is said to be examined by matching of silhouttes to line drawings, pictures to each other and pictures to written words.

Related functions: A special test of demanding or asking, airthematic and examination of tongue, lip and jaw movement and phonation.

The subjects performance is rated on a 5 point rating scale and a summary profile given. Reporting is descriptive.

The ALD protocol outlines the severity of a patients language disturbances and the areas of impairment It does not yield a classification system nor does it attempt to place aphasics into various categories.

A Gujarathi version of the ALD has been developed at the B.M. Institute, Ahmedabad, where it is currently in use.

THE AUDITORY COMPREHENSION TEST FOR SENTENCES (ACTS) - SHEWAN AND CANTER, (1971) :

This is another test which basically tries to assess language ability based on auditory compatibility of the individual. This test contains 42 sentences, which vary systematically in the parameters of length, vocabulary difficulty and syntactic complexity. The patient responds by pointing to correct picture from an array of four corresponding to the sentence presented orally by the examiner. There are 7 types of sentences with six examples of each type, created by increasing the difficulty of the three parameters independently, to a moderate and high degree scoring uses a weighted system with prompted (0-3 sec), correct (4-10 sees), and delayed (11-30 sees) responses. Incorrect, perserverative categories are scored as zero. The time estimated to administer the test is 20 - 30 minutes.

THE SKLAR APHASIC SCALE (SA) - SKLAR, 1973 : Has attempted to give a scale to test the abilities of aphasics which he has named after himself by calling it as "Sklar aphasic scale".

In this test mere are 4 sub tests representing the four language areas. Each sub test contains 25 items.

1. Auditory decoding : Uses identifying body parts, understands simple questions, identifying words and objects in the environment, identifying useful objects and recalling the objects name (memory span).

2. Visual decoding : Is tested by matching printed words, matching words with pictures, sentences completion, airthmetic and silent reading with pointing to correct answers.

3. Oral encoding : Scores functional speech, repeating spoken words, naming objects, reading an article aloud and telling about five items remembered, and describing actions of people in a picture incident

4. Graphic encoding : Requires the patient to write his name and address, copy words from a model, write names of pictured objects, sentences from dictation and describe a picture.

Each item is scored correct (O), retarded (I), assisted (2), distorted (3), erased or no response (4). A total impairment score is determined by adding the four subtest scores and dividing the sum by four. The patients are classified into categories of:

minimal impairment 0-10

mild impairment 11-20

moderate impairment 21-60

severe impairment 61-90

total or global impairment 91-100 and those categories are also described in terms of functional communication. The author claims mat on the basis of the total impairment score a prognosis for recovery can be made. The lower the total impairment score the better is the prognosis.

QUEENSLAND UNIVERSITY APHASIA AND LANGUAGE TEST (QVALT) - TYRES ET AL (1973) :

The QVALT consists of a battery of language tests comprising of 4 groups. Corresponding to 4 primary region channels of verbal communication :

1. Auditory comprehension (AC)
2. Oral expression (OE)
3. Reading (R) and
4. Writing (W)

Each channel is represented by several sub test of language function.

4 sub tests for AC

11 sub tests for OE

8 sub tests for R and

7 sub tests for W

Making 30 sub test altogether. Each subtest is divided into a number of items. It was attempted to construct items of progressively increasing difficulty, item 2 being more difficult than item 1 and so on. Tests for AC are administered first, in order to assess and take into account any loss on this channel of communication when testing OE. Similar consideration lead to the assessment of reading comprehension before writing.

Author claim it is a comprehensive and detailed battery 3-4 parallel forms are available. It takes 1- 1 1/2 hours to administer mis test

WESTERN APHASIA BATTERY (WAB) - KERTESZ AND POOLE (1974), KERTESZ. A (1982):

KERTESZ and POOLE (1974) developed another test battery called "western aphasia battery" incorporating some of the material from the Boston diagnostic test for aphasic of GOODGLASS and KAPLAN (1972).

The western aphasia battery is designed for research and clinical use. The language sub test can be administered in an hour to most patients, although two such sessions are often required for the full battery.

The oral language sub tests - a) spontaneous speech b) comprehension, c) repetition and d) naming - are used to assess the severity and type of aphasia. The summary of their scores provide the aphasia quotient (AQ). When reading, writing praxis, drawing, block design, calculation and raven's progressive matrices scores are added, the performance quotient (PQ) is obtained, and AQ and PQ combined provided the cortical quotient (CQ), a summary of the cognitive function.

The first language parameter assessed is spontaneous speech, measured in terms of fluency and information content This is tested by conversational questions and presentation of a simple picture which the patient is asked to describe. Carefully graded criteria are used to judge fluency of speech in 1 to 10 scale. The same spontaneous speech is scored for information content depending on the number of items answered correctly.

Comprehension is measured in three ways. First, the patient responds to 'yes' or 'no' question of graded complexity involving personal matters as well as abstract relationship. He is men required to point to objects pictures, body parts, colors, letters, numbers and

shapes. Finally, the patient is asked to perform sequentially ordered auditory commands with 3 single objects to each other, or placing them in relation to each other.

Repetition is tested with words and increasingly complex sentences of low and high probability. Naming is scored by :

a. Requiring the patient to identify 20 objects.

b. Finding names for an object category

c. Sentence completion and

d. Questions requiring single word responses

The subscores of 4 items of the test - they are 1) spontaneous speech, 2) comprehension, 3) repetition, and 4) naming allow a classification of the patient according to the taxonomic principle into one of 8 sub types of aphasia.

Classification:

Expressive	Fluency	Comprehension	Repetition	Naming
1. Global	0-4	0-3.9	0-4.9	0-6
2. Brocas	0-4	4-10	0-7.9	0-8
3. Isolation	0-4	0-3.9	5-10	0-6
4. Transcortical aphasia	0-4	4-10	8-10	0-8
Receptive				
5. Wernicke's	5-10	0-6.9	0-7.9	0-9
6. Transcortical sensory	5-10	0-6.9	8-10	0-9
7. Conduction	5-10	7-10	0-6.9	0-9
8 Anormic	5-10	7-10	7-10	0-9

This classification is considered a clinically valid baseline for research, diagnosis and prognosis.

Apart from the English version, Indian adaptation in Kannada, Hindi, Gujarathi, Marathi, Tamil are being used extensively for clinical purpose in India.

BENTON, SPREEN, DE RENZI and VINGROW, a team of psychologists and neurologists, are engaged in the constraction of a test battery for aphasia and they hope that it will be possible to use mis test in all languages through out the world and they have named the test as "International Test For Aphasia" BENTON and his collaborators do not consider that this test battery will provide in depth protocols of aphasic patients. They view their inventory as an instrument to provide useful clinical information and which wfll serve as a valid research technique. They consider that it win be possible to present the final form of the test only in 10 sub tests and not requiring more than 50 minutes to administer.

THE BOSTEN DIAGNOSTIC APHASIC EXAMINATION - BDAE - GOOD GLASS AND KAPLAN (1982) :

This test is like PICA, one of the widely used tests. This test was developed in the tradition of approaching the aphasia on the one hand as a psychological analysis and measurement of language related skills and on the other hand as a problem in relating particular configuration of symptoms with their neuropathological correlates.

Purpose : BDAE was designed to meet 3 general aims :

Diagnosis of presence and type of aphasic syndrome, leading to inferences concerning cerebral localization.

Measurement of the level of performances over a wide range, for both initial

determination and detection of change over time.

Comprehensive assessment of the assets and liabilities of the patient as a guide to therapy.

The sub tests included in the tests are :

1. Examination of conversational or expository speech (9 items) :

6 features of speech production, melodic line, phrase length, articulatory ability, grammatical form or variety of grammatical construction, paraphasias in running speech and word finding are rated subjectively, by the examiner on a 1-7 scale.

2. Auditory comprehension - is measured by :

   a. Word discrimination which is a multiple choice auditory word recognition test, sampling 6 semantic categories, such as objects, geometric forms, letters, actions, numbers and colors.

   b. Body parts and finger identification.

   c. Commands of increasing complexity.

   d. Complex ideational material, requiring only "yes" and "no" responses to matched questions

3. Oral expression comprises of:

   a. Oral agiliry - which is divided into

      Non verbal agility - alternating movement of the tongue and lips.

      Verbal agility - rapid repetition of words.

   b. Automatized sequences of days, months, numbers, and the alphabet

   c. Recitation of nursery rhymes, singing and typing rhythms.

   d. Repetition of words, including letters numbers and a tongue twister.

   e. Repetition of phrases and sentences

f. Word reading

g. Responsive naming

h. Visual confrontation naming

i. Body part naming

j. Animal naming, measuring fluency in controlled associated:

k.Oral sentence reading

4. Understanding written language is measured by pointing to multiple choice item. Word recognition involves the selection from a multiple choice of five written words, phonetic association, comprehension of oral spelling, symbol and word discrimination. The comprehension of written words is tested with word - picture matching as well as reading sentences and paragraphs. The test of reading comprehension is accompanied by pointing to a multiple choice of words, completing the test sentence or paragraph.

5. Writing is tested by instructing the patient to write his name and address and then copy a printed sentence. The mechanics of writing is scored on a 0-3 scale. The recall of written symbols is accompanied by serial writing of the alphabet and numbers and dictation of individual numbers, letters and words, at a primary lcveL Spelling to dictation and written confrontation naming with a range of words of average difficulty is also used. Finally, written formulation is tested by getting the patient to write connected sentences about a picture with the patient being scored on a five point scale, from 0-4.

Thus the sub test of the battery have been chosen so as to elicit quantitative evidenceof the many possible areas of defect and represent alternative "windows" that enable one to infer the status of an underlying capacity.

DYSPHASIA DIAGNOSIS AND ANALYSIS CODING CARD SYSTEM CHAREY, P. (1980):

For her doctoral thesis, the author designed a test battery suitable for regular bedside use incorporating a diagnosis or analysis coding card system including extended test procedure to cover Hterats and polygots. The testing procedures covers a wide range of language abilities including cerebral dominance, lobar localization, non verbal disorders and sequential and spatial integrative abilities. Test items include free conversation, contextual conversation, auditory perception, repetition, speech formulation, complex ideat'onal material, visual comprehension and perception, serial and sequential integration, somatic oriented spatial integration, numerical relationships and drawing and copying. Additional sub tests are provided for assessment of reading.

The severity scoring is based on Schuell's criteria in the MTDDA. A master dysphasia card is provided for localization and counter checking of linguistic features. The extended form takes approximately 2 hours for administration while the short form can be given half an hour.

Normative data on 88 dysphasics above the age of 7 years and 40 controls matched on age, sex and literacy has been collected.

BILINGUAL APHASIA TEST (BAT) - PARADIS, M (1989,1990) :

This is a multilingual battery for testing language skills in bilingual and polygol apasic patients.

The protocol consists of 3 parts :

A detailed questionnaire to reconstruct the patients bilingual history (contexts of acquisition and use).

f. Word reading

g. Responsive naming

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Thus the sub test of the battery have been chosen so as to elicit quantitative evidenceof the many possible areas of defect and represent alternative "windows" that enable one to infer the status of an underlying capacity.

Fluency is judged from speech production during extended conversation and free narration. The BDAE prescribes an interview followed by presentation of a complex picture situation as a stimuli for a short narrative description. A rating scale for fluency is included in a set of 6 rating scales for those speech characteristics that are difficult to quantify objectively.

In addition there are supplementary language tests which cover an exploration of psycholinguistics factors in auditory comprehension and in expression, exploration of disorders of repetition, study of the sparing of comprehension of whole body involvement commands and screening for hemispheric disconnection symptoms. The sub tests are based on experimental and clinical experience but have not been incorporated into the aphasia battery. They are meant for the use of the examiner who is interested in a more complete understanding of the patients language functioning because of it's value in diagnosis, therapy or both.

There is a final section on supplementary non-language tests which include drawing on command and copying reproduction of stick figures and three dimensional block designs, finger comprehension, finger naming, visual finger matching, right-left test, airthmetic test, clock setting, finger identification and matching two-finger position.

Profiles of each individual aphasic is drawn on all of the above sub tests and rating scales.

The BDAE has been adapted or is being adapted and translated into Indian languages like Hindi, Tamil, and Telugu, some amount of clinical data has been compiles in these Indian version. (PURANIK A. 1985: KACKER and PANDIT, 1986).

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This is a multilingual battery for testing language skills in bilingual and polygol apasic patients.

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A detailed questionnaire to reconstruct the patients bilingual history (contexts of acquisition and use).

A test of each language, comprising spontaneous speech, comprehension excercises, repetition, naming series, recitation, sentence contraction, test of verbal fluency, semantic and grammatical exercises, a verbal auditory discrimination test, reading writing and mental airthmetic.

A test for each given pair of language, comprising translation and acceptability judgements for sentence incorporating syntactic surface structures of the other language. Equivalent versions have been produced in about 30 languages.

In each language, speech is analyzed at various levels of spontaneity and formality, spontaneous conversation, description of a connected series of pictures, sentence construction and production of grammatical transformation in accordance with instructions followed by examples.

So that norms may be established for each component of the protocol, the tests are given to population of hospitalized neurologically non- impaired umlingual and bilingual patients.

The purpose of these test is not to diagnose aphasia, but to compare linguistic performance in each of the patients language along as many parameters as possible. However, since the battery comprises tests usually considered reliable indicators of deficits characteristics of specific types of aphasia: a differential aphasia would become apparent, given the pattern of discrepancy between deficits in the two languages.

The bilingual aphasia test has been / is being developed in the following Indian languages - Hindi, Urdu, Kannada, Tamil, Gujarathi and Oriya.

PSYCHOLINGUISTIC LANGUAGE TEST FOR APHASIA (PLTA) - MAYADEVI GHANTE :

The test design was taken up by the author for her doctoral work and is based on the frame work of a linguistic model which concerns itself with language as a psychological process.

The test based on the information structure model consists of tasks eliciting performance on the expression and comprehension of language forms associated with the formation levels.

The subject population on which it was initially tried out consisted of 30 normals above the age of 15, 30 brain damaged non aphasic subjects and 30 brain damaged aphasic patients.

The PLTA tests results are of help to the clinician from 2 points of view :

what it tells the clinician about the aphasic deficits, and

what it suggest for therapy ?

These in brief, are the formal language tests for aphasia.

LINGUISTIC PROFILE TEST (LPT) - KARANTH, P (1980) :

Originally designed in 1980, in Kannada, in order to obtain a language sample large enough and varied enough to permit a comprehensive linguistic analysis of aphasic language. It was designed with in the systems approach, covers most of the linguistic features of the language and explores alternate modalities of reception and expression. It is more a descriptive tool man a diagnostic one.

KAYES (1985) interviewed 20 public school clinicians to determine what descriptors teachers gave on their referrals of hispanic students for special services. The clinicians gave 14 different descriptions. All of the referral characterisitcs could be classified into three categories; academics, comprehensions, and expression. The most referrals (37.8%) dealt with academic skills, such as reading and writing. Comprehension skills, such as, following directions and answering questions about a story, made up 35.5% of the referral descriptions. Only 22.2% of the referral descriptions were related to expressive language skills. These expressive abilities were described in general terms, such as "unintelligible" and has trouble with english.

KAYES (1985) reported that when a child was referred directly to speech-language pathologists from kindergarten or first grade, the referrals used temrs such as "speech unclear". But if the referral came from the second grade or above, academics and comprehension in the classroom were the two primary reasons for referring, not specific oral communication difficulties.

The clinicions also perceived eight demorgraphic characteristics common to the Mexican American children labeled as language impaired and placed in their caseloads. These included:

1. Low socioeconomic level
2. Monolingmal Spanish - speaking parents
3. English - only speaking teachers and classrooms
4. Academic difficulties, primarily in reading
5. Comprehension difficulties
6. Referral and

The LPT was originally called the test of psycho linguistic abilities in Kannada (KARANTH, P 1980, 1981). A parallel version in Hindi was developed in 1980, at which time the name of the test was changed to LPT in order to make it language free.

The LPT has been used extensively with clinical population both adults and children has been found clinically useful both for evaluation and as a basis for rehabilitation and linguistic skills and structures at different linguistic levels which can serve as a base line and guide for therapeutic programming and monitoring.

ASSESSMENT OF SPEECH AND LANGUAGE IMPAIRMENTS IN BILINGUAL CHILDREN:

Assessing children and adults speech and language skills is an integral part of our profession as speech - language pathologists. This chapter will review the procedures recommended for speech language pathology and special education in assessing communicative impairments in children. A discussion follows concerning prereferrals, which includes the case history, questionnaires, and observations. Test instruments and how they can be adopted to fit the needs of students, modified procedures, including a brief discussion of dynamic assessment, assessment checklist, the interpretation of data, other important considerations in the assessment process.

REFERRAL CHARACTERISITCS:

BOONE and PLANTE (1993) stated that approximately 10% of the population will have a communicative impairment OLSON (1991) states that about 12% of the language minority population in the united states may require special education. But, in many school districts, these students are over - or under presented in special education because of overzealous referrals, inappropriate referrals, fear of refening and placement, or ignorance.

8. Bilingual or predominately English speaking.

When the clinicians case loads were examined, 100 of 109 hispanic students had not received English as a second language classes, 97 had not received bilingual education. The children were placed directly into speech and language programs without first attemtping to assist the student through alternative remedial programes.

These referral characteristics could easily identify and second language leaves as communicatively imparied - there was a sailent pattern un the referrals from teachers, and this should alert clinicians of the need of additional information from teachers and parents before testing proceeds. The preferral process becomes necessary to avoid over referral to special education and thus the possibility of in appropriate identification of hispanic children as communicatively impaired.

Other alternatives in assisting students to achieve in the classroom (OLSON, 1991). For the speech - language pathologist, the goal of preferral is to assist the special education team in determining the child's language environment, (home and school), language use (home and school), and bilingual proficiency.

The education for all handicapped children act of 1975, public law 94-142, requires that children not be placed into special services on the basis of their language, culture, socioeconomic status, or lack of opportunities to learn. The preferral process protects the rights of children who are acquiring English as a second language.

Three sources of mformation that assist clinicians in determining the child's language environment, use and bilingual proficiency are ; the case history, questiornnaries, and observation of the student

THE CASE HISTORY:

The case history is especially important for appropriate referrals of second language learners for speech and language intervention. MEITUS AND WEINBERG (1983) suggest taking a detailed case history with 10 categories for investigation-,

1. Conditions related to the onset and
2. Development of the problem
3. Previous diagnosis and
4. Rehabilitation results
5. General developmental status and
6. Health status
7. Educational/vocational status,
8. Emotional/social adjustment
9. Pertinent family concerns, and
10. Other information volunteered by the respondent

Case histories can be sent home with the student, but a personal interview and review of the information with the parent is important to ensure the completness of the responses to all of the questions.

QUESTIONNAIRES:

A number of questionnaires developed for parents and teachers of bilingual students are available. MATTES and OMARK (1991) and LANGDON and CHENG (1992) provide lists of these instruments. Very few of these questionnaires have determined the validity and reliability of the questions. KAYSER (unpublished data) administered the Bilingual language proficiency questionnaire (MATTES and SANTIAGO, 1985 Academic

Communication Associates) to 10 parents of bilingual students who had been identified as language imparied by two certified bilingual speech-language pathogists. The parents responses to questions did not indicate any parent concerns or communication or pragmatic difficulty by the students. Further parent questioning indicated that the questions were not specific enough or used terms interpreted differently by the parents. The majority of the questions should have more specific categories (e.g., Does he initiate conversations?). Speech-language pathologists should follow up all questions on a questionnaire with more probing and specific questions to ensure that the parents understand the questions and that correct information is conveyed to the clinican.

OBSERVATIONS:

The attention behaviors observed both in normal second language learners and learning disabled students are

1. Short attention span
2. Distractible
3. Daydreams
4. Demands immediate gratification,
5. Disorganised
6. Unable to stay on task and

7. Appears confused. The demands of learning English in a classroom may, at times, be overwhelming to a young student and could easily produce the behaviors just listed. Descriptions of the language behaviors common to both second language learners and teaming disabled students (ORTIZ and MALDONADO-COLON, 1986) include: speaks infrequently, uses gestures, speaks in single words or phrases, refuses to answer questions,

does not volunteer information, comments inappropriately, poor recall, poor comprehension, poor vocabulary, difficulty sequencing ideas, difficulty sequencing events, unable to tell or retell stories, confuses similar sounding words, poor pronunciation, and poor syntax.

Table 11-1 is a list of behaviors observed by MATTES and OMARK (1991) and KAYSER (1990) of bilingual children interacting with peers in the classfoom. Both suggest that language-impaired students who are bilingual have difficulty in discourse with peers. Peer relationships are valued among Hispanic students. These observations need further validation, but they are initial attempts to identify behaviros that differentiate impairment from cultural difference.

The prereferral process by speech-language pathologists is necessary so that children are not tested, labeled, and placed into speech-language services inappropriately and unncessarily. A thorough case history, questionnaires that are clear and specific to the needs of Hispanic families, and observation of behaviors that identify language differences in bilingual children must be part of that process.

TABLE :

Observable communicative behaviors for Spanish - and English speaking language impaired students.

1. Child rarely initiates verbal interactions with peers.
2. Child rarely initiates interactions in peer group activities.
3. Child rarely initiates or organizes play activities with peers.
4. Child does not respond verbally when verbal interactions are initiated by peers.

5. Child's communication has Httle or no effect on the actions of peers.

6. Child does not engage in dialogue/conversations with peers.

7. Child communicates with limited number of classroom peers.

8. Child generally uses gestures rather than speech to communicate with peers.

9. Facial expressions, eye contact, and other nonverbal aspects of the child's communication are perceived by peers as inappropriate.

10. Facial expressions and/or actions of peers indicate that they may be having difficulty understanding the child' s oral and/or nonverbal communications.

11. Peers rarely initiate verbal interactions with the child.

ADAPTING TESTS:

Adapting a test instrument means that the tasks and content of the instrument are changed to include culturally appropriate stimuli (GAVUJLAN-TORRES, 1984; KAYSER, 1989) and are therefore less biased for the Hispanic child. Adapting a test should not be the sole responsibility of an aide, secretary, or even a bilingual professional Rather, adapting tests should be a concerned effort by a bilingual team. The composition of the team may be different depending on die clinical setting. For example, in a school setting, a group of bilingual specialists may include special and bilingual educators, a reading specialist, and a community menber. The teachers may come from different grade levels such as primary and intermediate levels. In a child clinic setting, team members may include an early childhood specialist, a psychologist, nurse, social worker, and a parent The team should include professionals who are in dairy contact with the children.

KAYSER (1989) reviewed some of the strategies used by professionals to adapt test instruments. For content revision, the strategies included review of vocabulary to determine appropriateness for the age level of the children, vocabulary substitutions that are depict the experiences of the children, and developing story topics mat are more familiar for the region. Task revisions included changing formats for appropriate age levels, changing yasks to receptive rather than expressive when necessary, or vice versa, and changing tasks to another modality to access similar skills.

An understanding of and familiarity with the purpose of testing is necessary for the successful adaption of test instruments. Discussions among team members will likely lead to frustration because bilingual professionals often have had different experiences with Hispanic children. But the result of these discussions will produce an instrument that will be in the process of development As the instrument is used with children, specific items can be discussed at a later time and revised or omitted as needed.

MODIFYING PROCEDURES:

The test situation is a social communicative event that many Hispanic children have not experienced (SAVILLE-TROIKE, 1986). HEATH (1984) stated mat testing has three premises',

a. normal language learners go into a test situation with a known framework for interaction and are expected to use this framework for responses;
b. children are expected to be information givers, interpreters of pictures, and narrators;
c. children should know how to segment language, so that they know what "words" and "meanings" are, and be able to recognize that mere is an agreed-on meaning for a text Among anthropologists these premises are debated.

A standardized approach to testing limits Hispanic children to a stimulus-response set that as considered to be a western European social communicative event (TAYLOR and CLARK, 1994). Because the purpose of testing is to determine whether a communication impairment exists, modifying procedures may assist clinicians in determining whether an Hispanic student does indeed have a communication difficulty not related to normal second language acquisition, and after testing. Each of these will be discussed briefly (ERICKSON and lGLESIAS, 1986; KAYSER, 1989).

BEFORE TESTING:

Preliminary precautions should be taken before the testing session begins. These require some time in preparation but are considered to be effective.

1. Reword the instructions so that familiar phrasing terms, and sentence structure may assist the child to understand what is expected of him.
2. Develop more practice items mat will allow the child more examples of the test stimuli.
3. Obtain and use different picture stimuli that may be more representatives of the child's culture, or provide a better example of the item.
4. Omit items that you know from your experience are incorrectly identified by Hispanic children.

DURING TESTING:

The following modified procedures are presented from the easiest to implement to the most difficult The more difficult procedures require more practice by the clinican and may take time to develop.

1. Record all responses, especially if the child changes an answer.

2. Repeat the test stimuli when necessary and more frequently than what is specified or allowed in the test manual.
3. Provide additional time for the child to respond
4. Watch the child's eye gaze and body movements for referencing when mere is no verbal response.
5. Accpet culturally appropriate responses as correct
6. On vocabulary recognition tests, have the child name the picture in addition to pointing to the stimuli item to ascertain the appropirateness of the label for the pictorial representation.
7. Have the child identify the catual object, body part, she has limited experience with books, line drawings or the testing process.
8. Have the child explain why the "incorrect" answer was selected.
9. Continue testing beyond the ceiling.

AFTER TESTING:

1. Compare the child's responses to charts on dialect and/or second language acquisition features.
2. Rcscore articulation and expressive language samples, giving credit for variation or differences.
3. If the child was uncooperative or unresponsive, complete the testing in several sessions.
4. Consider having a peer, sibling, parent, or trusted adult administer the test items during a second session.

Modifying your procedure is an art and will require clinicians to develop flexibility in their testing protocols. Allowing student to use a variety of response sytles will tap the

child's true world knowledge and thereby eliminate inappropriate placement of children into special services.

DYNAMIC ASSESSMENT:

The assessment of communicative competency in bilingual children has been described as static (i.e., a measure of a child's ability on one task on one occasion) (ERICKSON and LEGESIAS, 1986; KAYSER, 1993) PENA and IGELESIAS (1992) have recommended that dynamic methods of language assessment be used to assess language learning potential in bilingual children. Dynamic assessment focuses on the individual's ability to modify language behavior or ability to learn during the testing process (ERICKSON and IGLESIA, 1986). Thus, the clinicians and student interact during the testing session rather than having the child simply respond to test stimuli. The clinician tests, teaches, or mediates, and then retests. PERIA and UGESIAS (1992) have used this method with preschoolers who were identified as language impaired and normal. The purpose of their study was to explore home and school demands for labeling versus description and also to demonstrate the efficacy of this approach in differentiating normal from language-imapired children. PENA and IGESIAS (1992) reported that the language-impaired children were less responsive to mediation than normals and required more intense effort by the examiner to produce change. Additionally, although the pretest scores for the two groups were similar, the posttest scores after mediation were markedly were similar, the post test scores after mediation were markedly different PENA and IGESIAS believe mat change in the ability to label on a one word expressive test for the normal group helped differentiate mem from the language-imparied group.

This method is an experimental and innovative approach to assessing language abilities in Hispanic students. PENA and IGESIAS (1992) state that future research directions include comparisions of other language measures, determining whether the mediated skills are transferred to other contexts, and applying learned strategies to new learning situations. There is still much to learn about this method, but it is a promising approach for differentiating language impariements from normal language in developing bilinguals.

INTERPRETING THE DATA:

De LEON (19SS) reported that team decision making concerning differentiation of children who are language impaired versus normal was more reliable than individual "expert" reviews of the same test data. The teams were from local school districts and were familiar with the community, children, and school expectations for bilingual children. It appears that determming whether a student is speech and language impaired may be improved with the consensus of a team of professionals who routinely provide diagnostic assessments. Speech-language pathologists who review only their own test results may be able to determine normal from deviant, but if the children is unsure, discussion of test data with other professionals may bring out information that one person may ovcriook or not consider.

OTHER CONSIDERATIONS IN ASSESSMENT:

TESTING PROCEDURES:

A number of practices are used by speech-language pathologists in testing bilingual Hispanic children. When clinicians are unsure of bilingual students performance, unorthodox procedures may evolve. Table 1.2 summarizes some of the practices that may be used by clinicians who evaluate Spanish-English speaking students (KAYSER, 1993).

Table :

Recommended testing and reporting procedures.

1. Use formal and informal measures of language abilities that assess form, content, and use.
2. Administer several test measures that are representative of the population.
3. Use translations of test only if they have been developed by a diagnostic team.
4. Test both languages, but one at a time.
5. Assess biHngual discourse abilities with other bilinguals.
6. Use a minimum of three elicitan'on procedures to obtain a language sample.
7. Report all adaptations of the test instrument in the evaluation report
8. Report the nature of the testing procedures, such as the use of an interpreter, language 1 first tested etc.
9. Report norms only if they are valid for the population tested.

Evaluating Hispanic children does require more time and effort than testing an English monolingual student Using questionable and succinct methods to assess these students will result in invalid assessment results.

THE TRANSLATION OF TESTS:

Tests are frequently translated and this process may be considered to be one way of adapting a test instrument merely translating the test does not equate to an appropriate adapted assessment instrument (ERICKSON and IGLESIA, 1986; KAYSER, 1989). Languages differ in honorifics (formal used versus familiar tu), gender markers (el and la), semantics (arroz, tomato based and spicy versus rice, white or brown), structural rules (adjective before noun versus adjective after noun), register (formal educated versus

barrio), dialectal variations in vocabulariy and registers (Cuban versus Mexican), and cultural norms for who speaks what to whom and when. For example, a receptive vocabulary test developed in English for middle-class urban children could be translated. But if two Spanish-speaking children, one reared in Dallas and the other in rural Mexico, were evaluated with this instrument, the test results might indicate that the rural child had an impairment The ruban Spanish-speaking child may have had the experiences of urban life, or at least may have reviewed the mamstream culture on television, thereby giving him an edge on this test The translation of tests is a simplistic attempt to test children, but it neglects complex variables such as cultural, language, and children's experiences that allow children to perform at their maximum potential.

THE CLINICIANS LANGUAGE PROFICIENCY:

There are two issues relative to the assessment of Spanish-speaking children that may have a biasing efect on the child's test performance, the clinician's Spanish or English language proficiency and dialect

ASHA's (1989) definition for bilingual speech-language pathologists and audiologists states that the clinicians must be able to speak bis or her primary language and to speak (or sign) at least one other language with native or near-native proficiency in lexicon, semantics, phonology, morphology/syntax, and pragmatics during clinical management One way of determining bilingual competency is for clinicians to submit to a language proficiency examination administered through language testing agencies. But what if a clinician desires to develop his or her bilingualism? How should his or her proficiency be monitored?

A possible solution would be for the future bilingual clinician is to develop his or her proficiency through a mentoring relationship with another bilingual clinician or other professional. The clinician's proficiency should first be evaluated by the testing agency. A contract could be developed, practiced, and monitored through videotape, tape recording, or live observations. As each of these skills is mastered, the contract is fulfilled. Bilingual clinicians must recognize their own limitations in working in English and/or Spanish. Not all clinicians are able to or interested in working with adults. Similiarry, not all bilingual clinicians are capable of working with adults versus children because of fluency and level of language proficiency. The general rule should be, whatever language competency is expected of English-speaking Speech-language pathologists, should also be expected of Spanish-speaking clinicians.

DIALECT:

Although dialect may have little effect on the comprehension of utterances by adults with other adults, it may have an effect on children who are speech and dialects (FANTINI, 1985), but we do not know what effect this may have on the child's testing performance. To illustrate., when a Southerner speaks, it may take a Westerner several minutes to become accustomed to the speech patterns. Spanish-speaking children who use a different dialect from the clinician's doalect may need additional time to become accustomed to and therefore understand the clinician's speech and language. If the child is truly language impaired, the child may have more difficulty than the child with normal language development Allowing the child to first listen to the clinician's speech patterns during a 10 minute conversational period may improve the child's performance on tests. The same may be true if the child's dialect uses a slower rate of speech than what the

clinicians uses in her or his dialect The clinician's language proficiency and dialect should be considered and monitered for proficiency and dialect should be considered and monitered for potential buasing effects on children's test performance.

STUDIES ON COMPREHENSION:

KESSLER (1972) dealt with comprehension of syntactic and morphological elements, and proposed a diachromc interference effect to account for differential comprehension abilities. She tested 12 Italian-English children aged 6-8 by asking the children to point to the picture (out of three) that best represented the spoken stimulus. For example, the child was asked to point to the picture described by the English sentence. The boy has been hit by the ball, and also to point to the picture described by the sentence, the bnall has been hit by the boy. Although the subject's command of the two languages was equal overall, more wrrors were seen with Italian pronouns and possessive adjectives than with English, and more errors were seen with English reflexive and reciprocal structures than seen with Italia. These difficulties in English were probably due to the additional complexity of the English forms, since two different structures in English correspond to a single structure in Italian (The girls see themselves and the girls see each other are expressed by Le VEGAZZE SI VEDONO). KESSLER concluded that those structures that are shared by the two languages are acquired in the same order in each language she suggested that structures are acquired in the same order because they are of equal transformational difficulty in the two languages that they are mastered in the same relative orders.

TREMAINE (1975) extended KESSLER'S method to list syntatic comprehension in French-English bilingual children aged 6-10. The major hypothesis tested was that stabilization of syntax comprehension for the more complex syntactic rules in a language

would correlate with achievement of the piagetion stage of concrete operational reasoning. Also studied was the effect of study of French on level of comprehension of English syntactic strucutres. TREMAINE'S 60 subjects were children for whom English was the dominant language; half were in a French immession program; the other half studied French 15 min a day.

In this study, as in that of KESSLER, the rate and order of acquisition of shared syntactic structures was seen to be approximately paralleL Three out of five of the test of having passed into the stage of correlate and French. (The most highly correlated task was the test of numeration, of figuring out the number of steps a man would have to climb from a given position to reach the top of the staricase. Mass and weight conservation Problems also correlated, volume and seriation did not). The children with intensive study of French performed better on the English syntax subtest This result may be attributed a sampling disortion, since parents choose one or the other course for their children, or to a higher degree of linguistic cognitive stimulation engendered in the intensive bilingual situation,

BAIN (1976) tested response to command in 48 infants between 22 and 24 months of age, at which age, he reported, a clear-cut distinction of language by addressee first manifests itself in bilingual children whose parents speak only one (Or) the other language to them. He divided the subjects into three groups by means of a task of taking messages from one parent to the other in another room. The 15 subjects of group 4 were bilingual (French- Alsatian) whose parents each regularly addressed the child in a different language. He called this the one-person one-language condition. The 17 subjects of group N were bilinguals whose parents used both languages interchangeably. Group C consisted of 16

monolingual. The mother was instructed to carry out the task of telling the child the location of a marble hidden secretary (and randomly across 100 trials) under one of two opaque containers.

Several conditions of repeating the instructions to the child, and of delaying their response by distracting them for 10 sec, were tried. In all cases the bilingual group from the one-person one-language families outperfonned the other two groups which were quite similar. This group, groupA, totalled 69.7% correct responses, whereas the other bilinguals totalled 55.0% and the monolingual 55.7%.Since the results could not be proven significant, BAIN admitted that these results constituted only suggestive support of the hypothesis that bilinguals from a one-person-one-language (i.e., coordinate) environment have accelerated cognitive development over the other two groups, and noted mat the bilinguals exposed to mixed language environment are no worse off than monolinguals.

The relation between native language (NL) (or) first language (LI) and foreign (FL) (or) second language (L2) reading comprehension has been a matter of theoritical debate in many recent publications (e.g., ALDERSON, 1984; CARRELL, 1988; or COADY, 1979).

Emphirical studies such as BERNHARDT and KAMIL (1995), CLARKE (1979), CARRELL (1991), HACQUEBORD (1989), BOSSERS (1991, 1992) and TAILLEFER (1996), sought to identify the principal sources of (FL) reading comprehension problems. These studies distinguished two major factor, namely FL knowledge (generally indicated by some kind of (FL) vocabulary or (FL) grammer test, and a factor presumed to represent some sort of common underlying ability of reading in general, usually called "reading ability". The studies mentioned above used (NL) reading comprehension as a measure of

this ability. Their outcomes provided an indication of how (FL) knowledge and (NL) reading ability contribute to (FL) reading comprehension at one particular stage of the (FL) acquisition process.

Why should one claim a positive relation between (NL) & (FL) reading ability? The reason is that general reading skills are assumed to constitute an important part of reading ability. Such skills are general in the sense that they underline both (NL) and (FL) reading. GOODMAN (1971), for instance, claimed that reading is much the same for all languages with minor variations to accommodate the specific characteristics of the language. This means that readers, once they have acquired such skills (usually in the NL), merely have to transfer them to similar tasks in the FL. Transfer of such skills cannot but result in a positive correlation between (NL) and (FL) reading comprehension, obviously good NL readers would then be good FL readers as well.

TAILEFER (1996) an data reported by him that the relation between NL and FL reading performance varied according to the complexity of the reading task. The correlation was modest between (NL) & (FL) scanning but very low between (NL) & (FL) receptive reading, the latter being more demanding. Generally, the impact of (FL) proficiency far outweighed that of (NL) reading.

A serious problem concerning that interpretation of studies that entered (NL) reading into a prediction model for FL reading performance is that the factor "NL reading" is a complex predictor in itself. It is important to realize that NL reading is not just a synonym for the "general reading skills" mentioned above, because NL-specific knowledge (NL vocabulary knowledge in particular) appears to be an important predictor of NL reading comprehension (e.g., ANDERSON and FREEBODY, 1985). Thus NL reading too is

underpinned by both language-specific knowledge & more language-independent or general reading skills.

Particular this study by SCHOONEN.R. et al., (1998) who did metacognitive and language-specific knowledge in native and foreign language reading comprehension. This was empirical study among Dutch sudents.

The results of this study among 685 students in grades 6,8, and 10 in the Netherlands to whom they administered grade-appropriate measures of reading comprehension and vocabulary knowledge in their native language (NL), Dutch, as well as, in grades 8 and 10, in English as a foreign language (EFL) revealed interesting results. All students answered the same questionnaire on (4 components of) meta cognitive knowledge of reading. The aim was to explore the relative contributions to NL and FL reading comprehension of a language-specific predictor (Vocabulary knowledge) and of general metacognitive knowledge. Results of analysis of covariance structure show that meta-cognitive knowledge was not entirely implicated in vocabulary knowledge. For older students grades (8 and 10), metacognitive knowledge appared to play a significant role in both NL and FL reading comprehension. These findings suggest that, in the educational setting investigated, poorer students in grades 6 to 8, not having spontaneously acquired metacognitive knowledge of reading, stand a good chance of profiting from instruction in this type of knowledge. Furthermore, they found evidence for the so-called threshold hypothesis, according to which (meta cognitive) knowledge of reading strategies, reading goals and text characteristics cannot compensate for a lack of language-specific knowledge if the latter remains below a certain threshold leveL

The limited FL knowledge "short circuit" the transfer of reading skills to the FL.

PAUL MARKHAM et al., (1987) assessed the influence of religious - specific background knowledge on adult listening comprehension. Sixty-five University-level students participated in the study. Twenty-eight students self-reported being religion-neutral with virtually no knowledge of moslem or Christian religious rules. . . . .of the students declared themselves to be practicing moslems, and twenty students reported being practicing Christians. The students listened to one passage describing the prayer rituals of Islam and second language describing the prayer rituals of Christianity.

The results suggested that passage content exerts a powerful influence on the listening comprehension scores of students professing close ties to a particular religion. Particularly strong differences were observed regarding the recall of major idea units. Less striking, yet obviously supportive differences were in evidence with respect to the creation of schema - appropriate elaborations and inappropriate di teons. The religion - neutral students performed some what erratically in mat they recalled more major idea units pertaining to the moslem passage, but also provided more appropriate elaborations regarding the Christian passage. In addition, retrospective interviews that yielded insightful information that generally supported the quantitative findings were conducted.

JON JONZ (1987) studied textual cohesion and second language comprehension. Two close tests were administered to native (n=199) and non native (n=230) speaks of English at three Universities in north eastern Texas. One test was based on an analysis of the lexical and referential cohesion in the passage while the other was a standard fixed-ratio test Prior to the administration of the tests, half the subjects were allowed to read the whole text from which the close tests were derived. Non native scroes on the fixed-ratio format reflect

approximately the same effect as native scores from having had prior access to the whole context Scores on the cohesion - based test, however, demonstrate that non natives are for less capable of coping with the loss of redundant cohesion data than are natives when these data are available, however, non natives employ them in comprehension to a comparatively greater extent than do native speakers. Non native speakers appeal to be for more reliant on text in comprehension processes (text-bound) than are native speakers.

EILEEN.W. GLISON (1985) studied the effect of word order on listening comprehension and pattern retention. An experiment in Spanish as a foreign language. An important skill which the language learner uses in the listening task is knowledge of the syntax of the target language. This study emprically examines the effect of one aspect of surface structure, word order, on the listening comprehension and pattern retention of native English speakers learning Spanish. The factors of sentence length and position of a sentence in a given context are also analysed. As the basis for the experiment, a brief discussion is presented of theortical implications of word order processing and memory in listening. A comparative analysis of Spanish and English work order patterns follows, which identifies three principal word order patterns of Spanish. Subject-verb-object, verb-subject-object, and object-verb-subject Results are reported of the experiment which tested the abilities of native. English-speaking students of Spanish and native spanish-speakers to comprehend an oral passage and remembers the work order of certain sentences. The findings indicate that word order significantly affected the degree of comprehension of the English speakers. In addition, for both groups of participants, sentences which were both longer and in final position in a context were comprehended most effectively. Word order and sentence position significantiy affected surface retention

of both groups. Further, there is indirect evidence to lend additional support to transformational grammar theory indicating that native speakers and foreign language learners may utilize an. . . .processing strategy of converting pattern to the basic SVO word order.

JON JONZ (1989) paper reports research into the interactive roles played in verbal comprehension proceses by the sequence of textual elements, text-specific prior knowledge, and levels of languages, proficiency. Four close tests were administered to undergraduate (n=246) and graduate (n=240) native speakers of English and to undergraduate non native (n=238) spekers at three Universities in North East Texas. One test passage was a set of descriptive facts with very little linear connectivity. A second test was based on the chronological account of a psychological experiment The third and fourth tests were scarnbled versions of the first two. Prior to the administration of the tests, half of the subjects were allowed to read the entire intact sequentially ordered text before completing the close test deserved form it. For the native speakers who read the simple collection of facts, textual sequence and topic specific prior knowledge did not contribute significantly to comprehension; however, for all subjects who read the chronological account, variation in the texts naturally occuring sequence and the interaction of that sequencing with the reader's access to topic specific prior knowledge were important factors in comprehension. Moreover, proficient non native speakers were significantly more able to capitalize on recently acquired topic-specific prior knowledge, especially when the close task that they were given was presented in its normal sequence. These findings are interpreted as evidence of normative text boundness.

Research on discourse comprehension has shown that comprehension is determined not only by the local effects (sentences or paragraphs), but also by the overall organization of a test Each type of test - e.g., stories, fables, expository and scientific texts - has its own conventional structure, knowledge of these conventions aids listeners or readers in comprehending the text as well as in recalling it later, (KINTSCH and VAN DDK 1975; MEYER 1975; THORNDYKE (1977). FLOOWING BARTLETT (1932), this knowledge has been called a schema, or more specifically following CARRELL (1983a), a formal schema.

Recent empirical research has shown the powerful effects of formal schemata in first language comprehension for both adults and children (MANDLER and JOHNSON 1971; JOHNSON and MANDLER 1980). Finding for first language acquirers, children, show that at least by first grade children have acquired story schematain second language comprehension. PARTICIA L. CARRELL (1984) reports an emphirical study of the effects of story structure on second language comprehension, specifically reading comprehension in English as a second language. Results indicate that the quantity and temporal sequence of story recall are affected by differences in story structure.

TRACEY.M. DERWING (1989) investigated information type and its relation to normative speakers comprehension. A native speaker - non native speakers (Ns - NNS) conversational adjustment in the relative proportions of information type was exammed for its relation to communicative success sixteen. Native speakers of English were paired with other native speakers and with low - proficiency non-native speakers. The subjects viewed a short film, the content of which they were to relay to their two partners independently. Communicative success was measured through comprehension questions addressed to the

listeners at the completion of the task. The relative importance of prepositional information in the narratives was determined and adjustments were measured. Analysis indicated that an increase in the proportion of background detail correlated with comprehension problems for second - language leavers. The implication of the findings are discussed and suggestions for further research are made.

JANET ANDERSON - HSICH et al., (1988) investigated the effect of foreign accent and speaking rate on native speakers comprehension. The speakers for the study were three native speakers of Chinese, with (test of speakers English) TSE comprehensibiliry scores of 180, 200 and 260 and one native speaker of American English. The speakers each were made to read passages at three different speaking rates. The tape recorded passages were than presented to native speakers of American English who responded to them by taking a listening comprehension test and rating the speech samples. The results showed that the comprehension scores were significantly higher for the native passages man for the non native passages and significantly higher at the regular rate than at the fast rate for all speakers.

It was also found that the increase in speaking rate from the regular to the fast rate resulted in a greater decrease in comprehension for the most heavily accented speaker than for the other speakers, indicating that speaking rate is more critical for the comprehension of heavily accented speech. In addition, the results suggested that prosodic deviance may affect comprehension more adversely than does segmental deviance.

ECHOIC MEMORY INTERFERENCE AND COMPREHENSION IN A FOREIGN LANGAUGE:

Current theory states that listening comprehension is crucial to second language acquisition and requires active cognitive processing (BYRNES, 1984). Researchers have thus begun to analyze how various component skills or processes of active listening constribute to the skills level of the second-language learner (Mc.LAUGHLIN, ROSSMAN, and Mc LEOD, 1983). Accordingly, the goal of the present study was to determine whether the ability of a second - language learner to process information in echoic memory is related to his or her ability to comprehend a foreign language.

Based on the hypothesis that students who are less able to comprehend speech in a foreign language suffer from greater echoic memory interference, faculty evaluated the listening comprehension of students in several inductory foreign language course. The evaluations were used to assign students to weaker and stronger comprehension groups. Both groups were tested for echoic memory interference using the standard suffix procedure in which a list of digits is read with either a tone control, or a suffix recall, appended to the end of the test Echoic interference is measured by comparing the recall performance in the suffix and non suffix (tone) conditions. Poorer rccal of terminal digits in lists in this suffix condition, as compared to the non suffix condition, indicates echoic interference. The results were consistent with the hypothesis, suggesting mat students with weaker listening comprehension depend more upon vulnerable sensory codes in echoic memory, while those with better comprehension rely on stable higher - order codes.

RECOVERY PATTERN:

GOLDSTEIN (1948) suggested that recovery of only one language may be result of impairment of the switching mechanism. He reported a case in which the switching mechanism, instead of becoming entirely inoperative, operated too readily spontaneous speech but could not be activated on command. CHLENOV (1948) reports a German Printer who learnt English and Spanish, and who spoke French and Russian as well. CHLENOV found that after the injury 3 years post trauma, his German was better than his English and other language which he learnt in his schooling. HALPEN (1941) reports some type of cases in his stduy whose mother tongue was Russian & German and HALPEN found that after the head injury the cases recovered their second language Hebrew in comprehension and also MINKOWSKI (1963) referred to several cases in the Russian literature on polyglot aphasics in which young man from Central Asia whose native language were Turkmenian, Kazakh or Georgian and learnt Russian in their carrier and MINKOWSKI found that these cases recovered Russian first after their injury. PARADIS (1977) who gave some factor, order of learning the languages, degree of proficiency in them, effective attitudes towards languages, site and size of the lesion, the role of physiological factors and the general biological condition of the patient and also therapy in one language may result in simultaneous recovery of other language. FREDMAN (1975) who selected 40 polyglot aphasics and therapy was given only in Hebrew. FREDMAN found that inspite of giving therapy only in Hebrew there was recovery found in other languages found in cases. YASMINE FAROQUI and SHYMALA CHENGAPPA (1997) who found mat language generalization and recovery in other

languages like English, Hindi and Teiugu although formal therapy was extensively in Kannada in multilingual aphasics.

METHODOLOGY

ATM:

The aim of the present study was to assess, compare and contrast the comprehension disturbances in the two language of bilingual aphasics individuals. A secondary aim was also to compare the performance of normal adult bilinguals. With the aphasics and also see whether the following variables had an effects on the performances of the aphasics on comprehension in both languages.

1. Age
2. Type
3. Therapy (duration of therapy session)
4. Education
5. Duration of exposure of second language

SUBJECTS:

The present study had two groups of subjects, namely the experimental group and the control group. The experimental group consisted of eight aphasic (N=8) adults. They were in the age range of 42 years to 75 years with a mean age of 43.2 years. All the eight aphasics were male. The control group consisted of eight normal adults (N=8). They were in the age range of 25 to 37 years with a mean age of 29.8 years. The control and experimental groups were male.

All the subjects were Tamil-English bilinguals. Tamil is a Dravidian language spoken mainly in the state of Tamil nadu while English is an European language learnt as a language as well as a medium of instruction in school period.

DIAGNOSIS AND SELECTION OF EXPERIMENTAL GROUP:

The patients were diagnosed on the basis of neurological findings obtained from neurologists as well as on the speech and language symptoms. For the sake of anonymity, the patients names are abbreviated as RP, JB, SA, NC, JS, DM, AS, MB. Among them RP, JB were BROCA'S aphasics, SA, NC were WERNICKE'S aphasics; JS, DM were GLOBAL aphasics, AS, MB were ANOMIC aphasics; these patients were diagnosed on the basis of Western aphasia battery (WAB, KERTESZ, 1982) and they all were attended speech therapy minimum two weeks to 3 months.

The following variables were taken into consideration, while selecting the patients.

1. All subjects were diagnosed as aphasics by speech and language pathologjsts or neurologists.
2. All subjects were above 18 years of age.
3. Those patients alone were included in the study who suffered a cerebrovascular accident (CVA). Testing was done between one to three month post onset When the patient had attained neurological stability.
4. All the patients were bilingual speakers with Tamil as their mother tongue and/or most used language and English as their second language.
5. All subjects in the study had minimum education till secondary school. They could read and write both the languages.
6. Only those who had no known defects of hearing and vision were selected in the study.

The demographic data of the experiemntal group is given in Table 1.

Table 1: Table shows Age/Sex, Education, Exposure of language English (L 2) and Tamil (LI), CT Scan data, Diagnosis, of the Aphasics.

Subject	Age	Sex	Edu. in Yrs	Exposure of language in years		CT. Scan data	Diagnosis
				Eng.	Tamil		
1	50	M	15 yrs	10 yrs	12 yrs	Large left temporal lobe haemorrhage and multifocal lesion in the posterior frontal opaculum	Global aphasia
2	55	M	15 yrs	15 yrs	12 yrs	Extensive area of global infarct involving left temporal, posterior frontal and inferior parietal region extending deep into subcortical regions (left corona radiata and basal ganglia)	Global aphasia
3	65	M	15 yrs	15 yrs	12 yrs	Acute non-haemorrhagic inforct in left peripheral MCA territory and extending into sub cotical white matter	Broca's aphasia
4	45	M	17 yrs	17 yrs	12 yrs	Infarcts in the left cerebellar hemi-sphere and right parietal lobe adjacent to the body of the left ventricle watershed area of me left MCA and PCA	Broca's aphasia

5	75	M	17yrs	17yrs l0yrs	Vascular lesion in left temporo parietal region	Anomia
6	42	M	17yrs	17yrs l0yrs	Acute non-haemorrahagic infarct left temporo parietal region (watershed area between PCA and MCA territories).	Anomia
7	45	M	15yrs	15yrs l0yrs	Lesion in the left posterior superior temporal lobe-enloboHc store	Wernicke's Aphasia
8	55	M	17yrs	17yrs 12yrs	Infarct in left MCA territory (temporal lobe region)	Wernicke's aphasia

The control group consisted of eight non brain damaged adults.
The demographic data of the control group is given in Table 2:
Table 2: Shows Age, Sex, Education, Exposure of language English (L 2) & Tamil (L1)

Subejct	Age/Sex	Education in years	Exposure language in years English	Tamil
1.	30/M	15 years	15 years	12 years
2.	27/M	17 years	15 years	10 years
3.	35/M	20 years	15 years	10 years
4.	30/M	15 years	12 years	12 years
5.	25/M	15years	13 years	10 years
6.	37/M	20 years	12 years	12 years
7.	25/M	15 years	12 years	10 years
8.	30/M	20 years	15 years	10 years

M = 29.8

TEST ADMINISTRATION :

The orignial Revised Token Test was translated into Tamil and the original English Test was used to test in English. The details of administration of test and scoring are described in Appendix A.

Initially each subject (control and experimental) were asked a few routine questions before beginning the test regarding their Bilingualism. Subjects were seated comfortably, in quite room. The experimental group were tested in a clinical setting and the control group was tested in the home environment. The Revised Token Test were tested in bom the languages i.e., Tamil and English.

First the testing was done in Tamil and then in English. The two languages were tested with in a time interval of not more than 2 hours.

While testing in Tamil all conversations and instructions were given only in Tamil and similiarry English was used exclusively for testing in English.

ANALYSIS:

Unpaired 'T' test was used to analyse the data and the results were analysed and discussed. Comparison for inter and intra group, among normals and aphasics was done.

RESULTS AND DISCUSSION

The aim of the present study was to assess, compare and contrast the comprehension disturbsances in the two languages of the bilingual aphasic individuals. A secondary aim was also to compare the performance of normal adult bilinguals with the aphasics and also see whether the following variables had an effect on the performance of the aphasics on comprehension in both languages,

i- Age

ii. Type of aphasia

iii. Therapy (i.e., duration of therapy)

iv. Education

v. Duration of second language exposure (English L *2*\ and

vi. Acquisition of second language (English L 2)

The above variables for both aphasics and normals are given in the following Table 3A and 3B:

Table 3A: shows Age, Sex, Mother Tongue, Second language exposure, Education, Most preferred language by the subjects etc.

Table 3B: shows Age, Sex, Mother tongue, Second language exposure, Education, Language used in the therapy etc.

Table 3A:

Sub-jects	Age/Sex	Mother tongue	Second language L 2	Age of learning L 2	Mode of learning L 2	No. of years of Education inL2	Most prefered language of the subjects
1	30/M	Tamil	English	5yrs	School	15yrs	Both
2	27/M	Tamil	English	5yrs	School	17yrs	Both
3	35/M	Tamil	English	5yrs	School	20yrs	Both
4	30/M	Tamil	English	5yis	School	15yrs	Both
5	25/M	Tamil	English	5yrs	School	15yrs	Both
6	37/M	Tamil	English	5yrs	School	20yrs	Both
7	25/M	Tamil	English	3yrs	School	15yrs	Both
8	30/M	Tamil	English	3yrs	School	20yrs	Both

Table 3B

SL No	Case Name	Age/ Sex	Mother tongue L1	Second language L 2	Age of learning L 2	Mode of learning L 2	No. of years of education in L 2	lgused in therapy Tamil
1	MB (Anomia)	42/M	Tamil	EngHsh	l0yrs	School	l0yrs	Tamil
2	AS (Anomia)	75/M	Tamil	English	12yrs	School	12yrs	Tamil
3	JS (Global)	50/M	Tamil	English	l0yrs	School	l0yrs	Tamil
4	DM (Global)	55/M	Tamil	EngHsh	l0yrs	School	l0yrs	Tamil
5	SA (Wernicke's)	55/M	Tamil	English	9yrs	School	10yrs	Tamil
6	NC (Wernicke's)	45/M	Tamil	English	l0yrs	School	l0yrs	Tamil
7	RP (Broca's)	45/M	Tamil	English	12yrs	School	12yrs	Tamil
8	JB (Broac's)	65/M	Tamil	English	l0yrs	School	l0yrs	Tamil

The "Revised Token Test" (Me NEIL and PRESCOTT, 1978) was administered to the two subject groups Le., Normal and Aphasics L The scores obtained on the tasks in both languages (Tamil - English) were complied and analysed H. The results were statistically analysed to detennme the diffemces in performance between nonnal and aphasics and among aphasics between the two languages (Tamil & English).

The results of the study have been presented under the following sections.

i. Performance of the control group

ii. Comparision of performance of control group with aphasics group

iii. Comparision of performance of aphasics across subtests and languages

iv. Performance of the aphasic group

Results are shown in the tabular form and they are also represented graphically.

i. Performance of control group:

The following Table No. 4 shows the average scores on each of the subjects across the two languages.

Table 4:

Subject	Average (Tamil L1)	Average (English L2)
1	15	15
2	15	15
3	15	15
4	15	15
5	15	15
6	15	15
7	15	15
8	15	15

The normals scored 15, the maximum score of the subtests across languages. There was no difference found between the two languages, on the subtests. The subjects in the control group were well educated, young and middle aged people (refer table 3A) and the exposure for language Tamil (L 1) and English (L 2) were almost equal and most preferred

language of the subjects were also both (Tamil L 1 and English L 2). The reason may be as follows

1. They may be balanced bilinguals

2. The bilinguals' may have a unified perceptual system. The performance of the control group in the present study was felt to be due to the unified system as there was no difference across languages for comprehension. (The perception is the first level comprehension). This finding is supported by CARAMAZZA et al., (1973) who found that in their subjects bilinguals' production system was dual, while their perception system was unified. Another support is also drawn from the study of COOPER and TERRY (1969) who analysed the perceptual judgements of 45 Spanish-English bilinguals. They found that the subjects made the perceptual judgement equally well whether the stumuli were in Spanish or English thus inferring that the bilinguals may have a unified system for perception.

ii. Comparision of performance of control group with aphasics group:

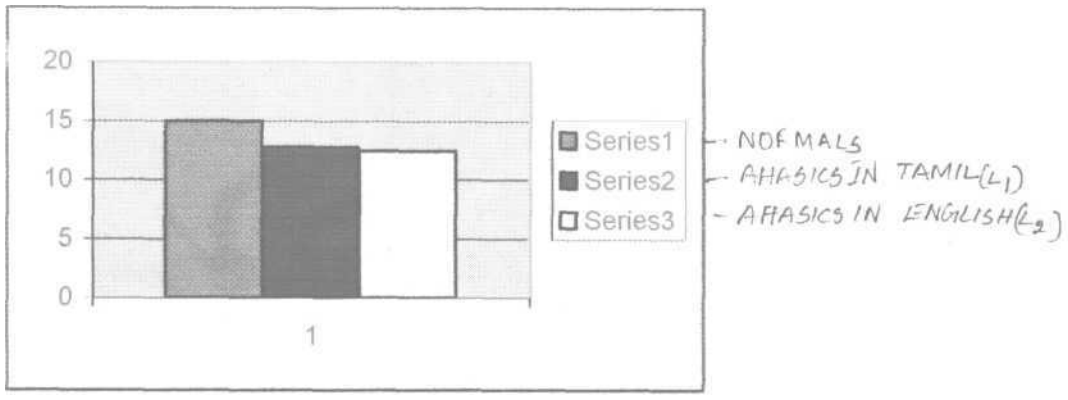
Results of statistical analysis :

Table 5: Show the Mean, SD, t - test scores of aphasics and normals.

LANGUAGE	NORMALS			APHASICS			
	N	X	SD	N	X	SD	t
TAMIL	8	15	0	8	12.75	1.18	*10.32
ENGLISH	8	15	0	8	12.48	0.60	*5.04

Significant at 0.05 and 0.01 level

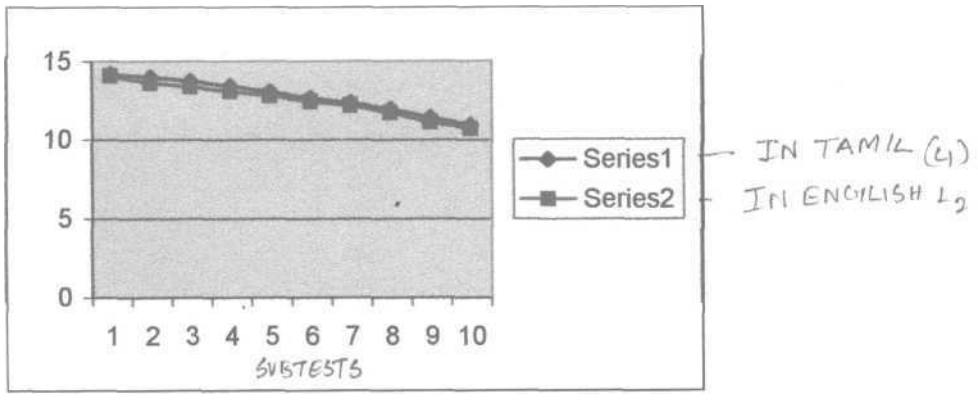
BAR DIAGRAM 1:



When comparision was studied between normals and aphasics, there was no difference in the performance of normals across languages. Aphasics showed better comprehension in Tamil but there was difference among the aphasics across languages, (i.e., four aphasics showed better comprehension in Tamil than English while the other four showed better comprehension in English than Tamil.

iii. Comparision of performance of aphasics across subtests and languages:

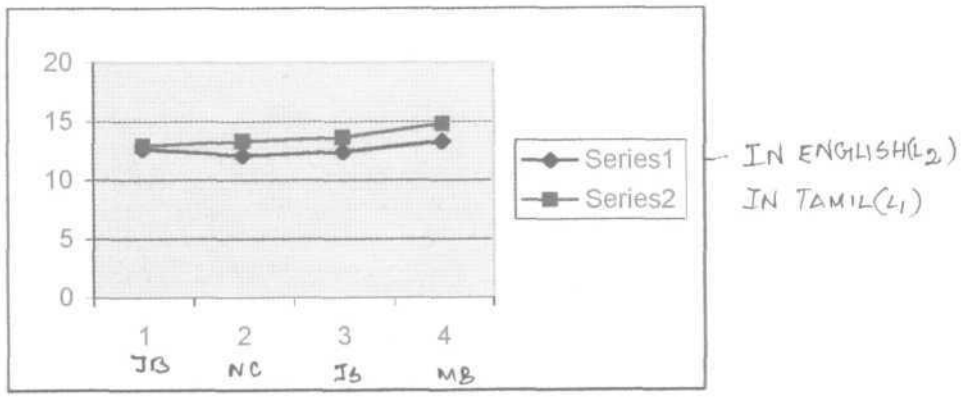
Graph 1 shows the performance of aphasics on each of the subtests.



There was differences in performance of aphasics on each of the subtests. As the complexicity of the subtests increased there was decreased performance.

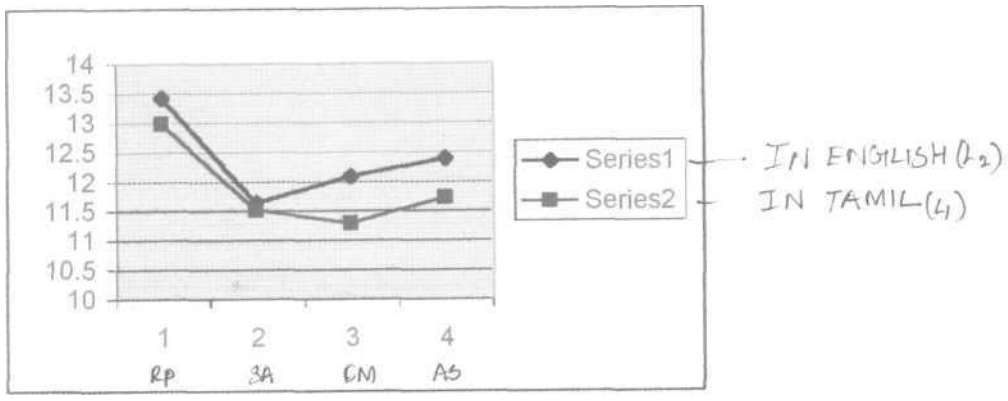
Graph 2A and 2B show the performance of aphasics across languages.

Graph 2 A shows the performance of aphasics in Tamil L 1



JB, NC, JS, MB who were Broca's, Wernicke's, Global and Anomic respectively had better comprehension in Tamil L 1 than English L 2.

Graph 2B show the performance of aphasics in English L 2



RP, SA, DM, AS who were Broac's, Wernicke's, Global and Anomic respectively had better comprhension in English L 2 than Tamil L 1.

iv. Performance of aphasic group:

The following Tables show the performance of the aphasics group on the subtests in Tamil (Table No. 6A) and English (Table No. 6B).

Table 6A: Shows the perfonnance of aphasics group on the subtests in Tamil:

	Sub test I	II	III	IV	V	VI	VII	VIII	IX	X	Avg
Broca's	15.0	15.0	15.0	14.1	13.1	12.6	12.0	11.9	10.8	10.3	12.98
Broca's	14.71	14.08	13.91	13.55	13.30	12.75	12.47	12.03	11.47	10.75	12.90
Werni-cke's	12.25	12.03	12.00	12.00	11.75	11.63	11.55	11.47	10.55	10.00	11.52
	14.27	14.13	14.02	13.42	13.33	13.12	13.00	12.75	12.55	12.07	13.26
Global	15.0	15.0	15.0	14.75	14.55	13.47	13.22	12.09	11.75	11.04	13.58
	12.55	12.41	11.75	11.52	11.21	11.20	11.00	10.82	10.50	10.00	11.29
Anomia	14.67	14.3	13.11	13.06	12.03	11.17	10.73	10.04	9.18	9.00	11.72
Anomia	15.0	15.0	15.0	15.0	15.0	15.0	14.75	14.45	14.33	14.11	14.76
Avg	14.18	13.99	13.72	13.42	13.03	12.61	12.34	11.94	11.39	10.90	

Table 6B: Shows the performance of aphasic group on the subtests in English:

	Sub test I	II	III	IV	V	VI	VII	VIII	IX	X	Avg
Broca's	15.0	14.9	14.3	13.9	13.82	13.74	13.45	12.5	11.5	11.0	13.41
Broca's	14.4	13.7	13.5	13.2	12.8	12.7	12.5	11.98	11.00	10.98	12.61
Werni-cke's	13.00	12.9	12.75	12.68	12.5	11.00	10.89	10.5	10.2	10.00	11.64
	13.98	12.87	12.71	12.5	11.9	11.76	11.6	11.56	11.64	10.70	12.06
Global	14.12	13.70	13.45	13.00	12.9	12.5	11.9	11.9	10.50	9.98	12.39
	13	12.74	12.6	12.3	12.2	12.05	12.00	11.55	11.43	11.00	12.08
Anomia	14.61	14	13.6	13.45	13.00	12.45	12.03	11.00	10.00	9.80	12.39
Anomia	14.26	14.02	14.0	13.54	13.30	13.10	13.05	12.70	12.61	12.17	13.27
Avg	14.04	13.60	13.36	13.07	12.80	12.41	12.18	11.71	11.11	10.70	

Table 7: The following table shows the average score's of the subtest by the aphasics across language.

	ENGLISH	TAMIL	AGE/SEX	THERAPY SESSIONS ATTENDED
BROCA'S (RP)	13.41	12.98	45/M	4 MONTHS
BROCA'S (JB)	12.61	12.90	65/M	1 MONTH
WERNICKE'S (SA)	11.64	11.52	55/M	3 WEEKS
WERNICKE'S (NC)	12.06	13.26	45/M	2 MONTHS
GLOBAL (JS)	12.39	13.58	50/M	3 MONTHS
GLOBAL (DM)	12.08	11.29	55/M	4 WEEKS
ANOMIA(AS)	12.39	11.72	75/M	2 WEEKS
ANOMIA(MB)	13.27	14.76	42/M	6 MONTHS

Aphasics performed poorly on all subtests as compared to normals JB (12.90 in Tamil L 1), NC (13.26 in Tamil L 1), JS (13.58 in Tamil L 1) and MB (14.76 in Tamil L 1) who were Broca's, Wernicke's, Global and Anomic respectively had better comprehension in Tamil than in English. RP (13.41 in English L *2*\ SA (11.64 in English L 2), DM (1208 in English L 2), AS (12.39 in English L 2) in who were Broca's, Wemicke's, Global and Anomic respectively had better comprehension in English The recovery pattern that was seen in all the aphasics could be matched to the pattern of differential recovery proposed by PARADES (1977). Differential recovery refers to the condition where languages are not equally impact and/or recovered at different rates. Poor

comprehension in aphasics as against that of normals seen in the present study draws ample support from literature (PEUSER and LEISCHENER, 1974, LYMAN, KWAN and CHAO, 1938). While analysing the individual performance of aphasics as seen above. JB (12.90 in Tamil L 1), NC (13.26 in Tamil L 1), JS (13.58 in Tamil L 1) and MB (14.76 in Tamil L1) who were Broca's, Wemicke's, Global and Anomic respectively had better comprehension in Tamil than in English. The above result may be inferred to be because of the following reasons:

First language i.e., Tamil L 1 could be the less impaired language and therefore it may return first as proposed by RIBOT. T. (1882X CHELNOV (1948), DREIFUSS (1961). This trend was seen in the aphasics JB, NC, JS, MB.

The other four aphasics showed a good comprehension in English L 2 RP (13.41 in English L 2), SA (11.64 in English L 2), DM (12.08 in English L 2), AS (12.39 in English L 2) in who were Broca's, Wernicke's, Global and Anomic respectively had better comprehension in English. Considering the formal therapy was extensively in Tamil for all aphasics, the reasons for such a finding were further explored. The above results could be inferred to be because of the following reasons.

1. Most recently used language or more frequently used language as used in their work place returns first i.e., English L 2 as proposed by PITRES (1895), HALPEN (1941).

2. Impairment of the switching mechanism as prosposed by GOLDSTEIN (1948) and PARADIS (1977). Switching mechanism refers to the condition where multiple processes are involved in the conscious or unconscious decision to switch from one language to another, either in processing incoming language or in producing language.

3. Due to combined influence of the variables as age, therapy, education, exposure of language English L 2 favouring RP, NC, JS, MB (refer to Table 3A and 3B) as supported by PARADIS (1977).

4. Therapy in one language (i.e., all the patients received therapy in Tamil but tests were conducted in both Tamil and English) may result in simultaneous recovery of the other language. This finding is supported by FREDMAN (1975) and FAROQUI and SHYAMALA CHENGAPPA (1997).

Thus the present study throws light on several possibilities as explanations for comprehension deficits in aphasics. Further details regarding the nature of these deficits however, need to be further explored.

SUMMARY AND CONCLUSIONS

The present study was undertaken to investigate the comprehension disturbances in Tamil-English bilingual aphasics.

In the present study eight bilingual aphasics (two Broca's, two Wernicke's, two Anomics, two Global) and eight normal subjects were included. They had Tamil L 1, as their native language and had learnt English (L 2) in school, around the age of 10 years. Their performance on the Revised Token Test (Mc NEIL and PRESCOTT, 1978) on both the languages were studied.

The results of the study revealed many interesting aspects.

i. Normals had no differences between the languages and between the subtests in their performance

ii. Aphasics performed poorly on all subtests as companed to normals

Some aphasics had better comprehension in Tamil L 1 than in English while some, had better comprehension in English (L 2) man Tamil (LI).

iii. Among different type of aphasics anomics had better comprehension in both languages (Tamil L 1 & English L 2) followed by Broca's, Werrricke's and Global,

iv. The number of therapy sessions attended by the aphasics showed an effect on comprehension ability. The aphasics who attended more number of therapy sessions had greater performances improvement in their comprehension than otherwise,

v. In the present study the recovery pattern that was seen in all the cases was found to be differential recovery. Some showed good performance in Tamil while the others showed better performance in English

Limitations of the study:

The study had following limitations

i. Limited number of subjects

ii. Subjects were only males. Therefore sex differences in performance could not be investigated.

iii. All subtypes of aphasics in greater number could not be included,

iv. No strigent distinction was mad between co-ordinate and compound bilinguals while choosing the aphasic subjects & normals.

v. Age of the control group & experimental group was not matched. Therefore the age difference could not be studied among the normal groups.

Suggestions for future study:

i. This study could be replicated with a larger sample population with adequate distinction between subtypes of aphasia, age, duration of therapy etc., including other cognate or non cognate languages viz., Tamil vs Kannada, Tamil vs Telugu, Kannada vs Telugu, Kannada vs English Telugu vs English etc.

ii. This study could be replicated with a larger sample population with age matching between the control & experimental groups,

iii. Further all sub types of aphasia could be studied.

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SCORING

Each unit in the command statement receives a separate number that represents a description of how the task was performed, chosen from the 15-point scoring system. The possibility exists that each unit in a command could have a different number assigned to it, although this would be the exception rather than the rule. Most often there are only a few nonverb units receiving a different score than the verb unit preceeding them. The scoring categories and their descriptions are given below.

15—Complete A score of 15 means that the response to an individual unit within a command was made promptly, with no mediation tactics, without extra information, was made completely, and in general, in a more "normal" manner.

14—Vocal-Subvocal Rehearsal A score of 14 indicates that the patient, for one of several possible reasons, was havinc trouble mediating the auditory command, or some part of it, and was either attempting to repeat the command or unit(s) aloud or by whispering or by simply moving his lips. This was done without unusual processing time (which would be scored as delay). If any unit in the command is eligible for a score of 14, no unit within that command can receive a score higher than a 14. Although visual sequencing of the stimuli simultaneously with the command statement is not a separate category in the scoring system, its presence indicates a deficit in auditory mediation, and should be noted. Visual sequencing is often difficult to observe, and i when it is present, it is usually seen in combination with vocal—subvocal rehearsal, but in any case is scored 14. When it is obvious, it can be noted by circling the 14 to differentiate it from the 14 representing the similar but distinct mediation tactic of vocally or subvocally rehearsing the command.

13—*Delay* A score of 13 means that the response was produced as a complete response (15), but required additional processing time to complete. The determination of additional processing time should be differentiated from slow or uncoordinated motor responses, such as those produced by hemiparaletics or ataxies. The determination of a delay is thus operationally defined as, and determined by, either of two methods. A 13 is scored if the patient delayed initiating a response, after the command had been completed, for the amount of time that it takes to silently repeat the entire command statement at the same rate of speech at which it was presented. A 13 is also scored if there was an obvious halting or changing direction of a movement once a pointing or touching gesture had been initiated. (Normals have been found to respond quite consistently within this time limit without interruptions in gesture. See subtest times for further clarification.) If the first part of a two-part command is not delayed it *is* possible thnt the second part could be delayed, thus scoring all units following the first verb a 15, and all units following the second verb a 13. (See Appendix H, subtest III, item 1.)

12—Immediacy A score of 12 indicates that the patient was unable to mediate the command in any form and was unable to use additional processing time in order to respond. Because of this inability, he responded simultaneously with the verbal statement. In other words, the patient touched the first token before the tester finished giving the command. The patient who demonstrates this type of auditory deficit usually sits close to the tokens, and usually has a hand or finger poised for the next response, in order to expedite his following of the command. When this response is made it is usually fairly obvious, and is considered clearly an aberrant response. If any unit of the command statement is eligible to receive a 12, no unit in that statement can receive a score higher than 12.

11—*Self-correction* A score of 11 indicates that die command statement or a unit within it was performed incorrectly but was *correctly* changed without external feedback. This requires that the patient actually' touched a token. If he did not actually make physical contact with the token, it is scored as a delay (13). If any unit in the statement is eligible to receive an 11, no other unit in the statement can receive a score higher than a 13. This self-correction must be done before the subsequent command has begun. (See Appendix H, subtest II, item 1.)

10—*Reversal* A score of-10 applies only to subtests III, IV, V, VI, VII, and VIII (in other words, for subtests consisting of two-part commands). A 10 indicates that any one set of units in this two-part command was reversed from the order in which they were verbally presented. For example, if the command "Put die green square under the black square" were responded to by picking up the black square and putting it on the green square, both colors would be scored a 10, the shapes a 15 (or 13 if appropriate) and the preposition would receive a 7. (See Appendix H, subtest V, item 1.) Other examples may help clarify this: If the command "Touch the red circle and the blue square" were responded to by touching the blue circle and the red square, the color units would both receive a score of 10, and the other units would be scored as 15. (See Appendix H, subtest III, item 2.) If only one unit in the two-part command is reversed and the other unit is incorrect, (e.g., if the command: "Touch the red circle and the blue square" were responded to by touching the blue circle and the black square) both color units would receive a score of 7. (See Appendix H, subtest III, item 3.) If a repeat or a cue is given and units are reversed, the reversal is not scored, but rather the repeat or cue is scored. (It may, however, be diagnostically and therapeutically significant if reversals do occur, and even though they are not formally scored when a repeat or cue is given, they can easily be noted by marking a small 10 in the upper right corner under the individual unit(s) concerned. (See Appendix H, subtest III, item 4.)

9—Repeat A score of 9 means that the patient needed the same command statement given again. There are only three conditions under which a repeat of the command may be given. The three conditions are the same for all commands and all subtests. These conditions are (1) if the patient asks for a repeat (this request does not have to be verbal; it can be indicated through a gesture); (2) if the patient does nothing for 30 seconds; and (3) if the patient does the task incorrectly, such as picking up a token when the command was to touch. The need for a repeat (as for a cue) is always judged by the verb, and not by any other of the units in the command. If the first part of a two-part command is performed correctly as judged by the verb, and the second part is not, then a repeat or a cue is appropriate. In other words, if either verb in a two-part command is performed incorrectly, a repeat or a cue *must* be given. If a command is given and an extraneous distraction or noise accompanies it, such as a sneeze by the patient or a noise outside the testroom, or an unclear or non-fluent instruction by the tester, the command should be restated without scoring a repeat or a cue. When a repeat is given, no unit in the command can receive a score higher than a 9. Only one repeat per command can be given, and a repeat can never be administered after a cue. Any time a verb would receive a score of 7 or less, a repeat and possibly a cue is called for. (See Appendix H, subtest III. item 4.)

8—Cue A score of 8 indicates that after a repeat, the patient required more information because he either did the wrong task, rejected the command, did nothing for 30 seconds, or requested a repeat. A cue is similar to a repeat but-it gives a more explicit and concrete command with a more specific gesture accompanying it. A *cue is only administered after a repeat.* Standard cues are found at the bottom of each subtest in the format booklet. These should be followed *exactly*, with standard gestures. (See Appendix H, subtest III, item 5.)

7—Error A score of 7 indicates that when a response to an entire command or a unit within a command other than the verb receives a 7, no repeat or cue is justified, and that particular unit should be scored as an error. For example, if the command is to "touch the blue square", and the patient touches the green square, the task was performed correctly (touch), and the shape was identified correctly (square), but the color was in error (scored 7). (See Appendix H, subtest I. item 1.) For prepositions, a score of 7 indicates that the token was placed in an acceptable position for the subtest (any one of six positions), but not for the specific command being tested. (See Appendix H, subtest V, item 2.)

6—*Perseveration* A score of 6 is given when a command or any unit within a command other than the verb is *incorrectly* performed, but was a perseveration of a response to a unit in the preceding command (whether or not that initial response was correct). A perseveration is defined as an incorrect response to a command (or to a unit of a command) that is also identical to the one or ones preceding it (inter-command). No incorrect response to a unit can be scored as a perseveration unless it is identical to the previous response, or sequence of responses. For example, if a command requires the patient to touch the red token and he touches the blue token, a score of 7 (error) is appropriate. (See Appendix H. subtest I, item 1.) If. however, on the following command the patient is required to touch the green token and lie again touches the blue token, and does so on succeeding commands, they should be scored as perseverations. (See Appendix H, subtest I, items 2, 3, 4.) If a break in the pattern of touching blue tokens occurs and then another inappropriate blue token is touched, that response should not be scored as a perseveration, but rather as an error (7).

A score of 6 indicates that the task called for was responded to appropriately (the patient performed the action), hence a verb cannot receive a score of 6. If a perseveration in verbs is demonstrated, and the responses are intelligible but are not an attempt to do the specific task called for, the units following them should receive a score of 5. (See scoring category 5 for explanation of this score.)

A perseveration signals that the task (the verb) was performed correctly; however, responses to units in one command are continued in subsequent commands when no longer appropriate. In other words, if a patient nondifferentially responds to a command by using the same token three times successively, the last two responses should be scored as a perseveration, but the first one should not. (See Appendix H, subtest I, items 2. 3, 4.)

5—*Intelligible/Rejection* A score of 5 can signify either an intelligible response or a rejection. It indicates that the patient responded to the command, but the response was not a clearly definable attempt at doing the task, although it was an intelligible response. This score would occur under circumstances like moving a token toward another token or demonstrating the function of a coin with a token. Before a score of 5 can be given, a repeat and a cue must be administered, because the patient did the wrong task.

If the patient rejected the command, or rejected one part of a two-part command, the score of 5 is circled. The rejection does not have to be verbal (spoken), although it could be. If the patient gesturally indicates an inability, this is acceptable. Whenever a patient rejects a command, the tester has the option to repeat and cue. or to go to another item, or to discontinue the subtest. A minimum of three items must be successively rejected before the subtest may be discontinued,

4—Unintelligible (Differentiated) A score of 4 indicates that the response could not necessarily be judged to be an attempt at the task (for example, if the patient picked up and shook the token, or stuck it in his ear) but is clearly different from other unintelligible responses. A repeat or cue would always be appropriate, because the patient had responded but had not done the task.

3—*Unintelligible (Pcrseveration)* A score of 3 indicates the same type of response was performed as with a score of 4. but it was undifferentiated from previous unintelligible tasks. The same rules for scoring a perseveration (6) apply. A repeat and cue must always precede this score.

2—*Omission* A score of 2 means that one part (either parti of a two-part command, or a preposition, was omitted. (If the patient had no awareness of an entire command, regardless of whether it had one or two parts, it is to be scored as a 1—no response.) An omission also requires a repeat and a cue before a score of 2 can legitimately be given. *(i.e.,* if a patient responds to the first part of a two-part command, asks for a repeat, and then responds only to one part, usually the second, a cue should be given.)

1—No Response A score of 1 indicates that the patient did not respond. In other words, "No Response" means that the patient may or may not be attending to the tester or objects, but in either case, does not give a recognizable response in any output modality or by nonverbal means after an appropriate repeat and cue has been given.

Scoring Notes

Rule 1: No unit in an individual command can receive a score higher than the verb preceding it. When a task has been performed, the first decision that has to be made is whether or not the patient has done the exact task (the verb—"touch" or "put") under consideration. If he has. the first score to be entered on the score sheet would be in the column headed Direct Command. It can be assumed in most cases that all units following the direct or indirect command would be scored the same as or lower than the direct or indirect command preceding them. The units receiving a lower number than the direct or indirect command are the only ones that need to be recorded at that time, thereby conserving time in writing down each unit's score. For example, in the command "Touch the red circle," if the patient touches the blue circle, the direct command would be scored a 15. the color would be scored a 7, and the shape would not have to be scored at that time, but rather would be assumed to be a 15 because the direct command received that score. (See Appendix H. subtest III, item 6.)

Exception: If the direct or indirect command were self-corrected, and the shapes, sizes. or colors were used correctly on the initial response, the verb would be scored lower than the following units. In this case, the direct or indirect command would be scored an 11, and the other units would be scored as delays (13), because the self-correction can be considered to be additional processing time. (See Appendix H, subtest III. item 7.)

Rule 2: The second verb in a two-part command can receive a score no higher than the first (See Appendix H, subtest III, item 8.) This rule applies most often where an initial delay is seen. Because the tester does not know which unit or part of the command is requiring the additional processing time, both verbs must be scored as delays. As stated before in the scoring descriptions, the second verb can receive a score lower (most often a delay) than the first verb. (See Appendix H, subtest III, item I.)

Exception: If the direct command were self-corrected before a response was made to the second part of the two-part command, the direct command would receive a score of 11, and the second verb would be scored a 13. (See Appendix H, subtest III, item 9.)

Rule 3: Verbs cannot receive a score of 6. The reason for this rule is explained in the scoring dimensions, under number 6 (perseveration).

Rule 4: Repeats and cues are judged to be appropriate only by the verbs. Regardless of how other units in the command are performed, the carrying out of the requested verb is the criterion for administering repeats and cues. Any verb that is eligible to receive a score of 7, or a score of 5 (a score of 6 is not possible for the verb) or below, requires a repeat or a cue. When scoring the verbs, the only responses that can be scored as an error (7) are when: (1) the patient touches instead of picks up (puts); (2) the patient picks up instead of touches; or (3) the patient points toward a token when asked to touch. All other incorrect responses to verbs are to be scored as 5 or below.

Rule 5: Only one repeat and one cue can be given per command.

Rule 6: A repeat always precedes a cue.

Rule 7: The scoring of the "adverbial clause" in subtests IX and X are determined by the touching of only one token. The adverbial chiuse can receive a score no higher than the verb preceding it. The determination of right or wrong, and degrees thereof, is decided when the patient touches only one token, which would be correct, and it follows the score that the verb received. If the patient touches more than one token, the adverbial clause is scored as a 7 or below. The last token touched is the one scored (as with a self-correction). In an "either. . . or" command the tester must make a decision as to which of the two tokens the patient was attempting to touch in determining what is incorrect and correct in the response.

Rule 8: If the placement of the token is neither to the left nor the right in subtests VII and VIII, the preposition is scored as 5. If, however, the command is to place a token to the right of another and the patient places the token to the left (or the reverse), this preposition is scored an error (7).

Rule 9: If, after a repeat and cue, the patient does not arrange the tokens in a new prepositional relationship, all units are scored an error *(7) with the exception of the preposition, which is scored an omission (2) (e.g., if the patient picks up each token successively and then puts them back in their respective places). After a cue. each unit would receive a score of 7, except the preposition, which would be scored a 2. A score of 5 would not be appropriate because the patient did pick up a token and place it somewhere. It merely happened to be nondifferential for the preposition, and in this case more of an omission. (See Appendix H, subtest V, item 3.)*

Rule 10: If the patient simultaneously touches two tokens (either with one or two hands) the command(s) should be repeated and rued appropriately until the patient touches the two tokens sequentially. During the pretest, this rule should be explained if the patient touches two tokens simultaneously when screening for colors. If the patient does touch two tokens at the same time (either with one or two hands), the examiner should say, "I want you to first touch one and then touch the other." He should then recheck the patient when the screening procedure is finished to confirm the patient's-knowledge of what is expected of him with regards to sequential touching responses.

Rule 11: Occasionally, a patient will "pick up" a token instead of "touch" it. If the patient merely picks it up without doing anything with it, such as placing it in relation to another token or doing something unintelligible with it, it should be scored and administratively treated as the correct response to the verb "touch".

PRETEST INSTRUCTIONS
(use all tokens)

Command Statements:

1. CAN YOU SEE ALL OF THESE OBJECTS ON THE TABLE? (Gesture at all of the tokens.)
2. I WANT YOU TO TOUCH ANY CIRCLE. (If patient does not do it or does the wrong task, say:) THESE ARE ALL CIRCLES. (Gesture at all of the circles.) YOU TOUCH ONE OF THEM.
3. NOW TOUCH ANY SQUARE. (Same as with circle if omitted or incorrect.)
4. NOW TOUCH ANY LITTLE SQUARE. (Same as above.)
5. NOW TOUCH ANY BIG SQUARE. (Same as above.)
6. NOW TOUCH ANY LITTLE CIRCLE. (Same as above.)
7. NOW TOUCH ANY BIG CIRCLE. (Same as above.)
8. NOW TOUCH TWO THINGS THAT ARE BLUE; GREEN; RED; WHITE; BLACK. (Demonstrate the correct choices if patie omits or gets one wrong.)

If any part is not performed correctly the first time, go back and check it when the other parts of the pretest are finished. Do this until you are sure the patient has the concepts of differentiated colors, shapes, and sizes.

PATIENT INSTRUCTIONS
(use large tokens)

I AM GOING TO ASK YOU TO DO MANY DIFFERENT THINGS WITH THESE.
(Gesture at all of the tokens.)
SOME OF THEM MAY BE HARD AND SOME WILL BE EASY. BUT I WANT YOU TO LISTEN CAREFULLY AND DO EXACTLY WHAT I SAY ... ARE YOU READY?

Subtest I:
(use large tokens)

Command Statements:

1. TOUCH THE BLACK CIRCLE.
2. TOUCH THE RED CIRCLE.
3. TOUCH THE BLUE SQUARE.
4. TOUCH THE GREEN SQUARE.
5. TOUCH THE WHITE CIRCLE.
6. TOUCH THE GREEN CIRCLE.
7. TOUCH THE BLACK SQUARE.
8. TOUCH THE WHITE SQUARE.
9. TOUCH THE BLUE CIRCLE.
10. TOUCH THE RED SQUARE.

Repeat: Same as command, with a random touching gesture.
Use if the patient:

1. Does the wrong task, i.e., picks up the token (judged by verb only).
2. Does nothing for 30 seconds.
3. Indicates that he has not understood the command.

Cue: I WANT YOU TO TOUCH (give a random touching gesture) THE . . , (same as command).

Subtest II:
(use all tokens)

Command Statements:

1. TOUCH THE BIG GREEN CIRCLE.
2. TOUCH THE BIG BLACK CIRCLE.
3. TOUCH THE LITTLE BLUE SQUARE.
4. TOUCH THE BIG RED SQUARE.
5. TOUCH THE LITTLE RED CIRCLE.
6. TOUCH THE LITTLE GREEN SQUARE.
7. TOUCH THE LITTLE WHITE SQUARE.
8. TOUCH THE BIG WHITE CIRCLE.
9. TOUCH THE BIG BLUE CIRCLE.
10. TOUCH THE LITTLE BLACK SQUARE.

Repeat: Same as command, with a random touching gesture.
Use if the patient:

1. Does the wrong task, i.e., picks up the token (judged by verb only).
2. Does nothing for 30 seconds.
3. Indicates that he has not understood the command.

Cue: I WANT YOU TO TOUCH (give a random touching gesture) THE . .. (same as command).

Subtest **III:**
(use large tokens)

Command Statements:

1. TOUCH THE GREEN SQUARE AND THE BLACK SQUARE.
2. TOUCH THE BLUE CIRCLE AND THE GREEN SQUARE.
3. TOUCH THE WHITE CIRCLE AND THE BLUE SQUARE.
4. TOUCH THE BLACK CIRCLE AND THE WHITE SQUARE.
5. TOUCH THE GREEN CIRCLE AND THE RED SQUARE.
6. TOUCH THE RED SQUARE AND THE WHITE CIRCLE.
7. TOUCH THE WHITE SQUARE AND THE GREEN CIRCLE.
8. TOUCH THE BLACK SQUARE AND THE RED CIRCLE.
9. TOUCH THE RED CIRCLE AND THE WHITE CIRCLE.
10. TOUCH THE BLUE SQUARE AND THE BLACK CIRCLE.

Repeat: Same as command, with a random touching gesture.

Use if the patient:

1. Does the wrong task, i.e., picks up the token (judged by verb only).
2. Does nothing for 30 seconds.
3. Indicates that he has not understood the command.

Cue: I WANT YOU TO FIRST TOUCH (give a random touching gesture) THE . . . (same as first part of command) AND THEN TOUCH THE . . . (same as second part of the command).

Subtest IV:
(use all tokens)

Command Statements:

1. TOUCH THE BIG GREEN SQUARE AND THE LITTLE BLACK SQUARE.
2. TOUCH THE BIG BLACK SQUARE AND THE LITTLE RED CIRCLE.
3. TOUCH THE BIG BLUE CIRCLE AND THE LITTLE GREEN SQUARE.
4. TOUCH THE BIG WHITE CIRCLE AND THE LITTLE BLUE SQUARE.
5. TOUCH THE LITTLE BLUE SQUARE AND THE BIG BLACK SQUARE.
6. TOUCH THE LITTLE GREEN CIRCLE AND THE BIG RED SQUARE.
7. TOUCH THE LITTLE BLACK CIRCLE AND THE LITTLE WHITE SQUARE.
8. TOUCH THE LITTLE WHITE SQUARE AND THE BIG GREEN CIRCLE.
9. TOUCH THE LITTLE RED CIRCLE AND THE BLUE CIRCLE.
10. TOUCH THE BIG RED SQUARE AND THE BIG WHITE CIRCLE.

Repeat: Same as command, with a random touching gesture.

Use if the patient:

1. Does the wrong task, i.e., picks up the token (judged by verb **only).**
2. Does nothing for 30 seconds.
3. Indicates that he has not understood the command.

Cue: I WANT YOU TO FIRST TOUCH (give a random touching gesture) **THE** . . . (same as first part of command) **AND** THEN TOUCH THE . . . (same as second part of command).

Subtest V:
(use large tokens)

Command Statements:

1. PUT THE BLACK SQUARE BY THE RED CIRCLE.
2. PUT THE BLACK CIRCLE ABOVE THE WHITE SQUARE.
3. PUT THE BLUE SQUARE BEFORE THE BLACK CIRCLE.
4. PUTTHE RED CIRCLE ON THE BLUE CIRCLE.
5. PUTTHE BLUE CIRCLE BEHIND THE GREEN SQUARE.
6. PUTTHE GREEN SQUARE UNDER THE BLACK SQUARE.
7. PUTTHEWHITE CIRCLE BELOWTHE BLUESQUARE.
8. PUTTHEWHITE SQUARE NEXT TO THE GREEN CIRCLE.
9. PUTTHE RED SQUARE IN FRONT OF THE WHITE CIRCLE.
10. PUT THE GREEN CIRCLE BESIDE THE RED SQUARE.

Repeat: Same as command, with a random picking up and placing gesture. .

Use if the patient:

1. Does the wrong task, i.e., touches the token (judged by verb only).
2. Does nothing for 30 seconds.
3. Indicates that he has not understood the command.

Cue: PICK UP (give a random picking up and placing gesture) THE .. . (same as first part of command)
AND PUT IT . . .(same as second part of command).

Note to tester: The dots and 'x's (for 'under') on the scoring form indicate the acceptable responses to the preposition, based on experimentation with normal subjects. Circle the dot or 'x' most similar to the patient's response, or enter a dot or 'x' elsewhere in the space if needed.

Subtest VI
(use all tokens)

Command Statements:

1. PUTTHE BIG RED SQUARE IN FRONTOF THE BIG WHITE CIRCLE.
2. PUTTHE BIG BLUE CIRCLE BEFORE THE LITTLE GREEN SQUARE.
3. PUTTHE LITTLE GREEN CIRCLE UNDER THE BIG RED SQUARE.
4. PUT THE BIG BLACK SQUARE ABOVE THE LITTLE RED CIRCLE.
5. PUT THE LITTLE BLACK CIRCLE BELOW THE LITTLE WHITE SQUARE.
6. PUTTHE LITTLE BLUE SQUARE BEHIND THE BIG BLACK CIRCLE.
7. PUT THE BIG GREEN SQUARE BY THE LITTLE BLACK SQUARE.
8. PUTTHE BIG WHITE CIRCLE NEXT TO THE LITTLE BLUE SQUARE.
9. PUTTHE LITTLE RED CIRCLE BESIDE THE BIG BLUE CIRCLE.
10. PUTTHE LITTLE WHITE SQUARE ON THE BIG GREEN CIRCLE.

Repeat: Same as command, with a random picking up and placing gesture.

Use if the patient:

1. Does the wrong task, i.e., touches the token (judged by verb only).
2. Does nothing for 30 seconds.
3. Indicates that he has not understood the command.

Cue: PICK UP (give a random picking up and placing gesture) THE .. . (same as first part of command)
AND PUT IT . . . (same as second part of command).

Note to tester: The dots and 'x's (for 'under') on the scoring form indicate the acceptable responses to the preposition, based on experimentation with normal subjects. Circle the dot or 'x' most similar to the patient's response, or enter a **dot** or V elsewhere in the space if needed.

Subtest VI):
(use large tokens)

Command Statements:

1. PUT THE BLACK CIRCLE TO THE LEFT OF THE WHITE SQUARE.
2. PUT THE-RED SQUARE TO THE LEFT OF THE WHITE CIRCLE.
3. PUT THE BLACK SQUARE TO THE RIGHTOF THE RED CIRCLE.
4. PUTTHE BLUE CIRCLE TO THE LEFT OF THE GREEN SQUARE.
5. PUT THE GREEN CIRCLE TO THE LEFT OF THE RED SQUARE.
6. PUTTHE WHITE SQUARE TO THE RIGHT OF THE GREEN CIRCLE.
7. PUTTHE RED CIRCLE TO THE RIGHT OF THE BLUE CIRCLE.
8. PUT THE WHITE CIRCLE TO THE RIGHT OF THE BLUE SQUARE.
9. PUT THE BLUE SQUARE TO THE LEFT OF THE BLACK CIRCLE.
10. PUT THE GREEN SQUARE TO THE RIGHT OF THE BLACK SQUARE.

Repeat: Same as command, with a random picking up and placing gesture.
Use if the patient:

1. Does the wrong task, i.e., touches the token (judged by verb only).
2. Does nothing for 30 seconds.
3. Indicates that he has not understood the command.

Cue: PICK UP (give a random picking up and placing gesture) THE . . . (same as first part of command) AND PUT IT . . . (same as second part of command).

Subtest VIII
(use all tokens)

Command Statements:

1. PUTTHE LITTLE GREEN CIRCLE TO THE LEFT OF THE BIG RED SQUARE.
2. PUTTHE BIG WHITE CIRCLE TO THE LEFT OF THE LITTLE BLUE SQUARE.
3. PUTTHE BIG GREEN SQUARE TO THE RIGHT OF THE LITTLE BLACK SQUARE.
4. PUTTHE LITTLE WHITE SQUARE TO THE RIGHT OF THE BIG GREEN CIRCLE.
5. PUTTHE BIG RED SQUARE TO THE LEFT OF THE BIG WHITE CIRCLE.
6. PUT THE LITTLE BLACK CIRCLE TO THE LEFT OF THE LITTLE WHITE SQUARE.
7. PUTTHE LITTLE RED CIRCLE TO THE RIGHT OF THE BIG BLUE SQUARE.
8. PUTTHE BIG BLACK SQUARE TO THE RIGHTOF THE LITTLE RED CIRCLE.
9. PUT THE BIG BLUE CIRCLE TO THE LEFT OF THE LITTLE GREEN SQUARE.
10. PUTTHE LITTLE BLUE SQUARE TO THE LEFT OF THE BIG BLACK CIRCLE.

Repeat: Same as command, with, a random picking up and pointing gesture.
Use if the patient:

1. Does the wrong task, i.e., touches the token (judged by verb only).
2. Does nothing for 30 seconds.
3. Indicates that he has not understood the command.

Cue: PICK UP (give a random picking up and placing gesture) THE . . . (same as first part of command) AND PUT IT . . . (same as second part of command).

SubtestIX:
(use large tokens)

Command Statements:

1. INSTEAD OF THE GREEN SQUARE, TOUCH THE BLACK SQUARE.
2. UNLESS YOU HAVE TOUCHED THE WHITE SQUARE, TOUCH THE GREEN CIRCLE.
3. IF YOU HAVE NOT TOUCHED-THE WHITE CIRCLE, TOUCH THE BLUE SQUARE.
4. TOUCH THE GREEN CIRCLE IF YOU HAVE NOT TOUCHED THE RED SQUARE.
5. EITHER TOUCH THE RED SQUARE OR THEWHITE CIRCLE.
6. TOUCH THE BLUE CIRCLE INSTEAD OF THE GREEN SQUARE.
7. TOUCH EITHER THE RED CIRCLE OR THE BLUE CIRCLE.
8. TOUCH THE BLACK SQUARE IF THERE IS A RED CIRCLE.
9. TOUCH THE BLUE SQUARE UNLESS YOU HAVE TOUCHED THE BLACK CIRCLE.
10. IF THERE IS A BLACK CIRCLE, TOUCH THE WHITE SQUARE.

Repeat: Same as command, with a random touching gesture.

Use if the patient:

1. Does the wrong task, i.e., picks up the token (judged by verb only).
2. Does nothing for 30 seconds.
3. Indicates that he has not understood the command.

Cue: Same as repeat.

Subtest X
(use all tokens)

Command Statements:

1. TOUCH THE BIG BLACK SQUARE UNLESS YOU HAVE TOUCHED THE LITTLE RED CIRCLE.
2. TOUCH THE LITTLE BLUE SQUARE IF THERE IS A BIG BLACK CIRCLE.
3. UNLESS YOU HAVE TOUCHED THE LITTLE WHITE SQUARE, TOUCH THE BIG GREEN CIRCLE.
4. IF THERE IS A BIG WHITE CIRCLE, TOUCH THE LITTLE BLUE SQUARE.
5. TOUCH THE 3IG 8LUE CIRCLE INSTEAD OF THE LITTLE GREEN SQUARE.
6. TOUCH THE LITTLE GREEN CIRCLE IF YOU HAVE NOTTOUCHED THE BIG RED SQUARE.
7. TOUCH EITHER THE BIG GREEN SQUARE OR THE LITTLE BLACK SQUARE.
8. INSTEAD OF THE BIG RED SQUARE TOUCH THE BIG WHITE CIRCLE.
9. IF YOU HAVE NOT TOUCHED THE LITTLE BLACK CIRCLE, TOUCH THE LITTLE WHITE SQUARE.
10. EITHER TOUCH THE LITTLE RED CIRCLE OR THE BIG BLUE CIRCLE.

Repeat: Same as command, with a random touching gesture.

Use if the patient:

1. Does the wrong task, i.e., picks up the token (judged by verb only).
2. Does nothing for 30 seconds.
3. Indicates that he has not understood the command.

Cue: Same as repeat.

END OF TEST

REVISED TOKEN TEST

Subtest Scoring Forms

McNeil, M.R., and Prescott, T.E.

Subtest I _____ Time _____

Command	Dir. Comm. Verb	Col. I Adj.	Shap. I Noun	Total = U	$\bar{X}$ Comm. Score
1				3	
2				3	
3				3	
4				3	
5				3	
6				3	
7				3	
8				3	
9				3	
10				3	
$\bar{X}$ Ling. Elements				30	$\bar{X}$ Subtest

Subtest II _____ Time _____

Command	Dir. Comm. Verb	Size I Adj.	Col. I Adj.	Shap. I Noun	Total # U	$\bar{X}$ Comm. Score
1					4	
2					4	
3					4	
4					4	
5					4	
6					4	
7					4	
8					4	
9					4	
10					4	
$\bar{X}$ Ling. Elements					40	$\bar{X}$ Subtest

Subtest III Time

Command	Dir. Comm. Verb	Col. I Adj.	Shap. I Noun	Implied Comm. Verb	Col. II Adj.	Shap. II Noun	Total # U	X Comm. Score
1							6	
2							6	
3							6	
4							6	
5							6	
6							6	
7							6	
8							6	
9							6	
10							6	
X Ling. Elements							60	X Subtest

Subtest IV Time

Command	Dir. Comm. Verb	Size I Adj.	Col. I Adj.	Shap. I Noun	Implied Comm. Verb	Size II Adj.	Col. II Adj.	Shap. II Noun	Tool /	X Comm. Score
1										
.2										
3									^ ^	
4									^ *	
5									/ ^	
6										
7									/ ^	
8									^ ^	
9										
10										
X Ling. Elements										X Subtest

Subtest V — Time

Command	Dir. Comm. Verb	Col. I Adj.	Shap. I Noun	Place Prep.	Col. II Adj.	Shap. II Noun	Total / # U	$\bar{X}$ Comm. Score
1							6	
2							6	
3							6	
4							6	
5							6	
6							6	
7							6	
8							6	
9							6	
10							6	
$\bar{X}$ Ling. Elements							60	$\bar{X}$ Subtest

Subtest VI — Time

Command	Dir. Comm. Verb	Size I Adj.	Col. I Adj.	Shap. I Noun	Place Prep.	Size II Adj.	Col. II Adj.	Shap. II Noun	Total / # U	$\bar{X}$ Comm. Score
1									8	
2									8	
3									8	
4									8	
5									8	
6									8	
7									8	
8									8	
9									8	
10									8	
$\bar{X}$ Ling. Elements									80	$\bar{X}$ Subtest

SubtestVII_____Time _____

Command	Dir. Comm. Verb	Col. I Adj.	Shap. I Noun	Left Rt. Prep.	Col. II Adj.	Shap. II Noun	Total / # U	$\bar{X}$ Comm Score
1							6	
2							6	
3							6	
4							6	
5							6	
6							6	
7							6	
8							6	
9							6	
10							6	
$\bar{X}$ Ling. Elements							60	$\bar{X}$ Subtest

Subtest VIII _____ Time _____

Command	Dir. Comm. Verb	Size I Adj.	Col. I Adj.	Shap. I Noun	Left Rt. Prep.	Size II Adj.	Col. II Adj.	Shap. II Noun	Total / # U	$\bar{X}$ Comm. Score
1									8	
2									8	
3									8	
4									8	
5									8	
6									8	
7									8	
8									8	
9									8	
10									8	
$\bar{X}$ Ling. Elements									80	$\bar{X}$ Subtest

Subtest IX_____Time _____

Command	Dir. Comm. Verb	Col. I Adj.	Shap. I Noun	Adv. Clause	Total / #U	$\bar{X}$ Comm. Score
1					4	
2					4	
3					4	
4					4	
5					4	
6					4	
7					4	
8					4	
9					4	
10					4	
$\bar{X}$ Ling. Elements					40	$\bar{X}$ Subtest

Subtest X _____ Time _____

Command	Dir. Comm. Verb	Size I Adj.	Col. I Adj.	Shap. I Noun	Adv. Clause	Total / = U	$\bar{X}$ Comm. Score
1						5	
2						5	
3						5	
4						5	
5						5	
6						5	
7						5	
8						5	
9						5	
10						5	
$\bar{X}$ Ling. Elements						50	$\bar{X}$ Subtest

APPENDIX - B.

Payirchi mun kurippugal

[Ella porulgalaiyum ubayogikkavum].

Payirchigal :

1. ingu vaikkapattirukkum porulgal anaitthum ungalal kanamudigiradha? [ella porulgalai-yum sutikatavum].
2. enakku ingu ulla edavadu oru vattatai tottu katta vendum. [no:yali eduvum sey-yavillai endralo alladu tavaru seydalo, sollavum:] idu ellam vattanga! [vattanga-lai suttikkatavum]. ni:nga! avatril ondrai tottu kattavum.
3. ippoludu edavadu oru saduratai todavum [noyali tavaru seydalo alladu eduvum seyyavillai yendral, mele ulladu po:l]
4. ippo:du edavadu siriya saduratai toda-vum. [mele ul!adu pol].
5. ippo:du edavadu periya saduratai toda-vum. [mele ul!adu pol].
6. ippo:du edavadu siriya vattatai todavum [mele ul!adu pol].
7. ippo:du edavadu periya vattatai todav-um. [mele ul!adu pol].
8. ippo:du ni:lam; pacchai; segappu; vel!ai, karuppil ul!a rendu porulgalai todavum [no:yali seyyavillai alladu ondru tavar-useidalo, seriyanadai seidu kattavum]

[edavadu oru pagudi mudal muraiyil sariya-
-ga seyyavillai yendral, payirchi munnil ulla
matra pagudigalai mudita piragu, anda
pagudiyai marupadiyum seyyavum. idai
no:ya:likku ella vannanga!, vadivanga!,
matrum alavuga! urudiyaga teriyum
varai seyyavum].

No:yali kurippuga!

[Periya porulgalai
ubayogikkavum].

Na:n ungalai idai vaittu pala velaiga!
seyya sollapo:gire:n. [ella porulgalaiyum
suttikattavum].

Adi oru siladu kaştama:ga irukkum, oru
siladu sulabamaga irukkum, a:nal ni:nga!
na:n solluvadai nida:nama:ga gavanittu,
appadiye seyyave:ndum .... ni:nga! tayara

Uruppu I.

[Periya porulgalai
ubayo:gikkavum].

Payirchiga!:

1. Karuppu vattatai todavum.
2. Sigappu vattatai todavum.
3. Ni:la saduratai todavum.
4. Pacchai saduratai todavum.
5. Vellai vattatai todavum.
6. Pacchai valttatai todavum.
7. Karuppu saduratai todavum.
8. Vellai saduratai todavum.
9. Ni:l vattatai todavum.
10. Sigappu saduratai todavum.

A:lo:sanai : No:yali tirumba seivadarku, ade: pola payirchi kodutu, angange tottu kattavum Tirumba yeppo seiyya ve:ndum :

(i) No:yali tavara:ga seidal
(ii) 30 nodigalukku ondrum seiyavillai
(iii) Payirchi puriyavillai yendru kurinal.

Uruppu II

[ella porulgalai ubayogikkavum].

Payirchigal :

1. Periya pacchai vattatai todavum.
2. Periya karuppu vattatai todavum.
3. Siriya ni:la saduratai todavum.
4. Periya sigappu saduratai todavum.
5. Siriya sigappu vattatai todavum.
6. Sriya pacchai saduratai todavum.
7. Siriya vellai saduratai todavum.
8. Periya vellai vattatai todavum.
9. Periya ni:la vattatai todavum.
10. Siriya karuppu sadurattai todavum.

A:lo:sanai: No:yaliyai yeppo:du tirumba seiyya sollave:ndum?

(i) No:yali tavara:ga seidal
(ii) 30 nodigalukku me:l ondrum seiyavillai
(iii) Payirchi puriyavillai yendru ku:rina:l

Kurippu : Neengal toda ve:ndum (thottu kattun-gal). Anda...(payirchi)

Uruppu III

[Periya porulgalai ubayogikkavum].

Payirchigal :

1. Pacchai sadurattaiyum karuppu sadurattaiyum todavum.
2. Ni:la vattataiyum pacchai sadurattaiyum todavum.
3. Vellai vattataiyum ni:la sadurattaiyum todavum

4. karuppu vaṯṯaṉaiyum vellai saduraṯṯaiyum toḍavum.
5. Pacchai vaṯṯaṉaiyum sigappu saduraṯṯaiyum toḍavum.
6. Sigappu saduraṯṯaiyum vellai vaṯṯaṉaiyum toḍavum.
7. Vellai saduraṯṯaiyum pacchai vaṯṯaṉaiyum toḍavum.
8. karuppu saduraṯṯaiyum sigappu vaṯṯaṉaiyum toḍavum.
9. Sigappu vaṯṯaṉaiyum vellai vaṯṯaṉaiyum toḍavum.
10. Ni:la saduraṯṯaiyum karuppu vaṯṯaṉaiyum toḍavum.

A:losanai : [Me:le kuriyabadi].

No:yalikku tarum ubyoga kurippu :

Ni::ngal mudalil toḍavendum (toṯṯuka:ṯṯavum) andha... (payirchiyin mudal pagu-di) apparam thoḍavendiyadu... (payirciyin pin pagudi).

Uruppu IV

[Ella porulgaḷaiyum ubayogikkavum].

Payirchigaḷ :

1. Periya pacchai saduraṯṯaiyum, siriya karuppu saduraṯṯaiyum toḍavum.
2. Periya karuppu saduraṯṯaiyum siriya sigappu vaṯṯaṉaiyum toḍavum.
3. Periya ni:la vaṯṯaṉaiyum siriya pacchai saduraṯṯaiyum toḍavum.
4. Periya vellai vaṯṯaṉaiyum siriya ni:la sad-uraṯṯaiyum toḍavum.
5. Siriya ni:la saduraṯṯaiyum periya karup-pu saduraṯṯaiyum toḍavum.
6. Siriya pacchai vaṯṯaṉaiyum periya sigappu saduraṯṯaiyum toḍavum.

7. Siriya karuppu vaṯṯaṯaiyum siriya veḷḷai sadurattaiyum toḍavum.
8. Siriya veḷḷai sadurattaiyum periya pacchai vattataiyum toḍavum.
9. Siriya sigappu vaṯṯaṯaiyum ni:la vaṯṯaṯaiyum toḍavum.
10. Periya sigappu sadurattaiyum periya veḷḷai vaṯṯaṯaiyum toḍavum.

A:losanai :

[Me:le kuriyabadiye seiyyave:ndum.]

Ade pola naya:likku tirumba seiyyum nilai yerpattal, munbu ku:riyadhu pola, no:ya:likku ubyoga kurippugal kodu--kka ve:ndum.

Uruppu V

[Periya porulgalai ubayogikkavum].

1. Karuppu saduratai sigappu vaṯṯaṯin pakkam po:ḍavum.
2. karuppu vaṯṯaṯai veḷḷai sadurattin me:le po:ḍavum.
3. Ni:la sadurattai karuppu vaṯṯaṯin munne poḍavum.
4. Sigappu vaṯṯaṯai ni:la vaṯṯaṯin me:l po:ḍa--vum.
5. Ni:la vaṯṯaṯai pacchai sadurattin pinna:di poḍavum.
6. Pacchai sadurattai karuppu sadurattin ki:le po:ḍavum.
7. Veḷḷai vattataī ni:la sadurattin ki:le poḍavum
8. Veḷḷai sadurattai pacchai vaṯṯaṯin aḍutu po:ḍavum.
9. Sigappu sadurattai veḷḷai vaṯṯaṯin munne. po:ḍavum.
10. Pacchai vaṯṯaṯai sigappu sadurattin pakkam po:ḍavum.

A:losanai :

[me:le ku:riyadu pola].

No:ya:likku tarum ubyoga kurippugal :

Yeduthu [Yedutukattungal] anda.(payirc-iyin mudal pagudi) vaikkavum..(payirchiyin pin pagudi).

Paritcai seibavarukku kurippu :

Scoring formil ulla pulli matrum 'x' no:yali payirciyai yeppadi seigirar yenbadai kuripadharkku mattum dan.

Uruppu VI

[Ella porulgalaiyum ubayogikkavum].

Payirchigal :

1. Periya sigappu sadurattai periya vellai vattatin mun po:davum.
2. Periya ni:la vattatai siriya pacchai sadura-ttin munna:di po:davum.
3. Siriya pacchai vattatai periya sigappu sadurattin adiyil po:davum.
4. Periya karuppu sadurattai siriya sigappu vattatin me:le po:davum.
5. Siriya karuppu vattatai siriya vellai sadur-attin kile po:davum.
6. Siriya ni:la sadurattai periya karuppu vatta-tin pinna:di po:davum.
7. Periya pacchai sadurattai siriya karuppu sadurattin pakkam po:davum.
8. Periya vellai vattatai siriya ni:la sadurattai aduttu po:davum.
9. Siriya sigappu vattatai periya ni:la vattatin pakkam po:davum.
10. Siriya vellai sadurattai periya pacchai vattatin me:le po:davum.

A:losanai matrum ubyo:g kurippugal:

[Me:le ulla badi]

Uruppu VII [Periya payirchigalai ubayogikkavum].

1. Karuppu vaṯṯatai vellai saduraṯin yeḍadu pakkam po:ḍavum.
2. Sigappu sadurattai vellai vaṯṯaṯin yeḍadu pakkam po:ḍavum.
3. karuppu sadurattai sigappu vaṯṯaṯin valadu pakkam po:ḍavum.
4. Ni:la vaṯṯatai pacchai sadurattin yeḍadu pakkam po:ḍavum.
5. Pacchai vaṯṯatai sigappu sadurattin yeḍadu pakkam po:ḍavum.
6. Vellai sadurattai pacchai vaṯṯaṯin valadu pakkam po:ḍavum.
7. Sigappu vaṯṯatai ni:la vaṯṯaṯin valadu pakkam po:ḍavum.
8. Vellai vaṯṯatai ni:la saduraṯin valadu pakkam po:ḍavum.
9. Ni:la sedurattai karuppu vaṯṯaṯin yeḍadu pakkam po:ḍavum.
10. Pacchai sadurattai karuppu sadurattin valadu pakkam po:ḍavum.

A:losanai matrum ubyo:g kurippugal:

[Me:le ulla badi].

Uruppu VIII

[Ella payirchigalai ubayogikkavum].

1. Siriya pacchai vaṯṯatai periya sigappu sadur-aṯṯin yeḍadu pakkam po:ḍavum.
2. Periya vellai vaṯṯatai siriya ni:la saduraṯṯin yeḍadu pakkam po:ḍavum.
3. Periya pacchai sadurattai siriya karuppu saduraṯṯin valadu pakkam po:ḍavum.
4. Siriya vellai sadurattai periya pacchai vaṯṯaṯin valadu pakkam po:ḍavum.
5. Periya sigappu sadurattai periya vellai vaṯṯaṯin yeḍadu pakkam po:ḍavum.
6. Siriya karuppu vaṯṯatai siriya vellai saduraṯṯin yeḍadu pakkam po:ḍavum.

7. Siriya sigappu vaṭṭatai periya ni:la sadura-ttin valadu pakkam po:ḍavum.
8. Periya karuppu sadurattai siriya segappu vaṭṭatin valadu pakkam po:ḍavum.
9. Periya ni:la vaṭṭatai siriya pacchai sad-urattin yeḍadu pakkam po:ḍavum.
10. Siriya ni:la sadurattai periya karuppu vaṭṭatin yeḍadu pakkam po:ḍavum.

A:lo:sanai matrum ubyoga kurippu:

[Me:le ulla badi]

Uruppu IX

[Periya porulgaḷai
Ubayo:gikkavum].

Payirchigal:

1. Pacchai sadurattirkku badila:ga karuppu sadu-rattai toḍavum.
2. Vellai sadurattai tottirundal pacchai vaṭṭatai toḍavum.
3. Vellai vaṭṭatai toḍavillai a:nal ni:la sadurattai toḍavum.
4. Sigappu saduraltai toḍavillai a:na:l pacchai vaṭṭa-tai toḍavum.
5. Sigappu sadurattai alladu vellai vaṭṭatai toḍavum
6. Pacchai saduraltirku badila:ga ni:la vaṭṭatai toḍavum.
7. Sigappu vaṭṭam alladu ni:la vaṭṭatai toḍavum.
8. Sigappu vaṭṭam yirunda:l karuppu sadurattai toḍavum.
9. Karuppu vaṭṭatai tottirundal ni:la sadurattai toḍavum.
10. Karuppu vaṭṭam yirunda:l vellai sadurattai toḍavum

A:losanai:

[Me:le ulla badi].

Uruppu X

[Yella payirchigaḷaiyum
ubayo:gikkavum].

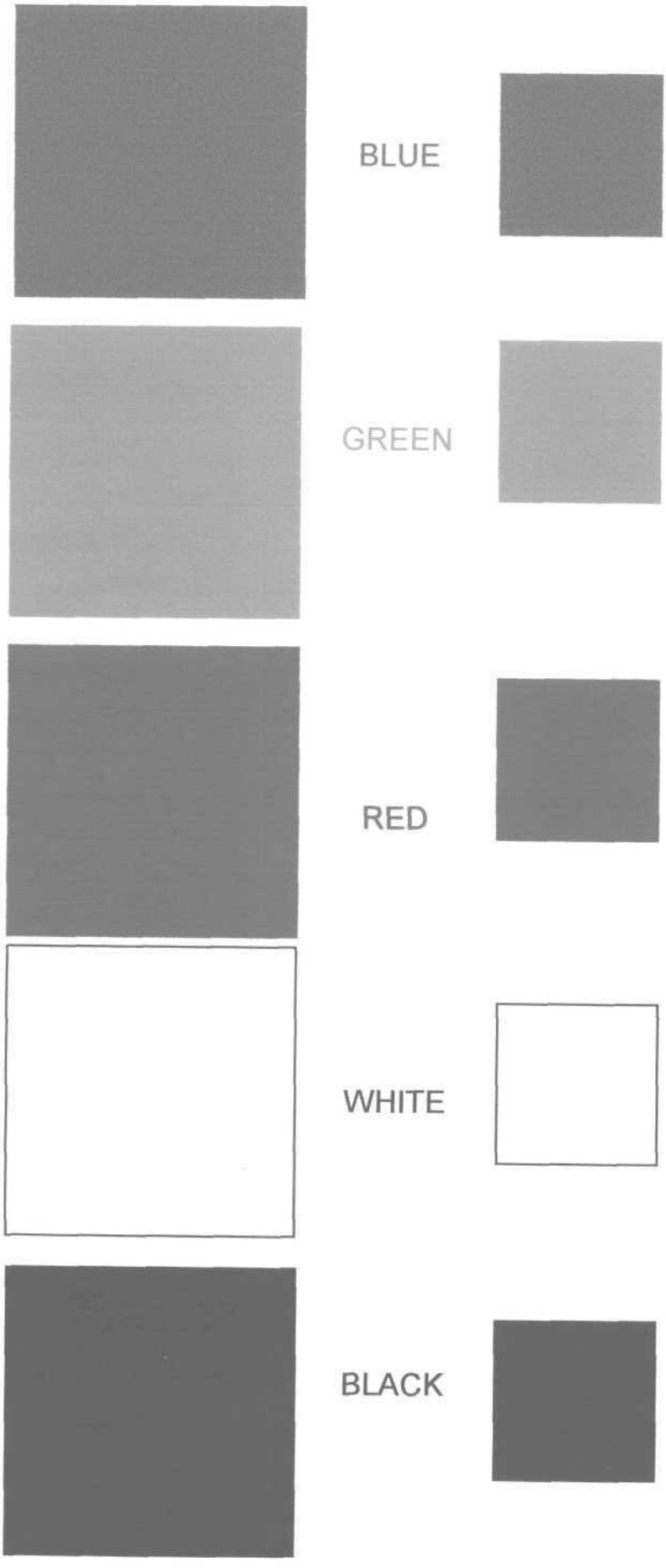
1. Siriya sigappu vaṯṯatai toṯṯirunda:l periya karuppu saḍurattai to:ḍavum.
2. Periya karuppu vaṯṯam irunda:l siriya ni:la saḍurattai toḍavum.
3. Siriya vel!ai saḍurattai toṯirunda:l periya pacchai vaṯṯatai toḍavum.
4. Periya vel!ai vaṯṯam irunda:l siriya ni:la saḍurattai toḍavum.
5. Siriya pacchai saḍurathirku badila:ga periya ni:la vaṯṯatai toḍavum.
6. Periya sigappu saḍurattai toḍavillai a:nal siriya pacchai vaṯṯatai toḍavum.
7. Periya peicchai saḍuram alladu siriya karuppu saḍurattai toḍavum.
8. Periya sigappu saḍurattirkku badila:ga periya vel!ai vaṯṯatai toḍavum.
9. Siriya karuppu vaṯṯatai toḍavilai anal siriya vellai saḍurattai toḍavum.
10. Siriya sigappu vaṯṯam alladu periya ni:la vaṯṯatai toḍavum.

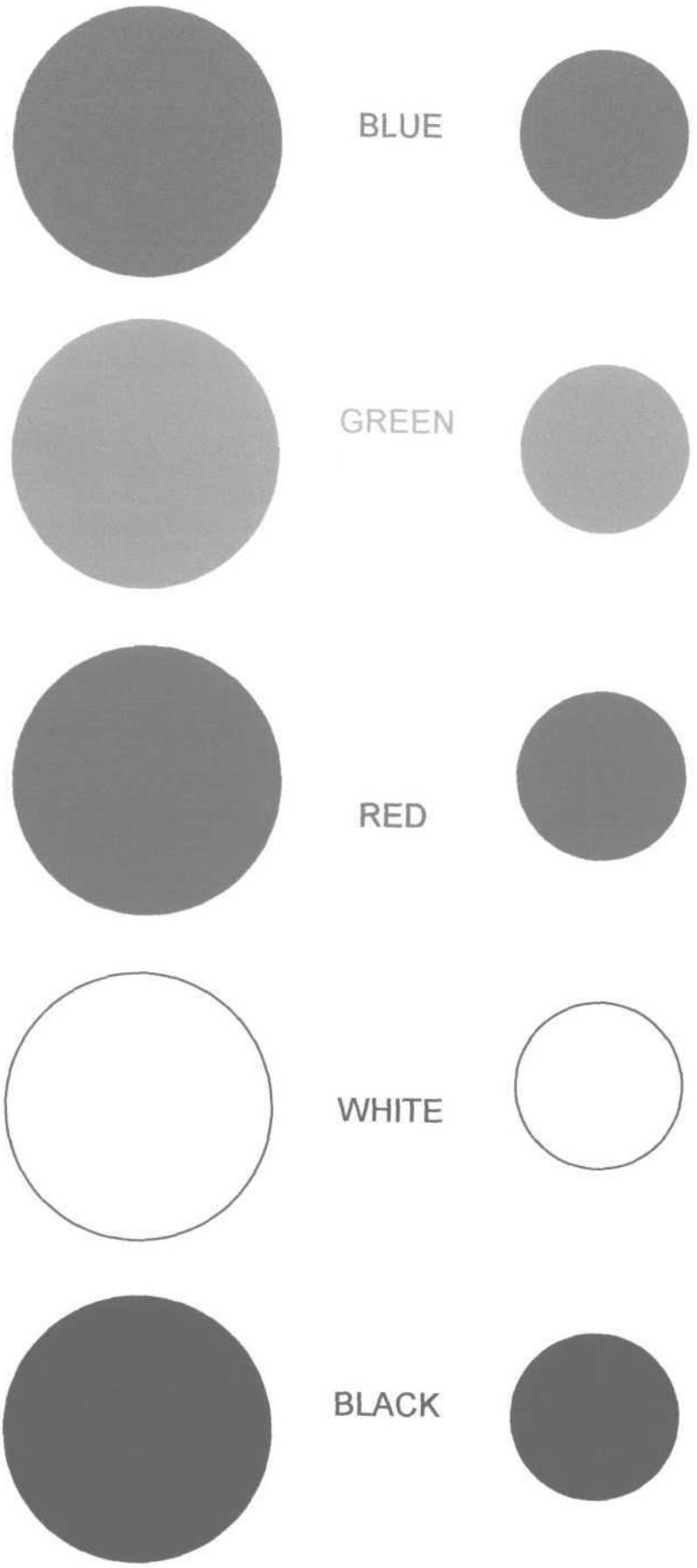
A:losanai matrum ubayog kurippu:

[Me:le ul!a badi].

Payirchi mudivu.

TOKENS USED IN TEST




BLUE
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