

**A STUDY OF PERSONALITY DIFFERENCES
AMONG STUTTERERS AND NON-STUTTERERS
WITH SPECIAL REFERENCE TO
THE EFFECTIVENESS OF SOME
TREATMENT METHODS ON STUTTERING**

HARPREET SINGH

**A THESIS PRESENTED TO THE UNIVERSITY OF MYSORE
FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
(Speech and Hearing)**

**ALL INDIA INSTITUTE OF SPEECH AND HEARING
MANASAGANGOTRI, MYSORE-570006**

DEDICATED TO
MY FATHER AND MOTHER
WITH LOVE AND AFFECTION

DECLARATION

I do hereby declare that the thesis which is being submitted for the award of the degree of Doctor of philosophy in Speech and Hearing of the University of Mysore, is the result of an independant investigation carried out by me under the guidance of Dr. J. Bharath Raj, Ph.D., professor and Head, Dept. of Clinical psychology. All India Institute of Speech and Hearing, Mysore.

I further declare that this thesis or part thereof has not been submitted before to this or any other University for the award of any degree.

Mysore.

Dated, 26th March 1990

Harpreet Singh
(**Harpreet Singh**)

CERTIFICATE

I hereby certify that the thesis entitled "A Study of Personality Differences among Stutterers and Non-stutterers with Special reference to the Effectiveness of Some Treatment Methods on Stuttering" submitted by Sri. Harpreet Singh, Speech Therapist, ENT Deptt., R.N.T. Medical College and A.G., Hospitals, Udaipur, for the Degree of Doctor of Philosophy of the University of Mysore, is the product of bonafide research work carried out by him at the Department of Clinical Psychology, All India Institute of Speech and Hearing, Mysore, India, under my guidance and supervision during the period 1985-1988.

Mysore
Dated: 26th March 1990


DR. J. BHARATH RAJ
Guide.

ACKNOWLEDGEMENTS

In the course of my research work, I was helped directly and indirectly by a number of people from the All India Institute of Speech and Hearing, Mysore and other organizations. It is imposaible to acknowledge all of them. However, some of them deserve special mention.

First and foremost, I must thank my teacher and guide, Dr.J.Bharath Raj, professor and Head, Department of Clinical psychology. A.I.I.S.H. He devoted a lot of time la guiding and supervising my work. without him guidance and help, this work would not have been possible. It was a great privilege to have him as my teacher.

This work was partly supported by a fellowship from A.I.I.S.H. I am grateful to Dr.M.Nithya Seelan, Former Director, A.I.I.S.H. for granting me the fellowship and Dr. B. Rathna, Farmer Director, A.I.I.S.H, for continuing this grant.

I meet acknowledge my grateful thanks to -
Dr.(Miss) Shailaja Nikam, Director-in-charge, A. I, I. S. H. for her valnable help ; Dr.(Miss) M.V. Susheela, professor. Department of Otorhinolarygology for her moral support ; Dr.(Mrs.) pratibha Karanth, professor. Department of Speech pathology for providing me with subjects for research ; Mr. p. Kalaiah, Readar. Department of Clinical psychology for his critical help; the staff of Department of Clinical psychology for giving access to psychodiagnostic test materials. Dr. N.P. Nataraja, professor. Department of Speech Sciences for extending the use of computer facilities and Mr. C.S. venkatesh. Lecturer, Department of Speech Sciences.

I thank the Secretary, Medical and Health Department, Government of Rajasthan, Jaipur and Dr. B.Bhandari, Principal and Controller, R.N.T .Medical College and Associated Group of Hospitals, Udaipur for permitting me to go on leave to complete my doctoral work.

My special thanks are due to Dr.A.K.Gupta,M.S., Professor and Head, E.N.T.Department, R.N.T.Medlcal College and Associated Group of Hospitals for his kind help and support.

I appreciate the help that I received from Shri D.S.Mehta, Administrative Officer; Sh.S.A. Hameed, Office Superintendent and Sh.U.S.Maroo, U.D.C., R.N.T.Medlcal College, Udaipur, and Shri Shiv Kant Sharma, L.D.C., Ministry of Health and family welfare. Government of Rajaathan , Jaipur in processing my papers for leave promptly.

I am thankful to Dr.S.Chandrasekhar, Director, Institute of Speech and Hearing, Bangalore, for extending me the use of his institute's facilities and Shri D.D. Sharma, President, Speak-Well Association, Bangalore for providing the subjects.

I am extremaly grateful to Drs, Martin R.Adams, University of Houston, M.Basavaana, Sri Venkateswara University, Hiram E. Fitmgerald, Michigan State University, Roger Ingham, UCSB, A.R. Mallard, South-West Texas State University, Glyndon and Jeana Riley, Rileys Speech and Language Institute and Ronald L.Wabeter, Hollins Communication Research Institute, for providing ma with reprints of their articles and the suggestions.

I am deeply grateful to R.K.Pruthi and Phalguna for their invaluable help,

I am indebted to Mahapatra for his suggestions and help in the analysis of the recorded speech samples.

I am thankful to Ranjit, ReKha and Sastry for their continued active support.

Mr. Subhaah Mehta did a wonderful job in typing out this dissertation, I am extremely grateful to him.

I owe my sincere thanks to the subjects, Whose active participation has made possible the completion of this study.

HARPREET SINGH

CONTENTS

1.	INTRODUCTION	1
2.	TERMS AND DEFINITIONS	30
3.	REVIEW OF LITERATURE	
	1. Personality and Intelligence Studies	49
	2. Treatment Method	77
	3. Indian Literature	164
4.	RESEARCH METHODOLOGY	
	1. Tests	173
	2. Experimental Design and Treatment Procedures	199
5.	DATA ANALYSIS	243
6.	RESULTS AND DISCUSSION	
	1. Personality Study	254
	2. Treatment Methods	327
	SUMMARY AND CONCLUSIONS	
	BIBLIOGRAPHY	
	APPENDICES	

CHAPTER - I

INTRODUCTION

Communication play* a vital role in human lives. The desire to communicate la natural and life without communication is unthinkable. Man is the only species which la capable of producing oral, verbal, vocal and meaningful symbols for the purpose of communication, Which is known as speech. The production of speech being highly skilled behaviour, but still most people are able to achieve it.

Some of us are afflicted with a spaech disorder termed as stuttering. Modern society places heavy demands on its members in the matter of communication. whenever the individual is unable to meet them, the penalties are heavy. These may range from adverae comments to refusal to listen to the individual. He becomes fearful and then the individual is afraid to approach communicative situatlons which involve even minimal risks, for him the production of speech becomes fraught with dread and difficulty.

In the and, the individual starts shunning the communication. In the extreme cases ha might avoid people or even the use of telephone , because it reminds him of

fearful consequences. The person becomes immobilized, depressed, anxious and lacks confidence in situations where others will function normally.

The phenomenon of stuttering is the most puzzling and controversial one. Extensive research and even more abundant speculations have failed to unfold the mysteries of many of its basic features. And the issue as to why individuals stutter can hardly be considered settled.

PERSONALITY CHARACTERISTICS OF STUTTERERS

There has been considerable body of research over the past 50 years period, focusing on the personality and the adjustment of the stuttering individuals. The aim of most of these studies has been to explore the hypothesis that particular personality and adjustment characteristics distinguish stuttering and normal speaking individuals. A variety of personality assessment techniques, including interviews, personality inventories, projective tests has been employed to measure similarities and differences between the two groups.

Despite the existence of rather rich literature, the relationship between stuttering and personality has remained unclear. The numerous findings in this area are often mutually contradictory. McDowell in 1928 first reported

a study about the emotional adjustment of stutterers. He found essentially no difference in the degree of adjustment between the two groups. Bender (1942) studied 249 college stutterers and same number of non-stutterers who were matched for age, intelligence and socioeconomic background and found that stutterers were more introvert,neurotic, less dominant in interpersonal relationship and lacking in self-confidence. Schultz (1947) studied 20 adult stutterers and found stutterers to be submissive, inhibited,hypersensitive and asocial. Richardson (1944) examined personalities of thirty stutterers and concluded that stutterers are socially more introverted, and serious in their outlook on life's problems.

Goodstein (1938) while concluding the research on the personality characteristics of stutterers said,"There appears to be little evidence to support the contention that the adult stutterers are neurotic or severely maladjusted." He further stated that implications of these studies were difficult to assess because the " methodological and conceptual limitations were so important that few, if any, generalisations were clearly suggested ..."

Three major reviews of the research on stuttering concluded that : " evidence does not appear to indicate

that the average stuturer is distinctly neurotic or maladjusted " (Bloodsteln, 1969), " there is no evidence to suggest that stuturers have a particular type of personality " (Beech and Fransalla, 1968), and " there are no demonstrable differences between stuturers and non-stuturers " (Sheehan, 1970),

Bloodsteln (1969, 1975) in summary remarks on the personality of stuturers, stated, "there is little evidence of any specific kind of character structure or broad set of basic personality traits that is typical of stuturers as a group" Bloch and Goodstein (1971) concluded in their review that " ... adult stuturers are somewhat more anxious, somewhat less self-confident, and somewhat more socially withdrawn than non-stuturers."

Prins(1972) remarks that " Persons Who stutter do not seem substantially poorer in personality adjustment than persons who do not. Specifically, the correlation data suggest an even stronger conclusion : that whether a person stutters, and the degree to which he stutters, has nothing to do with his personality." But he cautions that further research will be needed to evaluate the validity of this statement, Bharath Raj and Pranesha Rao (1970) administered B.P.I. to a group of stuturers and non-stuturers(N*100)

and reported significant differences between the two groups on the N and E scale at 0.01 level. Results also indicated that stutterers have closer affinity to neurotics than to normals . Stutterers were found to be more inclined to introversion and Introverted neurotics were many more in number than extroverted neurotics.

Hegde (1972) analysed the Bysenck Personality Inventory Scores of 106 stutterers and compared stutterers' mean scores on the neuroticism and extroversion scales with the test norms of psychiatric and normal populations. Stutterers emerged as less extroverted than the average and their mean score was very close to that of anxiety patients. Stutterers were as far from hysterics as were anxiety patients on the extroversion-introversion dimension. Hence they can be considered Introverts with their degree of introversion roughly corresponding to that of anxiety patients. Stutterers were very close to the mixed group of neurotics.

Devaki (1981) tested normals and stutterers each 30, on Sacks Sentence Completion Test (Kannada version) and concluded that stutterers have greater adjustment problems and more concern about their speech problems. They were also low in self-confidence, had guilt feelings and fears in family life, Bharath Raj (1982a) compared

stutterers and normals on a personality test and concluded that " stuttering is basically a deviant personality functioning mainly manifested in the qualities, depressive tendency, emotional instability, introversion, feelings of inferiority and disturbed interpersonal communication,"

Sermas and Cox(1982) evaluated 19 stutterers. Most showed some evidence of psychopathology, further results indicated that, "Nine exhibited obsessive - compulsive personality trends : formality, difficulty expressing warm emotions, indecisiveness, difficulty expressing anger directly, pre-occupation with detail, and sensitivity to social criticism, especially from authoritarian figures. The two female stutterers showed histrionic tendencies: seeking reassurance, craving activity, over-reaction to minor events, and exaggeration of emotions. Two patients had previously been treated for depression while others were mildly to moderately depressed at the time of the interview."

Nammalvar and Rao (1983) studied 30 stammerers and equal number of controls and noted that individuals with stammering showed high degree of identity disturbances in interpersonal identities as compared to non-stammerers. They hypothesise that stuttering in the early stages had disrupted the normal psychological development.

Although previous research has provided conflicting reports about stuttering and its relationship to personality, stutterers have repeatedly differed from normally fluent persons in their self-reported traits on personality inventories (Bloch and Goodstein, 1971), Commonly included traits are shyness, anxiety, lack of self-confidence and modal withdrawal. Hanley (1982) stated, "We have observed the stutterer's fears, anticipations and anxieties before, during, the following moments of stuttering and inferred that personality deficits or psychological deviance are important causal substrates of stuttering." The present investigation aims at studying the personality characteristics of stutterers and non-stutterers and to substantiate various findings in this area.

SUB - TYPES AMONG STUTTERERS

In the past several attempts have been made to find some sub-types which will help in organising the description of the children and adults who stutter. The data generated by these researchers have challenged the traditional concept of stuttering as a unitary disorder.

Beach and Fransella (1968) stated that :
 part of the problem of conducting research and therapy
 in the field of stuttering may stem from the kind
 of assumptions which are made in advance of the

experimental evidence, and one of which is undoubtedly easiest to make, is that stuttering is a unitary disorder

Van Riper (1971) divided stutterers into three groups: familial, neurogenic and psychogenic. Canter(1971) stressed the need for differential diagnosis to separate various sub classes of stuttering. Johnson (1957) brought into the light the possibility that there may be different types of stutterers and stuttering, and was highlighted again in 1959 by Brown et al.

Several attempts have been made to differentiate among persons who stutter using different strategies like the adaptation phenomenon (Lanyon, 1965; Newman.1963; Prins, 1968), type of stuttering moment(Ouarrington and Douglass, 1960; Emerick,1966) and visible and audible phenomenon of stuttered speech (Prins and Lohr,1972). Prins and Lohr (1972) concluded that the 10 resulting factors might be useful in describing disorder syndromes among stutterers. Yairi (1972) also concluded that homogeneity did not typify stutterers and recommended research to identify subgroups.

Neurogenic disfluency has been proposed as one etiological factor that can be useful in establishing sub-categories. Graham and Brumlik (1965) identified two

distinct subgroups of neurologically abnormal stutterers using EEG examination. Okasha, Moneim, Kamel and Moustafa (1974) obtained electroencephalographic (EEG) recording on 54 stutterers and 27 controls. They concluded that "there is background of cerebral dysfunctions in many stammerers." Schmoigl and Ladisick (1967), using an EEG methodology with 50 stutterers, noted that cerebral disorders do play part in high proportion of stuttering cases. Sayles (1971) examined 23 stutterers and 25 controls. Abnormal or borderline EEG was observed in 49% of the stutterers as compared with 12% of the controls. Tsunoda and Moriyama (1972), using their own test for cerebral dominance, tested 57 adult stutterers and controls. They concluded that one group of stutterers revealed abnormal cortical functioning resulting from minimal brain damage.

A variety of auditory anomalies which may form the basis for another subgroup have been identified by the researchers. The skills that have been reported as significantly different among stutterers include (1) the inability to resequence backward speech (Wingata, 1971; Perozzi, 1970), (2) the inability to translate "slurvianisms" (Wingate, 1967), (3) below average performance on dichotic listening tasks (Curry and Gregory, 1969; Sommers, Brady and Moore, 1975), (4) a reduced auditory pain threshold (MacCulloch, Eaton, and Long, 1970; MacCulloch and Eaton,

1971), (3) impaired auditory memory (Williams and Marks, 1972), and (6) inefficient intersensory processing (Cohen and Hanson, 1975).

A third possible subgroup which becomes apparent from a review of the research includes stutterers who have difficulty with syntax, grammar and other skills indispensable to language formulation. Soderberg (1967) described this difficulty as grammatical and lexical uncertainty. Bloodstein and Gantwerk (1967) and Bloodstein (1974) concluded that young stutterers may have difficulty getting started on the execution of an identifiable segment of language.

A fourth possible subgroup among stutterers includes those who have difficulty with neuromuscular timing and sequencing of the articulation, phonation and respiration systems. The studies by Seaman (1970) and Zimmerman and Knot (1974) describe motor coordination problems among stutterers. Adams, Runyan and Mallard (1975), and Adams and Hayden (1976) studied airflow characteristics as well as voice onset and termination times and found significant laryngeal timing problems among stutterers. Parkins, Rudas, Johnson and Bell (1976) found a lack of laryngeal movement with articulation and respiration among people who stutter.

Subtle oral motor coordination differences between stutterers and their matched controls have been noted. Which

may form the basis for another subgroup. Perkins and co-workers (1976) used the phrase "oral motor discoordination" to describe these differences. Riley and Riley (1979) reported that among 54 children who stuttered 19 (35%) had severe OMD.

Grimes and Healey (1984) reported that six (40%) of 15 young stutterers had OMD but only one (7%) was considered severe. Van Riper (1982) devoted a chapter to stuttering as a disorder of coordination in his revised text. Curlee and Perkins (1985) included chapters devoted to the stuttering person's articulatory dynamics (Zimmerman, 1985), sequencing and timing disorders (MacKay and MacDonald, 1985) and temporal programming disorder (Kent, 1985a) in a recent text book.

If stuttering is not a unitary disorder, then there is need to identify personality components that are related to stuttering. If these personality components are regular and independent, a sub-typology may be possible. The purpose of this study was to investigate the influence of a variety of personality factors that allegedly are covariant with stuttering phenomenon in adults.

EVALUATION AND MEASUREMENT OF STUTTERING

Traditionally the following strategies have been used to evaluate stuttering which aim at describing an individual's speech, social and emotional behaviour, relating the speaker with his environment, prognosis and therapy :

1. Observing the stutterer and his family.
2. Developing a social and developmental case history by interviewing the stutterer and various members of his family.
3. Administering tests.

Speech rate is a multivariate construct to be considered at various levels -utterance, word, syllable, sound and gesture. In the present investigation, the level of syllable has been considered for measuring stuttering. This is the highest level at which speech fluency can be assessed as "There is evidence (Kozhevnikov and Chistovitch, 1965; Ladefoged ,1967; Lindblom,1968) that speakers organize the sequence of complex muscular events in terms of a hierarchy of units, one of which is the size of a syllable; , , " (Ladefoged,1973). Therefore

the number of syllables per second is the basic measure of rate. The rate of speech is 5-6 syllables per second in adults (Walker and Black, 1950; Devraj, 1978).

Andrews and Ingham (1971) have developed the measure of percentage of syllables stuttered(%SS) as an indicator of speech rate. Measurements are to be taken in situations that at least approximate normal situations. Percentage of syllables stuttered (%ss) has also been shown to correlate highly with listener judgements and to be reliable (Young, 1961 ; Andrews and Ingham,1971).

There is now reasonable agreement that syllables spoken during talking time and stuttering frequency counts are necessary measures. They seem to be the bare minimum measures for determining (1) changes in stuttering and (2) the contribution that the amount and rate of speaking makes to the stuttering variability. It might be better if individual's speech rate is taken into account during stuttering free intervals,

The severity of stuttering has also been rated by judges solely on the basis of the audio cues in stutterer's speech. The intra- and inter-judge reliability for these ratings have been found to range from .77 to .96 . At

times even sole judge has been used for assessing the severity of stuttering and it has been claimed that even such procedures yield a high degree of inter-and intra-judge reliability in recorded segments of stuttering (Sheehan, 1951).

Adams (1976) favours identifying stuttering in terms of specific behaviours, rather than identifying moments, as instances of stuttering, Wingate (1977) is also of the opinion that interobserver reliability for identifying stuttering is higher when stuttering is defined in terms of specific behaviour than when the definition of stuttering is left to an individual observer.

Psychological scaling methods of equal appearing intervals have been used to measure the severity of audible characteristics of stuttering. Reliable mean scale values have been obtained for 3 minute samples of stuttering speech. Intrajudge reliability was found to be same for five, seven and nine point equal appearing interval scales with minimum definition of points, a seven point scale with well defined points; and a direct magnitude estimation scales. Interjudge reliability was same for all the scales except for the direct magnitude estimate scale (Cullinan et al, 1963). To suggest the use of single rating from a single judge as an Individual predictor is not sufficiently reliable.

Numerical formulas such as words stuttered per minute and number of blocks per 100 words have also proven to be most reliable type of severity rating. One such index has been given by Minifie and Cooker (1964).

$$\text{Disfluency Index} = \frac{S}{W/M}$$

S = Total number of syllables stuttered

W/M= Reading rate calculated in traditional manner
(words per minute)

But such approaches have been criticised as changes can occur in other parameters of stuttering which do not change the frequency (Sherman and Trotter, 1956),

The following measures of severity were found to be satisfactory and have been used in the present study :

1. Syllables per minute as the measure of rate,
2. Percentage of syllables stuttered as the measure of stuttering,
3. Articulatory rate as a second measure of the speed of speech,

TREATMENT PAST AND PRESENT

The aim of any method of treatment is to ameliorate the problem and for stuttering treatment, specifically to establish fluency. Though all the different

methods of treatment of stuttering, differ in their theoretical framework and therapeutic strategies, their goal is to eliminate stuttering and to make the individual fluent. Many of the methods of treatment are based on some theory regarding the causation of stuttering and therapy usually operates within these limits. The treatment of stuttering will be reviewed keeping this in mind.

THE PHYSICAL APPROACH

Many people including Hippocrates, Aristotle and Galen had discussed stuttering. In the 14th century there was a change from mechanical theories emphasising tongue as the cause of stuttering to the physical theories of causation. Some considered stuttering to result from ulcers of the tongue and advised applications of embrocations, cauteries and the gargles of the tongue. New surgical operations to cure stuttering by cutting a transverse wedge out of the tongue were also performed (Dleffenbach,1841), All these methods of cure arose from the theory that stuttrer+s tongue was get incorrectly in his mouth. Later it was thought that stuttering is due to faulty respiration and speech musculature, resulting in breathing and speech exercises but most of these directly stem from beliefs that have prevailed for centuries.

RELAXATION

Techniques of relaxation were introduced before the end of the last century and still hold an important place today. " The utmost relaxation of the body must prevail during speech " (Hoffman, 1840). As the stutterer becomes increasingly relaxed he will become less fearful of the clinical setting and more capable of considering the emotional stimuli.

RHYTHM

Rhythm is a therapeutic procedure with a long history of application. It stemmed from the observation that stutterer very often does not stutter when he speaks rhythmically. The use of speaking in single syllables in rhythm, accompanied by placing the thumb and fore-finger together had been popularized by Columbat De l'Isere(1840).

Even in the present day, the rhythm as a therapeutic aid is still in very much use (Barber, 1940 ; Brady, 1968; 1969; 1971; Meyer and Mair, 1963; Andrews and Harris, 1964; Ingham et al., 1972 ; Adams and Hotchklsa,1973; Hotchkiss, 1974; Ost, Gotestam and Melin,1976; Trotter and Silverman, 1974; Herscovlteh and Le Bow, 1973).

SHADOWING

Shadowing is another type of treatment related to the use of rhythm. This is based on perceptual rather

than motor functions. In this, the stutterer " shadows " the words uttered by a second speaker reading from a book. As the stutterer is concentrating very hard on the reader, he has little time to perceive his own utterances. A decrease in stuttering is frequently reported to occur under these conditions. Clinical reports on the use of shadowing have been provided by various authors (Cherry and Sayers, 1956; Walton and Black, 1958; Walton and Mather, 1963; Kelham and McHale, 1966; Kondas, 1967; Shelton, 1975; Ost, Gotestam and Melia, 1976; Kondas and Pukacova, 1977).

DRUGS

There are many who hold the belief that stuttering has an organic or neurological basis. Hence they have attempted to treat stuttering with the help of drugs, but the results have not been very encouraging. A variety of drugs; depressants, stimulants and tranquilizers such as reserpine, chlorpromazine, meprobamate and haloperidol have been used (Wlnkelman, 1954; Love, 1955; Mitchell, 1955; Hackett et al., 1958; Heaver et al., 1963 and Wells and Malcom, 1971), Though tranquilizers reduce anxiety and tension, there is no convincing evidence that they have a significant affect on stuttering itself. Several of the research studies report having used some form of speech therapy or psychotherapy as well, which confounds the results

still more. There is need for further research before any firm conclusions can be drawn regarding the drug effects on stuttering.

THE PSYCHOLOGICAL APPROACH

The idea that stuttering is due to some psychological problem can be traced back to 200 years ago, but it has been made explicit only in the last 100 years or so, Mendel shon in 1783 first seems to have conceived of stuttering as being due to psychological conflict between opposing forces compared to orderly or purposeful ideas.

Based on this line of thought, stuttering is often explained in terms of psychological or personality factors either in the stutterer himself or in his background. Even those theoreticians who believe in the importance of organic factors frequently also include the psychological factors in their formulation of the etiology of stuttering. Treatment with the underlying belief that some important psychological component causes the stutterer to stutter is widely applied and is less bizarre than the physical treatments of the past.

PSYCHOTHERAPY

It is still widely believed that stuttering has a psychoneurotic base, though the experimental evidence is

conflicting. Here stuttering is treated by some form of psychotherapy. Little or no attention is paid to the speech act itself; focus is on the person. At present it is impossible to evaluate the success of these various psychotherapeutic approaches in the treatment of stuttering as no systematic research has been reported in any detail.

BEHAVIOUR THERAPY

Behaviourists view stuttering as a learned behaviour. Since it is learnt it might be unlearned* There are other theories which consider stuttering as a form of learned or conditioned behaviour, These theories have already gained acceptance from theoretical as well as therapeutic point of view.

SYSTEMATIC DESENSITIZATION

Two methodologies based on conditioning principles have been used in the treatment of stuttering. One is operant variety. The other is called reciprocal inhibition, originally designed by Joseph Wolpe as a means of helping people to overcome clearly defined anxieties. Which have become conditioned to specific stimuli. Wolpe reasoned that if such an incompatible response is conditioned to the same stimulus that evokes fear, the fear will be inhibited.

Later on, systematic desensitization was widely applied in the treatment of stuttering.

The technique has been used by a number of workers in the field (Wolpe, 1958; 1961; Lazarus, 1963; Spielberger, 1966; Brutten and Shoemaker, 1967; Brutten, 1969; Webster, 1970; Boudreau and Jeffrey, 1973; Tyre, Maisto and Companik, 1973; Burgraff, 1974; Lal, Latthe and Bharath Raj, 1976; Moleski and Tossi, 1976).

ASSERTIVE TRAINING

Another procedure based on reciprocal inhibition is assertive training. In assertive training the actual confrontation is the acting out of the previously suppressed assertion and its underlying emotion towards a feared individual in non-punitive circumstances. Such a release tends to inhibit the conditioned anxiety response towards this individual and repeated assertions tend to weaken it. Only a few studies have been reported on assertion training in relation to stuttering. Data available from these studies are limited and the results are conflicting, though there have been some encouraging reports too.

OPERANT CONDITIONING

The principles of operant conditioning and the techniques of behaviour modification have been applied to

the problem of stuttering in a number of ways. underlying all the operant enterprises is the basic idea that on certain occasions the frequency of the certain kinds of behaviour is influenced by the consequences generated by that behaviour. This relates behaviour to the events that immediately precede and follow it,

the manner in which operant procedures are applied may cover a broad range of events. Each operant approach may have different goals and may focus on different aspects of stuttering behaviour e.g. punishment for stuttering behaviour and reward for fluency. Favourable results have been reported with this procedure in conditioning sessions given over time intervals varying from a few days to a number of months, but considerable resapse has been noted in follow up studies.

THERAPIES BASED ON IMMEDIATE FLUENCY

Behaviour therapy has such an impact on the treatment of stuttering which is difficult to ignore that the new approach attaches a high value to the modification of the behaviour by direct methods. This resulted in a variety of techniques for achieving fluency. One of these is the use of delayed auditory feedback.

DELAYED AUDITORY FEEDBACK/PROLONGED SPEECH

The delay in the perception of one's own speech which makes many normal speakers stutter, had been found to be helpful to many stutterers in speaking fluently. Experiments have shown that DAF can serve as a stimulus which decreases the disfluencies in the speech of stutterers (Chase, Sutton and Rapin, 1961; Goldiamond, 1965; Webster and Lubker, 1968; Webster, Schumacher, and Lubker, 1970). Many clinicians took advantage of this fact and applied it to stutterers as a means of teaching them to use a slow speaking rate.

Other techniques like attenuating or eliminating auditory feedback in a stutterer were used for gaining immediate fluency. But still some of these techniques were essentially similar to the old ones. These included talking in time to the rhythmic beats of the metronome; the prolongation of syllables; and the deliberate manipulation of voice, articulation or breath stream in various ways.

There is still no data on the long term effects of these techniques on the general speech behaviour. The procedures should be operationalised to establish the clinical value of these methods fully.

BIOFEEDBACK

Behaviour therapy has brought a large measure of diversity to the field of stuttering of which there has been very little, about thirty five years ago. In addition to a variety of therapeutic devices which are available for achieving fluency, some interesting beginnings have been made in the use of electro-Myographic feedback. In this method the stutterer automatically receives a warning signal whenever there is excessive tension in vocal musculature prior to speech attempt. Published reports are few and it is difficult to draw any conclusions. However its use may open a new area for treatment which still needs to be investigated.

With the advent of these therapies, many favourable, though occasionally extravagant, claims of success have been reported. But it is rather difficult to assess the effectiveness of any of these therapies, as the validation of a method of treating stuttering involves so many difficulties and opportunities for error. It can be achieved, only at the expense of considerable time and effort.

At present, in the therapy of stuttering, we proceed haphazardly and apply various therapeutic procedures indiscriminately. If a particular technique works, we keep it. But in this way failures are more. The loss of economy and time is also more and these techniques, when not

successful, can result in frustration for both client and clinician.

The evaluation of speech improvement in individuals or groups is likely to be misleading if measures are not objective or are confined to clinical setting* There are problems even with the follow up studies. One might be led to believe that there has been success with the particular therapy used, as the stutterer might either exaggerate the benefits of therapy, or muster good speech for the duration of brief examination, while the results indicate otherwise. Misevaluation is also likely to occur unless a control group is used consisting of stutterers receiving no therapy or some kind of treatment. When improvement does take place, there is no certainty that it is due to the methods applied. A variety of other factors like the therapist or enthusiasm on the part of therapist might be responsible for the improvement.

The concern of many of the recorded therapies appear to have been directed towards the act of speaking rather than the content of the speech or the personality of the speakers. As the individual and the disorder are treated separately and the personality of the stutterer is not considered for treatment, the relapse rate even after successful treatment is very high. The treatment should

be of the total personality, not merely of the speech phenomenon, in other words, we must treat stutterer as wall as stuttering.

Many of the stuttering therapies in use today reflect a mixture of procedures, often with incompatible goals. Borne therapeutic efforts aim at making the individual accept the fact that he is a stutterer, while others treat stuttering as a learned behaviour, This obvious contradiction in orientation is very much evident in current efforts to treat the problem of stuttering.

Attempts have bean lacking to apply systematic, direct and manipulative techniques to stuttering. The old taboos associated with different forms of therapy have impeded most of the directive attempts to deal with the problem. At the present, there seems to be no specific type of stuttering therapy which has a history of reliably and efficiently eliminating or reducing the problem,

A number of the important theories have been proposed by men Who were themselves stutters. Many of these theorists have selected a point of view without following the precept of rigorous scientific investigation. In fact, it may be fairly said that many of the theories of stuttering and their associated therapies

are based more or less on extended common sense interpretations and/or impressionistic data, rather than on carefully conducted studies which meet acceptable standards of scientific rigour or objectivity.

An examination of most reports on stuttering therapies give few, if any, quantitative data on the performance of those being treated. Relatively little objective information has accompanied the reports on stuttering therapy and existing therapies have not been documented to produce reliable improvement in the speech fluency of the treated clients.

Many of our treatment strategies are single treatment approaches. Either we try shadowing or prolongation, biofeedback or systematic desensitisation, negative practice or time-out techniques. Rarely have two or more methods of treatment been tried in combination (e.g. Walton and Mather, 1963* Browning, 1967; Kondas, 1967; Perkins, 1967; Ingham and Andrews, 1968, 1971a, 1973; Ingham, 1975; Ost, Gotestam and Melin, 1976). Only Perkins' study clearly states that the rate control conditioning procedures with coverant control and time-out contingencies are superior to reciprocal inhibition and implosion therapies for producing predictable improvement in fluency. In other

studies, where two or more treatment procedures have been used, it is difficult to find out which one of the methods has been responsible for improvement or failure.

Most of these authors did not use any control group and there was a lack of quantified data in some. These serious limitations in the studies make it difficult to assess how the various therapeutic methods must have operated to bring about the improvement. In any package of treatment, the appropriate sequence and weightage which must be given to each method of treatment is not still very clear.

Hence there is a great need for identifying areas of personality in which stutterers are deficient so that a prediction can be made whether a particular method or group of methods in combination are most suitable for the treatment of stuttering. The focus in the treatment of stuttering is to arrive at single method or combination of methods, giving due weightage to each one of these methods and their sequentiality. It will be interesting to know the variations and dimensions in personality areas that are related to stuttering.

This study is an attempt to find out the differences in the personality of stutterers and non-stutterers and the effectiveness of some treatment methods on stuttering* An

effort will also be made to know if stuttering is a unitary phenomenon or there are syndromes of stuttering.

OBJECTIVES OF THE STUDY

The following were major objectives of the present research :

1. To find out how stutters differ from non-stutterers in personality.
2. To find out whether there are significant differences between stutters and non-stutterers in intelligence.
3. To arrive at potentially significant items in personality tests differentiating stutters from non-stutterers.
4. To derive factors from the obtained scores of the personality tests by factor analysis.
5. To study the effectiveness of following treatment strategies along with Progressive Muscular Relaxation on stuttering:
 - a) Prolonged Speech
 - b) Rhythmic Syllable Timed Speech
 - c) Systematic Desensitization
 - d) Regulated Breathing Procedure
6. To examine the relative efficacy of the above treatment methods when administered individually along with Progressive Muscular Relaxation.

CHAPTER - II

TERMS AND DEFINITIONS

Selection, definition and explanation of various terms are interrelated. Initially these may be expressed in a general way, but then the terms must be defined in a precise way. There are several reasons why the terms should be defined in certain ways. When the terms are defined precisely it becomes easy and possible to measure a particular phenomenon. Objective measurements will be hardly possible with vague definitions. Objective definitions make it possible for the external observer to verify the results of various therapeutic methods as well as findings. 80 it is necessary to define various terms precisely.

STUTTERING

"Stuttering" is mostly used to refer to the disturbance in the speech flow. The most commonly judged "stuttering" disfluencies are syllable repetitions (ba- ba- baby) and prolongation of sounds. If an adult's speech contains seemingly " involuntary, audible or silent repetitions or prolongations in the utterance of short speech elements, namely; sounds, syllables, and words of one syllable". If he says this speech pattern has been with him as long as he can remember, if he wants to be rid of it and If he calls himself a stutterer, he will be diagnosed as such (Fransella, 1972).

Researchers and clinicians have been trying hard to provide an adequate definition of stuttering phenomenon, for the past 20 years. But unfortunately, hardly any success has been achieved in providing a verbal, working definition of the phenomenon. Beech and Fransella (1968) pointed out that the specifications of what stutterers do when they are stuttering provides a basis for much conjecture, but still in many instances stuttering can be recognised immediately (except in borderline cases).

Bloodstain (1981) has summarized the current state of knowledge about the definition of stuttering with the following statement :

The best definition we appear to be able to offer at present is : (stuttering) is Whatever is perceived as a stuttering by a reliable observer who has relatively good agreement with others. If we want to be guided by a more "objective" definition we must not ask questions about "stuttering" but about repetition, prolongations, broken words, speech rate, and the like, and must be content with answers that are not About stuttaring, but about repetitions, prolongations and so forth.

At present there are two major prevailing definitions in the field: stuttering is defined by the presence of certain

specific speech disruptions (repetitions and prolongations) or that stuttering is a perceptual phenomenon defined by observer agreement, Few clinicians have tried to differentiate between the terms " Stammering " and " Stuttering ". Hunt (1967) defined stammering and stuttering separately. Bluemel (1957) distinguished between stuttering and stammering on the basis of "unorganised " and "disorganized" speech.

To us the term stuttering is synonymous with stammering and is the preferred term in the professional usage in India. in the present study, it includes following :

1. Repetition of sound, syllable, or one syllable word.
2. A silent and/or audible prolongation.
3. Silent intervals : Complete stoppage of speech, a pause When pausing is inappropriate.
4. Blockage in the middle of the word >2,5 seconds.
5. Interjection of words and syllables* .

Any one or a combination of these events will be considered as stuttering/stammering in the present work.

* This in isolation does not constitute stuttering.

To enhance reliability, stuttering was typically measured, in a global fashion, that is, a moment of stuttering. One moment of stuttering was counted for each of the speaker's attempts to produce a given syllable irrespective of the duration of that attempt. The basic decision was binary. A given syllable was perceived as either stuttered or not. Stuttering can occur between words and within words. And more than one stuttering can occur in a word, when this occurred each moment of stuttering was counted separately.* further atuttering was not recorded according to different forms or topographies, as most clinical researchers and clinicians have given up this practice, since research have shown those divisions not to be clinically meaningful (eg. Costello and Hurst, 1981).

* Moments of atuttering that are interjections of words and syllables or repetitions of word and syllable or repetitions of words and phrases were counted only once.

SYLLABLE

"The fact that syllables are important units is illustrated by the history of writing. There are many writing systems in which there is one symbol for each syllable. Perhaps the best known present-day example is Chinese. But only once in the history of mankind has anybody devised an alphabetic writing system in which syllables were systematically split into their components. About 4000 years ago the Greeks modified the Semitic syllabary so as to represent consonants and vowels by separate symbols..... It seems that everybody finds syllables to be comparatively easy units to identify. But people who have not been educated in an alphabetic writing system find it much more difficult to consider syllables as being made up of segments (consonants and vowels)" (Lade Foged, 1982).

Syllable is a unit of pronunciation typically larger than a single sound and smaller than a word. The notion of syllable is very real to the native speakers. "A syllable is a single unit of movement of the lung initiator which includes but one crest of speed..... Every occurrence of an initiator time bulge..... followed by the renewed speed of the initiator movement is a trough or

border between two syllables. Physiologically, syllables may also be called chest pulses Real syllables are those which the ear is physiologically capable of distinguishing. Perceptual syllables are those which an investigator actually notices at some particular time," (Pike, 1972).

Although it is easy to identify syllables, nevertheless it is difficult to state an objective procedure for locating the number of syllables in a word or phrase (Lade foged, 1982) . There are a few cases where people disagree on how many syllables there are in a word in English. There are also several groups of words in which people do not differ in their pronunciations, but nevertheless differ in their estimates of the number of syllables.

Bloomfield defines syllables as containing one vowel while Pike explains the syllable synthetically in terms of accent. Hjelmslev defines syllable in French on the basis of shortest word expression. From the view point of an analysis of phonetic substance, the syllable has been defined in terms of sonority (Bloomfield, 1933 ; Pike, 1947), sometimes in terms of tension (Grammont, 1933) and sometime in change from implosion to explosion (de Saussure).

In the present work, the term syllable will be used in the following sense :

1. Syllable can be either formed by a solitary vowel or diphthong or by combining a vowel or diphthong with one or more consonants.
2. Although syllables contain different number of consonants, they always contain one and only one vowel.

PERSONALITY

In every day language we often refer to another person by saying 'He has no personality' or 'he has a strong personality'. A layman would take this to mean that he is boring, unimaginative, unpredictable or he is domineering, rigid, reluctant to change his mind and so on. But psychologists use the term 'personality' in a more technical sense.

There is no single, generally accepted use of the term 'personality' among psychologists. Approaches and definitions which have been adopted for the concept of the personality are varied and bewildering.

In the current study, utmost importance has been attached to the present functioning of personality of the given individual at the time of testing. This has been done on variety of traits which are accepted* A detailed description of the instruments used in the present study is provided. . . elsewhere.

INTROVERSION AND EXTROVERSION

The concept of introversion- extroversion was originated as a clinical intuitive concept through incisive observation of human beings by the Swiss psychiatrist Carl C. Jung. It is now so battered by popular usage that it may mean anything from sociability to good emotional adjustment. Eysenck subjected it to experimental validation. He carried out extensive experimental research in this area, subjected the findings to rigorous statistical analysis and ultimately found that introversion-extroversion dimension of personality did exist in reality.

Laird. (1925) describes introverts as characterized by their emotional outlets being expressed largely within themselves. The extrovert expresses his emotions in action and with associating with others. Bernreuter (1935) says that introverts are imaginative and tend to live within themselves. Extroverts rarely worry, seldom suffer emotional upsets, and rarely daydream.

Marston (1925) defines introversion and extroversion in terms of feelings. Introversion is the dissipation of emotionally aroused energy within the organism rather than adequate discharge of his energy through skeletal channels upon the environment, while extroversion is normal expression of emotions. Marston considers introversion abnormal. Neymann and Kohlstadt (1929) regard it as a tendency to withdraw from the real world and extroversion as an interest in people and things outside one's self.

In this work the person will be considered extrovert if he obtains a high score on the Extroversion Scale of S.P.I, and introvert if his score is low, in comparison to test norms. An Individual can be called extrovert if he is friendly, social, talkative, active, impulsive, cheerful, spontaneous and enjoys excitement. He is able to express his needs well and stimulus hungry whereas introvert is inhibited, aloof, less sociable.

NEUROTICISM

There are various ways in which neuroticism can be defined. A psychoanalyst may prefer to define it in his theoretical terms as a particular kind of conflict, with generation of anxiety between the ego, id and super-ego.

Others may describe neuroticism almost as if it were simply a high level of anxiety. But in a very pragmatic sense, there is only one definition of neuroticism that it is the pattern of behaviour shown by those individuals who come to the clinic for aid because they feel themselves to be in emotional difficulties. Eysenck's outstanding work on the study of neuroticism, originated from his first-ever test i.e. Maudsley Medical Questionnaire, which was later modified to M.P.I. and further brought in the form of E.P.I. A number of tests have been devised by psychologists to differentiate neurotics from the normals. The results of these tests show either some tendency to differ or some substantial degree of difference. There are indications that on some personality factors, neurotics and psychotics deviate from the general population in the same way, but there is no doubt that in the total profile of dimensions the neurotic is a quite different person from the psychotic.

The neuroticism dimension is similar to the notion of emotional instability. Those individuals who fall at the extreme neuroticism end of the dimension tend to be more prone to worries and anxieties and get upset more easily. They are also likely to complain of headaches, and sleeping or eating difficulties. Although they may be more

likely to develop neurotic disorders under stress conditions, the frequency of such problems is low and most individuals function adequately in their work and in their family and social life,

Emotionality or neuroticism is related to the reactivity of the autonomic nervous system. Individuals with more labile autonomic system are liable to respond strongly to unpleasant or frightening experiences by increases in heart rate, muscle-tension, sweat-gland activity and so on. Individuals high on neuroticism will tend to have low threshold of emotional arousal. This will lead to more frequent activation of their autonomic nervous system which in turn will trigger the R A S (Reticular activating system). Thus the RAS will be more often in a state of arousal for individuals with high score on neuroticism. This means that such individual will tend to resemble introverts who are generally more 'aroused' than extroverts.

As the N scale of E.P.I. has been factorially established, and its items can be considered as highly reliable and valid, therefore, in the present study, the score on the N scale represented degree of the neuroticism of the subjects.

ANXIETY

Anxiety is a common experience of everyday human life. It may range from very mild to severe. Anxiety can be completely normal even when it is extreme. But there are few criteria which are to be kept in mind while measuring this phenomenon. Transitory, passing anxieties and depressions may be ignored. It is only when these phenomena are aroused in great strength and persist colouring the behavioural reactions of the individual, that they matter. Only recently attention has been focused on this as an illness, but it is heartening to note that in present day we have necessary modus operandi to treat this condition.

"Anxiety is the feeling you have when you think that something unpleasant is going to happen in future" (Priest, 1983). Other words which are often used to describe this feeling are "apprehensive", "uncertain", "nervous", "wound up", "unease", "dreading the worst." Anxiety can also be considered as a response to threat, real or imagined. Threat might be at physical or more abstract level. To a considerable extent, anxiety can be advantageous. This might spur individuals to make decisions, take steps, engage in practical activities to find solution. The physical symptoms of anxiety vary from palpitations, shaking, tension, insomnia, perspiration to nausea, numbness, tingling in the hands and desire to urinate more often than the usual.

Anxiety has both emotional and physical aspects. Most of us have felt anxious at some or the other time, and causes are often obvious. Anxiety can be particularly disturbing when one experiences it for no obvious reason and it becomes a problem when one finds that it is out of proportion. A general feeling of anxiety with physical symptoms and no obvious cause is often referred to as free-floating anxiety. Anxiety might make the right action difficult to take.

Anxiety is both a state and trait. It means that we all experience higher and lower states with changing circumstances. There is also evidence that some people vary about levels which are typically different for them from the central tendency in others. Cattell (1970) referred to it as "characterological anxiety."

State anxiety is transitory, varying in intensity from moment to moment as a function of the situation in which the individual finds himself. Trait or general anxiety may be viewed as the degree to which a person tends towards autonomic activity, state anxiety refers to the actual autonomic reaction to the specific situation. On the other hand trait anxiety is general chronic anxiety state that does not vary from moment to moment. It is considered to be a personality trait that determines the

degree to which individual may react to specific situations with more specific and temporary anxiety.

In the present study, the score on the Revised Willoughby Questionnaire for Self -Administration represented the degree of anxiety for a particular individual.

SELF - CONFIDENCE

In general terms, self-confidence refers to an individual's perceived ability to act effectively in a situation to overcome obstacles and to get things go all right. Self-confidence as conceived here is a phenomenological construct . It is a characteristic or an aspect of self-concept, and should not be confused with the self-concept itself (Basavanna, 1975). It encompasses several areas of an individual's self-experience and his perceived adequacy and otherwise thereof.

A self-confident person has been defined as one who perceives himself as socially competent, emotionally mature, intellectually adequate, successful, satisfied, decisive, optimistic, independent , self-reliant , self-assured , forward-moving, fairly assertive, having leadership qualities and in general as having positive and constructive self-feeling and evaluation.

On the other hand, a person who lacks self-confidence is defined as one who perceives himself as socially incompetent, emotionally immature, intellectually inadequate, unsuccessful, dissatisfied, vacillating, pessimistic, dependent, unsure, insecure, escaping, anxious, unattractive, sensitive, shy, cautious, passive, lacking in leadership qualities and in general as having negative self-feeling and evaluation.

In this study, self-confidence inventory has been used to measure the self-confidence of the individual. A high score on the inventory represented high level of self-confidence and vice-versa.

SCALES OF THE SURFACE TRAIT INVENTORY

Bharath Raj (1982) validated eight scales of Surface Trait Inventory. These are : Activity, Cyclothymia, Depressive Tendencies, Emotional Instability, Introversion, Feelings of Inferiority, Psychosomatic Disorders and Interpersonal Communication Disorders. The scores on these scales represented the degree of abnormality for a particular trait. These traits are defined as under :

ACTIVITY

This trait may have something to do with concepts of drive, persistence and motivation. The concept is comparable to what Eysanck speaks of achievement orientation. This trait may be correlated with ambition and high aspiration. It also appears to be related to persistence in effort, endurance and self-reliance. In this trait, very high and very low scores reflect undesirable ends on a social continuum.

CYCLOTHYMIA

Kretschmer, around 1920, pointed out that two exclusive types, the cyclic insanities and schizophrenia recognised by Bleuler also existed in less extreme forms in normals and he called them the cyclothyme and schizothyme temperaments. The former are characterised by a disturbance of emotional mood, towards depression on the one hand or elation on the other, with some tendency to swing between the two. The latter shows no marked abnormality of mood, except for certain dullness and inaccessibility, but manifests a general silliness and inaptness of emotional expression. They are bothered when people watch them and feel uncomfortable to be different from

others. Face validity of this scale has been established. Impulsiveness and deliberativeness as a factor relate to this trait. Cyclothymes are impulsive. A middle range score on this scale may stand for stability.

DEPRESSION

Depression catches more attention because it is troublesome. In depression, the individual is emotionally depressed, feels anxious, exhausted, has periods of loneliness, worries over possible misfortune, etc. A distinction should be made between neurotic and pathogenic depression (psychotic). This scale compares with the depression scale of MMPI. It represents pessimism and low morale. The above characteristics which are felt by the individual reflect more often neurotic rather than psychotic depression. This scale is related to feelings of inferiority in a considerable way. Low score reflects freedom from depression and thus normalcy.

EMOTIONAL INSTABILITY

A person with high score on this trait is infantile, self-centred, demanding, quarrelsome, emotionally excitable, and has a tendency for day-dreaming. The individual is easily disturbed by distractive stimuli, finds it difficult to relax, frequently suffers from insomnia

and perspires easily. He is irritable, perpetually fatigued and restless. A very low score on this scale would reflect emotionally well balanced and mature individual. The trait may be highly correlated with " tolerance " .

INTROVERSION

A high score on this trait reflects that person is not happy-go-lucky, not carefree, is restrained rather than being natural and stops to think over things before acting. This trait is related to inter-personal communication in an important way. This scale may measure self-sufficiency also.

FEELING OF INFERIORITY

An individual with high score on this trait lacks self-confidence and social poise, feels inadequate, socially unaccepted and dissatisfied with present status. He is ego-centric and has feelings of guilt. Normals and individuals who are relatively free from feelings of inferiority will have low score on this trait.

PSYCHOSOMATIC DISORDERS

The items on this scale lean heavily on the bodily involvement of the person. This trait bears a close comparison with hypochondriasis (Hs) scale of MMPI i.e., unwarranted concern with body health. It also compares well with neurasthenia syndrome of Cattell. This scale may have some kind of relationship with emotional instability factor.

INTER-PERSONAL COMMUNICATION DISORDERS

The items of this scale have been arranged in such a way that a high score on it reflects greater Inter-personal communication problems. Low score on this scale is likely to reflect that the person is a lively conversationalist, has ability to express affection, can go about and associate with others. The individual has ability to talk to persons with authority and members of opposite sex. They are able to effectively participate in group discussions, have a tendency to avoid arguments, give pleasure while speaking and associate with successful people. They do not show resentment or hostility. They listen well and encourage others to talk.

CHAPTER III

REVIEW OF LITERATURE

If one attempts to get a historical perspective of the phenomenon of stuttering, one is likely to be perplexed by the sheer volume of literature. Research findings about the personality of stutterers do not portray a universal agreement. Some of the authorities take the stand point that a close examination and observation of the stutterers definitely point out certain personality deficiencies, for example, feelings of inferiority, presence of anxiety characteristics, depressive feelings, etc, (e.g, Richardson, 1944; Bharath Raj and Pranasha Rao, 1970; Hegde, 1972), On the other hand quite contrary findings are reported (e.g. Thorn, 1949; Goodstein et al. 1955; Prins, 1972) that there are no significant personality disturbances, In spite of these contradictions, clinical observations of the stutterers as a group convince one of the differences in the more common personality Characteristics like self-confidence, neuroticism, depressive tendencies and emotional instability. There could be exceptions but these are a rarity. In fact the first part of the present study has pointed out differences in the personality of stutterers and non - stutterers which are described in appropriate chapters.

Stuttering has been considered as a neurosis by many authors in the 19th century (e.g. Lichtinger, 1844; Kussmaul, 1881). Klendhe in 1862 was among the first to describe the anxieties and personality features of the stutterers. But it was only during the 1930's When lot of interest appeared in the personality, emotional adjustment, and the psydholo- gical aspects of human illness, a serious scientific investi- gation of stuttering phenomenon began and from then on the search for a common and distinctive feature of a person who stutters rapidly shifted from his constitution to his personality make up.

"As a clear landmark, the investigations by Wendell Johnson in 1930 and 1931 deserves first mention. Whereas nearly all previous writers had confined themselves to assertions that stuttering was the result of various person- ality factors, Johnson explored comprehensively the influence of the experience of stuttering on the personality. Those few personality differences Which did appear were held to be the result of the stuttering rather than its cause" (Sheehan, 1970, p.62).

As the field of clinical psychology expanded, more promising techniques in psychological test battery were developed and refined. This led to a greater interest in the personality of stutterers and it continues to be a challenging area.

The personality of the stutterers has been studied using a variety of tests. These include the Minnesota Multiphasic Personality Inventory, the Rorschach, the Thematic Apperception Test, the Picture-Frustration Test, Level of Aspiration measures, self-concept measures, paper and pencil personality inventories, 10 test comparisons, graphic techniques, various other projective techniques and clinical interviews.

In the earlier literature, specially the most frequent method has been the argument or statement from the authority without any empirical evidence. Speculative and arm chair thinking may serve a useful function in any scientific investigation but in the final analysis its usefulness will be determined by the quality of the clinical and experimental research it generates. After an extensive survey of the literature, it was decided to review only those studies which could truly be regarded to contribute to this area of research.

Many investigators have carried out their studies with little or no regard for the other studies which have used the same instrument. Virtually no attempts have been made to relate the findings of one study to another, except for separately published reviews (Sheehan, 1958; Goodstein, 1958).

MMPI STUDIES

Minnesota Multiphasic Personality Inventory (MMPI) is an empirically derived test that reveals the similarity of the response patterns of the subject to those of established clinical categories. It is one of the best standardised and the most widely used paper and pencil personality inventory. It utilises four validity scales which represent checks on carelessness, misunderstanding, malingering, on the operation of special response sets and test taking attitude. MMPI now yields 14 scales, including the 9 original clinical scales, the social introversion (si) scale, and the validating scales.

The MMPI is capable of successfully discriminating among clinical categories. This is indicated by score elevation of clinical scales. Any score of 70 or higher - 2 S.D's or more above the mean is generally taken as the cut-off point for the identification of pathological deviation. The categories include hypochondriasis (Hs), anxiety depression (D), obsessive compulsive tendencies, hysteria (Hy), nonconformity, psychopathic deviation (Pd), cultural interests, liberalism masculinity or femininity (Mf), paranoid tendency (Pa), psychasthenia (Pt), reality contact, schizophrenia (Sc), hypomanic, acting-out tendency (Ma), and social introversion (Si),

In a study (part of a larger study) by Brown and Hull (1942), the stutterers (N=59) had low scores in the area of social adjustment but not in morale, family relations, emotionality or economic conservatism on the MMPI scale When compared with test norms.

Themas (1951) found a slight elevation in the range of normal adjustment in 29 stutterers, Pizzat (1951) noted that stutterers (N=53) had poorer scores on all clinical scales except psychopathic deviate, but the scores fell well within the normal range. Thorn (1949) reported that the scores of stutterers fell within the normal range and the composite MMPI profile revealed no evidence of neuroticism. There was no common " personality type " when the profiles were analysed for "pattern", or any substantial difference in composite profile for the more severe and the least severe stutterer. Boland (1953) using a variety of MMPI derived measures on 24 stutterers and an equal number of controls (part of a larger study) reported similar findings except that stutterers were higher in the measure of anxiety.

Dahlstrom and Craven (1952) compared 100 college stutterers with 100 normal speaking college freshmen, 1763 psychiatric patients and 3966 college students Who had sought counselling help on their personal problems. The authors inferred that, While the stutterers did differ from the

control students, they were not as severely disturbed as the psychiatric patients and most closely resembled the college students with other kinds of problems. They also reported no significant relationship between the MMPI scores and the severity of stuttering. Walnut (1954) found that on all 10 clinical scales the 38 stutterers were well within the normal range as measured by the MMPI norms. On two scales, Depression and Paranoid, the stutterers had significantly poorer scores than the controls, indicating adjustment problems.

Sermas and Cox (1982) tested 19 stutterers on the MMPI (part of a larger study). The test was also administered to two comparison groups composed of psychiatric patients. The three groups were statistically comparable with respect to age and years of education. Forty seven patients of the 57 tested demonstrated a T-score of 70 or greater on at least one MMPI scale. Although 74% demonstrated such an elevation, no significant elevation was found when the stutterers' scores were averaged and considered as a group.

CALIFORNIA TEST OF PERSONALITY STUDIES

Powers (1944) used California Test of Personality on junior high school stutterers and non-stutterers. He did

not find any significant difference between the two groups in self-adjustment or in total adjustment, but there was some tendency toward significant difference in social adjustment. Shultz (1947) and Parkins (1947) using the California Test of Personality, reached much the same conclusion (N=20 and 75 respectively). These investigators did not use a control group but the published test norms, Schultz stated that stutterers and psychoneurotics have common symptoms While Perkins felt that problem of young adult stutters fell consistently within the areas of self-reliance, feelings of personal worth, nervousness, social skills and social standards.

Cypreansen (1948) tested 14 stutterers on California Test of Personality. He noted that the median of the group fell below the norm in each part of the test except one, Sense of personal freedom. The greatest differences were in self-reliance, freedom from nervous symptoms, social skills, school or occupational relationships, and community relationships* Horlick and Miller (1960) administered California Test of Personality to 26 stutterers and 30 controls. They found that stutterers had slightly but not significantly lower adjustment scores than the normal speakers.

Prins(1972) administered the California Test of Personality to sixty- six male stutterers between the ages

of 8 and 21 years. Twenty three subjects with other communicative disorders served as a control group. He noted, "The experimental subjects apparently held for themselves very high social standards (60th Percentile) in the face of self-perceptions of poor social skills (30th percentile). The effect of this discontinuity on individual could lead to feelings of self-deprecation: lack of personal worth, low self-esteem, and self-rejection," Further he stated that signs of maladjustment were more prevalent among subjects with disorders of speech other than stuttering.

RORSCHACH AND THEMATIC

APPERCEPTION TEST (TAT)

Both the Rorschach and TAT are projective psychological testing techniques, The patient is presented a series of ambiguous stimuli, and responses are interpreted by a variety of methods.

The Rorschach utilises ink blots as the stimuli, while the TAT relies on a series of pictures, mostly depicting people in certain situations. The Rorschach is an enormously rich and sensitive technique in clinical usage. It is an unstructured and commonly used psychodiagnostic test. It consists of series of ink blots some in colour which are presented to the subject. Subject in the nature of

his responses projects his attitudes, feelings and emotions. From this and other features of the subjects, inferences are drawn about the specific personality traits.

Ingebregsten (1936), Pitrelli (1948) and Haney (1951) used the Rorschach (N = 40, 311 and 6 respectively) and concluded that stutterers responses were symptomatic of a neurotic disorder, though these studies did not involve a control group, Richardson (1944, a; 1944, b) did not find any significant differences on either Rorschach or the TAT between a group of 30 stutterers and a matched control group* Speidel (1963) reported similar results. Silverman (1952) reported that TAT revealed that Negro stutterers had more dominant mothers than his Negro non-stutterers (N=10 in each group),

Goodstein, Martire and Spelberger (1955) using the TAT, reported no difference between stutterers and non-stutterers (N = 30 in each group) on two different indices of motivation for achievement imagery responses. Bloodstein and Schrelber (1957) found no difference in obsessive-compulsive signs on the TAT between stutterers and non-stutterers (N = 15 each group).

Santastafano (1960) studied a group of 26 stutterers and equal number of non-stutterers. Both the groups were matched for sex, age and IQ. Rorschach test was administered to stutterer* and non-stutterers. The results revealed that

stutterers projected on the Rorschach significantly more content indicative of anxiety and hostility than did non-stutterers.

After an analysis of both written and oral responses to the TAT, Solomon (1963) concluded that while stutterers and non-stutterers (N = 35 in each group) did not differ in terms of broad categories of aggression (for example, "strong aggression "), stutterers expressed more themes involving a particular kind of aggression namely more subtle and less physically violent aggression. This study was carefully designed, it tested quite specific, theoretically derived hypothesis and included a second speech defective group (voice and articulation disorders) as an additional control measure.

Sermas and Cox (1982) administered Rorschach and TAT to 14 stutterers (part of a larger study) and noted that " the two projective techniques elicited emotional responses similar to the various emotional issues and personality trends found in the interview of the stutterers. A scattered variety of other conflict areas were also found, including achievement, impulse control, dependency, sexuality and authority."

Rorschach and TAT have been administered to stutterers in both controlled and uncontrolled studies and a variety of results reported, " The lack of any consistent results may be to some extent a function of the projective tests

themselves, Although the Rorschach and the TAT are capable of eliciting an emotionally rich series of responses, their subjective nature and lack of psychometric qualities render them somewhat unsatisfactory as a research tool "(Sermas and Cox, 1982). However, the Rorschach may be potentially useful in predicting psychotherapeutic aspects of a given stutterer's response to treatment (Sheehan, 1970).

LEVEL OF ASPIRATION STUDIES

Level of aspiration, which is related to self-concept and self-esteem, has been used to distinguish the personalities of the stutterers from those of non-stutterers. Sheehan and Zelen (1951, 1935) found that stutterers were significantly lower in level of aspiration, that they stayed in the success area of goal-setting, predicted more modest performances for themselves, and tried to avoid the possibility of failure. Sheehan (1958) believes that the lower level of the aspiration of the stutterer is closely related to his ego-protective behaviour and it can be viewed as a reaction to stuttering and not as an etiological factor which contributes to stuttering. Mast (1952) used the Carl Hollow Square for evaluating level of aspiration in stutterers and the scores indicated that the stuttering group was overly cautious in defence against failure in the defeatist category.

Sheehan (1963) administered the level of Aspiration for fluency to 60 adult stutterers and noted that greater the role commitment to fluency, greater the pressure towards perfect speech and greater the anxiety regarding the speaker role. Emerlck(1966) found that tonic and clonic stutterers did not differ significantly from normal speaking controls (N=20 in each group) in goal setting behaviour as measured by the Cassel Group Level of Aspiration Test,

SELF-CONCEPT STUDIES

English and English (1958) define self-concept as "the self as the individual is known to himself," Kelly (1955) saw the notion of self as being related to other ways in which individuals view their world. Several studies have investigated the self-perceptions of stutterers. Fiedler and Wepman (1951) used Q-technique to study 10 stutterers and 6 non-stutterers matched for sex, age, education and socio-economic status* No significant differences between stutterers and non-stutterers could be found. But Wallen(1959) using the same technique succeeded in differentiating the two groups (N=30 in each case) by showing stutterers to be less independent, more lacking in emotional control, less self accepting and more self rejecting. There was a greater discrepancy in stutterer group between how each individual saw himself as he was and how he would like to be. Wallen (1973) stated

that stutterers show lower actual self-concepts as compared to their ideal self-concepts.

Nelson (1955) performed a more thorough study using the Q-Sort, It showed that self-concept of stutterers was more closely focused on stuttering than was that of a comparable group of student therapists. The stutterers tended to perceive themselves primarily in terms of their speech, that is, as stutterers. Rahman (1956) also used this technique but compared real and ideal self-concepts of stutterers and their controls, finding some few differences in the real self-concepts but very few in ideal self-concepts. Essentially there were no differences. Clark and Murray (1965) present three case studies showing the use of Q-Sort and other self-concept measures in diagnosis and prognosis of stutterers,

Sheehan (1954) speaks of dichotomised self-concept and comments that the thought of suddenly ceasing to stutter often produces anxiety, "Because the defect may become a peg on which to hang his all short-comings.... He may have lived with his stuttering so long that functioning without it involved too radical a change in self-concept to be readily assimilated," He further states, "Just as in the early stages of treatment, the stutterer needs to accept himself as a stutterer, so in the final stages he must learn to accept himself as a normal speaker. The second adjustment is sometimes bigger than the first,"

Buscaglia (1963) examined 30 male stutterers and control group of 56 male non-stutterers and 26 psychotic male adolescents (demonstrating total role disintegration) on Sarbin-Hardyck test. On comparison it was found that stutterers are less able to perceive their own and other's life roles. Assuming correlation between role inadequacy and social behaviour, stutterer is socially more inadequate. Assuming correlation between role perception and empathy, stutterers have less empathic ability and their future learning will be negatively affected, Sheehan and Lyon (1974) using the same test in its original form, found no differences between stutterers and normal speakers.

Gonlon (1966) asked non-stuttering college students to rate themselves once as they are and once as if they are stutterers. They likewise evaluated themselves in positive and "stutterers" in negative terms. Fransella (1968) tried to establish whether the stutterer sees himself as "a stutterer." "The stutterers did not associate the idea of themselves with the idea of being a stutterer. The unexpected finding was that the stutterers (all males) and both sexes of non-stutterers do not differ significantly in the way they rated those concepts."

EYSENCK PERSONALITY INVENTORY STUDIES

The E.P.I has been widely used to study the personality characteristics of stutterers and non-stutterers. Bharath

Raj J, has provided much impetus to the research in the area of personality studies of stutterers and non-stutterers in India, Bharath Raj and Pranasha Rao (1970) were the first to use Eysenck Personality Inventory to study the personality differences of stutterers and non-stutterers (N=100 in each case) and to provide Indian norms for it. The results pointed out significant differences between the two groups on the N and E scales at 0.01 level, The mean N score for stutterers and non-stutterers was 13.25 and 11.05 with S.D's of 4.60 and 4.25 respectively. A comparison of the N score of stutterers with that of normals and neurotics pointed out a definite leaning of the stutterers towards neurotics rather than normals. The stutterers as a group were more inclined towards introversion and introverted neurotics were many more among them than extroverted neurotics,

Hegde (1972) analysed the Eysenck Personality Inventory scores of 106 stutterers. He compared the stutterers' mean scores on the neuroticism and extroversion scales with the test norms of the psychiatric and normal population. Stutterers emerged as less extroverted than the average and can be considered introverts with their degree of introversion roughly corresponding to anxiety patients. Stutterers were found to be more neurotic than the normal population but according to test norms they were still within normal limits, Stutterers scored nearly four points higher than the normal population and they were said to be close to the mixed

neurotic group. The percentage of neurotics in this sample as classified by E.P.I, was about 52%, while in the study conducted by Harpreet Singh (1986) it was 53.22%.

Harpreet Singh (1986) administered Eysenck Personality Inventory (both English and Kannada versions) to 75 stutterers. The stutterers' mean scores on the neuroticism and extroversion scale were compared with the Indian test norms. The stutterers were found to be less extroverted than the average. The stutterers obtained a mean score of 15.82 on the N scale, showing stutterers to be having anxiety components. A close examination of the studies which were carried out at AIISH, reveal a common thread running among them. Stutterers as a group did show greater leaning towards neuroticism than did normals, the stutterers tending to score higher.

Guitar (1976) assessed the personality of 20 stutterers (16 males and 4 females) by the extroversion and neuroticism scales of E.P.I.(part of a larger study). Their ages ranged from 21 to 64 with a mean age of 30.4 years. Stutterers did not differ from the normal population on extroversion. Stutterers' mean score of 11.90 (S.D. = 3.9) is very close to norm of 12.00(S.D. = 4.37). However, stutterers (M = 11.90, S.D. = 6.3) scored higher than the normal population (M = 9.00, S.D. = 4.3) on the neuroticism scale.

Gudi and Kumar (1986) studied stutterers and normals (N = 75 in each case) on the Junior Personality Inventory

constructed and standardised by Mohan Singh and Kalra, There was no significant difference on the trait of extroversion but significant difference was found on neuroticism scale the stutterers tending to score higher. The urban and the rural subjects both in control and experimental group did not differ in their responses to Neuroticism Scale.

CASE STUDIES

Duncan (1949) found that stutterers were more maladjusted at home than non-stutterers (N=62 in each group) as revealed by the scores on the Bell Adjustment Inventory, Morley and Berlinsky (1953) reported significant changes in scores on the Bell Adjustment Inventory in the direction of better adjustment as indicating successful stuttering therapy(N = 5).

Richardson (1944a) investigated the personality differences between stutterers and non-stutterers on an inventory of factors STDCR (part of a larger study). The stutterer* were more socially introverted, more depressed and less happy-go-lucky than the non-stutterers and scores of S, D and R of stutterers were significantly higher than those of non-stutterers. Shames (1951) using the Guilford Inventory of the Factors STDCR did not find any observable difference in his group (N=53) except that stutterers showed

a mora thinking introversion (Factor T). Shames did not use a control group but relied on the published test norms, which makes the interpretation of the discrepancy in the two studies difficult,

Robbins (1964) utilized the clinical interview as an assessment technique and reported some traits showing maladjustment among a large population of adults stutterers (N=490). Rieber (1962) in a pilot study of stutterers and clutterers (N = 20 in each group) interpreted the low score of stutterers on a Figure Drawing Test as indicating their greater dependency, introversion and withdrawal. The results of this study are difficult to Interpret as no control group of normal speaking subjects was utilised.

OTHER PROJECTIVE STUDIES

Many researchers have used a variety of test materials for studying the personality of stutterers. It was not possible to classify findings of all these studies under a single head. These findings are presented below,

Boland (1953) using Speech Anxiety Test (Modified Blacky Test) reported that the level of anxiety associated with speech situation was significantly greater for stutterers. There was no difference in sense of humour between stutterers and non-stutterers (Stoats, 1955).

Sayder et al. (1958) administered Backs Sentence Completion Test to stutterers and parents of stutterers, matched for age, socioeconomic background and education (N = 75 in each case) and inferred that stutterers as a group present a more disturbed personality structure than parents of stutterers. The attitudes of the stutterers varied significantly from the parents of stutterers with respect to family, sex, interpersonal relationship and self-concept. Devaki (1981) confirmed the above findings.

OTHER PERSONALITY STUDIES

As early as 1928, there appeared a first published study by McDowell of the emotional adjustment of stutterers. McDowell found essentially no difference in degree of adjustment between two groups. Johnson (1932) administered the Wood-Worth House Mental Hygiene Inventory to a group of 50 stutterers and a group of psychoneurotics and concluded, though the stutterers reported significantly more problems than normals, their responses were more like House's normal standardisation group. Pagan (1932) also used the same test with 33 stutterers and found a mild degree of maladjustment, in a majority of the cases.

In 1939, however, Beader reported results which suggested personality disturbances in stutterers. He

studied 249 collage stutterers and 303 non-stutterers who were matched for age, intelligence and socioeconomic background on Berneuter Personality Inventory and found that stutterers were more introvert, neurotic, less dominant in interpersonal relationship, lacked in self-confidence and less social,

Brown and Hull (1943) studied 59 stutterers on Speech Attitude Scale, Speech Experience Inventory and Personal Inventory Schedules. The group composed of 50 male stutterers and 9 female stutterers ranged in age from 17 to 34 years. All subjects were receiving clinical treatment. The following conclusions were drawn :

1. The stutterers as a group were "less confident and enthusiastic in their use of speech", "enjoyed speaking" to a lesser degree, and had less "poise" in doing so,

2. In stutterers' behaviour tendencies as well as attitudes deviate significantly from the norms, and that, "the individual (in this group) has used speech processes in social situations" to a lesser extent.

As revealed by the personality inventory schedules, though stuttermrs are significantly "lower" in social adjustment, there is no generalized inferiority as might be postulated.

Bearss (1951) using Adams Personal Audit and the Potter Incomplete Sentences Blank and Brutten (1951)

using the Maslow Security Index reported no significant differences between a group of stutterers and a matched control group (N= 23, and 16 respectively).

Spriestbach (1951) compared 50 stutterers ,183 normals and 20 hospitalised psychotics,all males,on Word-Picture Test of Social Adjustment, He stated that stutterers resembled the normal malas more than they did the psychiatric patients although they appear to be socially maladjusted.

Luper and Chambers (1962) administered the Picture Identification Test (P.I.T.) to 48 stutterers and compared the results with a group from a large population of college students and described stutterers as overtly sensitive to blame, criticism and fear of failure. Sergeant (1962) reported poorer social adjustment, less self- confidence, and greater emotional instability among stutterers (N=60) a* determined by both Boll and Bemreuter inventories, Wlngate (1962) tested 70 male stutterers on Edward Personal Preference Schedule and compared their results with test norms. The results indicated mild to moderate maladjustment in the area of social relationships.

Anderson (1967),from an analysis of responses to Gullford-Zimmerman Temperament Survey and the Gordon Personal Profile, concluded that his group of stutterers and a matched

control group (N=50 in each group) were highly similar in general emotional stability. However, they differed on several less global personality traits. Stutterers were reported to be more shy and less self-assured than non - stutterers but friendlier and more respectful towards others than the normal speaking controls. Wiagate (1966) reported that stutterers have less ability to adjust to shifts of familiar patterns and to continuously Changing situational demands but there was no evidence to support that stutterers have a high, rigid moral code.

Sermas and . Cox(1982) observed the results of 19 stutterers on the SCL-90-R (part of a larger study). The SCL-90-R is a 90 item self report symptom inventory which represents a revision of the Hopkins Symptom Check list. The test is composed of nine primary symptom dimensions (somatization, obsessive-compulsiveness, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism), together with three global indices of symptom and distress severity. Stutterers achieved higher absolute score than the two comparison groups (Brain dysfunction and non-brain dysfunction group), on the interpersonal sensitivity, depression, anxiety and psychotlcism dimensions. On these scales and on the obsessive-compulsive dimension, the stutt-erer's score was more than one standard deviation above the normative mean. However, the stuttering group was significa-ntly higher (at the 0.01 level) than the control groups

on the Interpersonal Sensitivity Scale only, reflecting feelings of personal inadequacy, uneasiness, inferiority and discomfort together with negative expectations during interpersonal interactions*

INTELLIGENCE STUDIES

As the speech of the retarded is so often impaired, researchers, taking a clue from this, started exploring the relationship between stuttering and intelligence. The first research in this area is that of Scripture and Kittredge (1923). The stutterers had a mean IQ of 92, Most of the stutterers tended to have an uneven scatter of scores on the subtests of the Stanford-Binet, suggesting a possibility of emotional instability . Many of the stutterers had low scores in the vocabulary subtest, leading authors to conclude that they appeared to have a " word disability ."

Fruewald (1936) examined 190 stutterers and 100 non-stuttering freshman and concluded that stutterers range definitely higher in intelligence than the general freshman college population.

ANXIETY STUDIES

Many studies which have explored the psychological aspects of stuttering and the general personality charact-

eristics of stutterers have emphasized the importance of anxiety in the phenomenon of stuttering. Various approaches have been timed to study anxiety in stutterers as a characteristic feature of behaviour independently of its arousal in speaking situations and a lot of evidence of what appears to be anxiety has been accumulated.

Different approaches such as projective techniques and questionnaires (Bender, 1942 ; Green and Small, 1944 ; Krugman, 1946 ; Meltzer, 1944 ; Richardson, 1944), case history, neurological, psychiatric and psychological examination have revealed a high degree of anxiety among stutterers.

Goss (1948) reported findings which suggest an anxiety gradient in stuttering behaviour. He noted that the longer the time interval between the exposure of the stimulus word and the signal for the stutterers to say the word, the greater the probability that the word would be stuttered. Goss concluded that longer the time interval, greater the anxiety and thus higher the frequency of stuttering. Baron (1949) found that a group of stutterers, required to speak a word following unconditional stimulus, acquired a conditioned eyelid response more rapidly than a group not required to say a word. The findings were interpreted as an indication that the anxiety generated having to say a word contributed to the total drive in situation, causing more rapid conditioning.

Berlinsky (1954) outlined a measure of anxiety for 14 stutterers and an equal number of non-stutterers matched for age on Saslow Screening Test, When they performed pursuit task under stress conditions of electric shock. There was no difference in the anxiety level of stutterers and non-stutterers, but frequency and kind of stuttering varied significantly for stutterers between experimental conditions. Anxiety measures showed a different pattern of relationship for stutterers and non-stutterers but stutterers showed greatest anxiety under conditions of "anxiety with no speech allowed."

Bruttan (1957) used a measure of palmar perspiration (PSI) as an anxiety index with a group of stutterers and a matched control group (N = 33 in each group). She reported on the intergroup differences in anxiety in verbal situations. She further stated that stuttering and anxiety adaptation were highly similar in decrement form and slope, while expectancy and anxiety adaptation covaried for stutterers, but not for non-stutterers.

Santostefano (1960) rated anxiety in stutterers and non-stutterers with the Taylor Manifest Anxiety Scale and asked the subjects to recall previously learned material in neutral and stressful conditions (part of a larger study). All subjects showed significant decrement in performance

under stress conditions in laboratory as compared to neutral ones, but stutterers showed greater decrement than non-stutterers.

Agnello (1962) examined the decrement in stuttering frequency from the second to fifth reading of prose passage. Two groups of 10 individuals were designated as high and low anxious by Taylor Manifest Anxiety Scale. The results indicated that differences in anxiety level did not contribute significantly to differences in stuttering decrements. However, high anxiety individuals indicated greater frequency of stuttering. The distribution of anxiety scores obtained from 50 individuals diagnosed as stutterers was compared with distribution obtained from 450 college students. No differences were obtained either in range of anxiety scores or the mean anxiety score. Gray and Bruttern (1965) studied the 21 stutterers and did not report any relationship between a change in the frequency of stuttering and anxiety level.

Gray and Karmen (1967) studied the relationship between nonverbal anxiety and non-fluency adaptation in stutterers and non-stutterers using Palmar Sweat Index (PSI) as a measure of anxiety. Their results indicated that :

- 1) the moderate nonfluency sub-group of stutterers demonstrate a significantly higher level of PSI than the high or low nonfluency subgroups of stutterers;

- 2) the low and high nonfluency subgroups of stutterers do not differ significantly in PSI level ; and
- 3) the three non-fluency subgroups of non-stutterers do not differ significantly in PSI level.

They also stated that stutterers and non-stutterers do not respond in the same way to situational adjustment of non-verbal anxiety. In other words, the relationship between fluency and non-verbal anxiety is not the same for both stutterers and non-stutterers.

Guitar and Bass (1978) administered the shortened form of the Erickson Scale. They reported that all but one of the stutterers scored above the mean for non-stutterers(9.14) with a mean shortened s-Scale Score of 20. Jamas et al. (1989) used the same instrument to study the communication attitudes of stutterers before and after therapy. Post hoc testing indicated that by the end of treatment, subject's attitudes and Improved significantly from a baseline of 20.2 (S.D. = 2.9) to an end of treatment mean of 14.5 (S.D. = 4.2).

From the above review, It becomes evident that a large number of investigators have studied the personality and adjustment of stutterers, but due to methodological inadequacies, such as use of unvalidated instruments, small

Ns and failure to cross validate, only a few generalisations can be made. In general, there is consistent evidence to support the conclusion that stutterers differ from non-stutterers on important personality traits. Though stutterers do appear to have adjustment difficulties, they are quite different in this respect from other severely mal-adjusted persons.

REVIEW OF LITERATURE (PART II)

TREATMENT OF STUTTERING:HISTORICAL PERSPECTIVE

The treatment of stuttering remains a matter of great speculation and controversy. A variety of treatment procedures seem to be effective with many stutterers but a complete and permanent cure from stuttering is relatively infrequent among adults (Curlee and Perkins, 1985) . There is no scientific or empirical basis for predicting which treatment procedures will be most effective for a given stutterer.

At the turn of century there has been ever-increasing out-pouring of books and research articles on the subject of stuttering. Many of these are the how-to-do variety, telling speech clinicians how to cure stuttering in a quick and better way ; others have dealt with the relationship of stuttering with psychological and physiological factors, or how to help the stutterer to stutter better. Neither of these genre has been very helpful for reasons which we will be dealing with presently.

The earliest account of treatment of stuttering goes back to ancient Greek literature. One Battos had gone to the Oracle of Delfi to know how he can be cured of his stuttering. He was adviced to go to a foreign

land and never to return. The advice might have worked, as it removed the individual from his immediate environment and allowed for resolution of conflicts.

" During the middle ages, the tongues of stutterers were burned ; and even as recently as sixty years ago they were sliced surgically. Cures were reported " (van Riper and Emerick, 1984). The other treatments which have been tried for the amelioration of stuttering make up a horrifying list;" Wedge-shaped portions were cut from back of the tongue ; the hypoglossal nerve, the lingual frenum and the various extrinsic and intrinsic muscles of the tongue were severed. The tongue was pierced with needles, cauteries, blisters, and embrocations of petroleum, also inoculations of croton oil were administered. Tincture of rectified alcohol, peppermint oil, and chloroform were applied. Wooden wedges were placed between the teeth. Smoking was recommended as a sedative to vocal cords" (Hollingworth, 1931).

Long ago, the French Government paid huge sums of money to a Madame Leigh for knowing the secret which brought relief to large number of stutterers. It was that stutterers were asked to keep a small pad of cotton rolled up under the tongue when they spoke. The reason

for the success of this method could be that as the stutterer was required to keep the cotton ball under the tongue, it reduced oral sensory deprivation as well as the tension in the muscles (Van Riper and Emerick, 1984).

About 150 years ago, Columbat advised stutterers to say each syllable of their speech and simultaneously to tap on the table or wave their arm. Van Riper (1982) commenting on this method said, " What it does is to make all words very much alike. It reduces phonetic fears by distraction. It reduces the communicative meaningfulness of speech. It is an antiexpectancy device."

Relaxation therapy for stutterers is widely used all over the world. In the late 18th century , Sandow trained his stutterers to achieve states of calm relaxation and serenity. His patients did not stutter when they were relaxed. As relaxation is not compatible with anxiety, a dramatic improvement usually occurs in the clinic, but in outside daily life conditions, they are not able to maintain enough fluency and fall prey to the disorder again.

In the end of the nineteenth century and the beginning of the twentieth, stutterers were treated in

groups in residential centres or homes called "stammerer's institutes". This form of group therapy included breathing exercises, reciting isolated sounds and word drills, chanting and singing, relaxing and speaking each syllable or each word in unison with a wide armswing or a finger tap. Each moment of stuttering was punished and fluency was rewarded; along with this, strong suggestions were also used* Most of the stutterers were completely symptom free in these institutions, but the problem restarted once they came back to their homes. As the field of speech pathology came into existence and made its presence felt, most of these commercial centres ceased to exist any more.

We continue to use many of the old methods, one of these is Suggestion and another is persuasion. Both these techniques are used overwhelmingly, be it a medical, psychological or speech therapy. The essential theme of these techniques lies in patients* belief that the therapist will enable them to overcome their difficulties (frank, 1961), The role of the suggestion is to enhance the patient's belief in cure.

Suggestion comes in different forms, it may be direct or indirect or it may be used in hypnosis or in the form of autosuggestion. Many therapists might

be using it with or without intent. A stutterer may be told by a therapist to do certain things in a specific way to be more fluent. Or the suggestion may be given in a subtle form.

The important point is whether the patient believes it or not. If he has full faith in the treatment procedure, he is likely to recover. Our belief systems, perceptions or emotions can be modified or changed to a larger extent through suggestion. The impact of the suggestion is still great, if it is given by an authority figure or therapist. Testimonials from doctors, lawyers and higher officials are often used to enhance the effect of suggestion. An illustration from a book by Mathur (1960) is given :

" Congratulations Mr. Mathur, on your logical and helpful advice on a particular troublesome problem. You have proved from your own experience the value of your methods, which I am sure should be of equal value to others afflicted with this disorder," (Psychology, Marple: Cheshire, England; December, 1958).

PERSUASION

Persuasion is closely related to suggestion and probably constitutes a special case of it. It attempts to create belief through logic and reasoning. During therapy the clinician asks about the beliefs of the

client and later on presents his own views about the matter. The client is brought to the point where he starts appreciating the rightness of therapist's view point and starts acting on it. In persuasion, there is always an appeal to reason, to logic and perhaps to authority. The persuasion therapies usually aim at convincing the client that there is nothing wrong with him and he can speak normally.

Wyneken (1968) expresses his views about persuasion clearly : " We must deprive the stutterer of his doubt and replace it with conviction, that is to say by faith in his ability to speak. If once we succeed in convincing the stutterer of the certainty of a method of cure, he will speak well as long as he believes it." "Breath-chawing technique" (Froeschels, 1964) and "ventriloquism" (Froeschels, 1950) have been considered to be based on persuasion by many authors (Kastein, 1947 ; Van Riper, 1973) .

HYPNOSIS

Hypnosis has been widely used and practised in India and China for centuries. Anton Mesmer was the first to demonstrate its effectiveness in curing certain ailment. Later on, his theory of animal magnetism and methods for inducing hypnosis were challenged, but he

gave impetus to scientific investigations for understanding the phenomenon of stuttering. Braid, Liebault, Bemheim, Charcot, Breuer, and Freud all used hypnosis to treat their patients.

The psychological and physiological factors involved in the hypnosis are not yet clearly understood (Chertok, 1967). The first report of treatment of two stutterers who were completely cured with hypnosis was provided by Donath (1932). Vogel (1934) reported the successful use of hypnosis for exploring the history and curing the stutterers. Schneck (1959) used hypnotherapy with a 17 year old male stutterer. There was an improvement but later on relapse, which was subsequently treated after rehypnotising. Nao (1964) claimed that three out of his five stutterers were completely cured by hypnosis. Watkins (1949) and Rosen (1953) treated their cases with hypnosis, who had developed stuttering due to stressful and conflicting situations. Luschinger and Arnold (1965) state that, "Hypnosis is of help only in acute traumatic cases of stuttering." Moore (1945) cautions that hypnosis should not be used alone but only in conjunction with other therapy, though out of 40 subjects he treated with hypnosis, 8 carried out post hypnotic suggestion* fluently, and reported easy and relaxed speech for two to three days. While 11 others did so intermittently, 12 were unable to speak fluently and the remaining 9 could not be hypnotised.

Van Riper stated that hypnosis produced a marked increase in fluency and a decrease in the severity of the stuttering without accompanying anxiety, but the effect usually wore off soon and booster sessions were required to maintain the fluency (1958) and reported some difficulties and problems for his techniques of "cancellation" and "pull-outs" (1971).

DISTRACTION

Stutterers have been using distracting devices and behaviours to ease their distress of communication difficulty. About 150 year ago, Schulthess insisted that stutterers be shown ways to divert their morbid attention from the speaking difficulties. Potter (1882) had listed the distractors ranging from drawing and sniffing to syllable timed speech and rate control. He stated that distractors worked as long as their novelty did not wear off, afterwards the stutterer is same as before. This may even further complicate the matters.

Fletcher (1928) commented on the efficiency of distractors as under ; "Placing corks or wedges between the teeth, shrugging the shoulders, tapping with the feet, pinching with the fingers, whistling or counting before speaking. and numerous similar therapeutic expedients, all of Which have bean known to be effective

in certain cases, seem to owe their efficacy to the fact that they distract the attention of the stutterer from his difficulty, and that, in consequence, they afford him a relief from the morbid inhibitions by which his speech is hindered."

Gutsmann (1848) demonstrated that by placing the electrode at the level of larynx of the stutterers with and without weak faradic current, he could make them speak fluently. This he attributed to their thinking more about the shock than the possibility of stuttering. Some stutterers report that they can speak more easily when swimming or driving an automobile or performing other activities. This effect may be due to the ease of timing and partly due to the distraction,

Freund (1932) stated that various methods of distraction work because individual is forced to pay less attention to his speech and other signals which provide cues for the beginning of speech difficulty. These methods include a novel way of breathing, phonating, accenting, producing syllables, or altering the tempo and melodic features of his speech* Freund recommended a judicious use of these methods as he believed that they attacked the expectancy core of the expectancy neurosis involved in stuttering.

Distraction is involved in one form or the other in all kinds of stuttering therapy. Biggs and Sheehan (1969), in their replication of the operant study by Flanagan, Goldiamond and Azrin (1958), insisted that reduction in stuttering resulting from contingent application of an aversive tone of 108 decibel was probably due to the distraction effect. Fransella and Beech (1965) attempted to rule out distraction as a cause of their findings by showing that fluency did not result when the subjects were instructed to listen attentively to an arrhythmic metronome beat. In another experiment, Fransella (1967) asked the stutterers to write down a series of tape-recorded numbers while reading aloud. This did not show any effect on stuttering. Therefore, it was concluded that the metronome effect has not been caused by distraction. Bloodstein (1975) raised serious doubts about Fransella's conclusions. He believes that strength or magnitude of a distractor as well as its ability for interfering should be taken into account.

Newman (1968) attributed the distraction effect to the novelty of the stimulus events. This novelty alters the speaking situation so that the old cues to which stuttering behaviours were connected are either absent, or become weak in strength, or are not perceived as connected with stuttering. Van Riper (1973) states that

under distraction the stutterer is less aware of possible consequences of his stuttering and also does not assume his usual preparatory sets which often result in overt stuttering behaviour.

NOVEL SPEECH PATTERNS

There are various ways in which speaker can change his breathing, articulation, pitch, loudness, quality, rate and rhythm. Almost every type of change usually helps the stutterer to attain fluent speech immediately. Among the techniques frequently used are slow speech, speaking syllable by syllable in time to rhythmic beat, monotone, singsong or other unusual inflections.

Mackay (1969) reported that normal speakers experience much less disruption and stuttering under delayed auditory feedback when they spoke in nasal voice. They were able to ignore the delay by attending to the tone. Stutterers have discovered long ago that on adopting an unfamiliar manner of stuttering, they could become fluent for some time, but the effect usually wore off soon. Kingdon-Ward (1942) made the observation that when stutterers spoke in a foreign or regional dialect, stuttering decreased in severity and frequency.

Another technique which had been used with many variations is Arnott's method. Though it was developed in 1864, many therapists still use it. The stutterer is required to prefix the short vowel ə before the first word of every sentence or feared word. Other variations include the use of schwa vowel on nasals or the aspiration "h" before uttering the sounds. About this technique Van Riper (1973) stated : "Since for a short time this prefixing will undoubtedly distract the stutterer's attention away from his usually feared sounds (since the words no longer start with them), the technique can produce some temporary fluency."

PSYCHOANALYSIS AND PSYCHOTHERAPY

Psychotherapy as it is known to us today began with the work of Freud in 1890. Initially the psychotherapy was in the form of psychoanalysis. Psychoanalysts were among the first to criticise stuttering therapy based on the immediate fluency. They argued that stuttering fulfils an urgent psychological need and warned that elimination of stuttering before the stutterer's underlying conflicts are removed can be useless or even dangerous. This could also lead to the development of serious emotional disorders and other neurotic symptoms. They believed that stuttering can be cured only by treating the neurotic symptoms in the stutterers.

Glauber (1958) said, "... it is impossible for stutterers, as for other patients with phobias, on their own consciously and regularly to resist phobias through will power. They can be resolved by means of psychoanalysis alone," Froeschels (1951) was of the opinion that psychotherapy alone may not be helpful, and it should be tried along with speech therapy. " Though stutterers do not need psychotherapy just because they are stutterers, they seem to profit from a program integrating psychotherapy" (Sheehan, 1970). Bloodstain (1975) supported the above view. Freud, while treating one of his earlier patients Frau Emmy, who had stuttering and many other problems, did not feel that psychoanalysis was an appropriate method of treating stutterers (He was able to solve her other problems).

Wolpe and Eysenck have challenged the efficacy of psychoanalysis in treating the stutterers. Eysenck's review (1952) showed that results of psychoanalysis were not much better than those methods which used simple reassurance, suggestion or persuasion. Wolpe (1961) presented a number of follow up studies that demonstrated the relative ineffectiveness of psychoanalysis.

DRUG THERAPY

Drugs have been used in the history of mankind to relieve anxiety, that's how they found their acceptance in the treatment of stuttering. Most of the drugs used in the treatment of stuttering have been classified as stimulants, sedatives and tranquillizers. The site of their effect has been claimed to be the different parts of brain. Even placebos have been found to provide symptomatic relief.

Though drugs have been used widely, the objective measurement of their effect on stuttering is lacking. It has been reported quite frequently that a drug has more effect on the complexity and severity of the stuttering than on its frequency (Kent and Williams, 1959; Burr and Mullendorf, 1960). Luchinger and Arnold (1965) reported that use of sedatives, atropine, prostigimin and the rauwolfia tranquilizers is very common in Europe,

Mitchell (1955) used serpasil for treating 16 stutterers. It did not show any significant changes in the rated severity of the stuttering, though the subjects undergoing speech therapy at that time indicated that they had less anxiety, shorter blockings and better control, under drug condition. Kent and Williams (1959) divided 15 stutterers into drug and placebo group (all subjects

were receiving speech therapy concurrently with the drug or placebo) and they found no significant differences between the two groups. Burr and Mullendorf (1960) and Kent (1963), in two Independent reviews stated that tranquilizers have no Important effect on stuttering, though studies by Aron (1965) and Goldman and Guth (1965) showed some improvement in the speech of the stutterers after drug therapy,

Hogewlnd (1940) used bellergal and phenobarbital reporting that "on the whole, the results were satisfactory, sometimes vary good." Schaubel and Street (1949) put their stutterers on prostigmin for three months and noted some decrease in the severity of the stuttering. Penson (1952) and Hale (1951) found some improvement resulting from the administration of vitamins. On the other hand Palasek and Curtis (1960) reported about the same degree of improvement when they gave only a placebo. Love (1955) did not find any significant differences when the effect of stimulant amphetamine was compared with that of the sedative phenobarbital on the severity of stuttering.

THE IOWA THERAPY

The term Iowa therapy has been used by Bloodstein (1975) to provide a comprehensive label to different therapies which were developed at the university of Iowa by three early students of Travis - Bryng Bryngelson, Wendell Johnson and Charles Van Riper, These three were highly critical of the older methods which were based on immediate fluency. They believed that a quick recovery from stuttering often meant a quick relapse. They also made sharp attacks on the therapies using novel speech patterns. They emphasized that such therapies tend to increase the anxiety of stutterers, as well as the severity of stuttering. On the other hand they were of the view that stutterer be allowed to stutter, but he should be taught to stutter with less fear and less hurry, effort and tension which complicate stuttering and increase its abnormality.

Bryngelson's therapeutic technique aimed at two immediate goals. One was to develop the attitude of acceptance and objectivity in stutterers in relation to their speech difficulty* This meant that stutterers were not to hide their stuttering, apologise for it or allow themselves to be handicapped by it and to refuse to make use of word substitutions or other tricks

for avoiding stuttering. The other procedures included the "situational work" in which stutterers systematically made phone calls, stopped strangers on the street to ask for directions, went into stores to ask prices of the articles or entered other difficult situations outside the clinic. The second was "voluntary stuttering", the deliberate faking of blocks for the purpose of practicing an objective attitude. This served as a means of learning to stutter without the avoidances, starters, and other tricks and devices with which stutterers frequently complicated their difficulty. Group therapy came to be used more widely, because it helped in raising the morale of stutterers and gave them the opportunity to model themselves on others who had already learned more appropriate attitudes.

Wendell Johnson formulated a therapeutic programme based on similar goals to those conceived by Bryngelson, but with certain differences. In this therapeutic approach, he was influenced by his conviction that there was little physical or organic basis for stuttering and by his development of "diagnosogenic" theory. He believed that fear was at the root of the problem and stuttering was an avoidance reaction motivated by

anxious anticipation of speech interruption. To start talking normally it was necessary to stop trying to avoid stuttering. For Johnson, the value of voluntary stuttering had little to do with the aim of gaining control over the stuttering, except that it was an exercise in throwing caution to winds. When a stutterer became nonfluent on purpose, it weakened his tendency to avoid non-fluency and consequently his tendency to stutter.

Stutterers were helped to see their stuttering as consisting of certain things they did that kept them from talking fluently and then were taught to talk without doing these things. Johnson believed that stuttering was caused by a peculiar set of perceptions and evaluations that stutterers had about their speech. His treatment aimed at changing those perceptions and evaluations in stutterers. The major emphasis of the treatment was on a great deal of actual speaking by the stutterer both in speaking time and number of situations and on paying attention to "going ahead and talking" on the assumption that there were no basic physical or emotional reasons for not doing so.

Van Riper's approach to stuttering problem was of helping a person to stutter in a more,, acceptable, controlled way (Van Riper, 1939) . In his own words,

"Teach the case to stutter in a fashion tolerable to both society and himself " (Van Riper, 1957) and later : "we establish and strengthen a new fluent way of stuttering" (Van Riper, 1973). Over time this objective has come under considerable criticism. Starkweather (1973) states that the ultimate goal which the therapist keeps to himself is the fluent speech. Therefore, there is no reason to avoid stating explicitly to the stutterer that the ultimate goal in the treatment of stuttering is to help him "speak as fluently as he is able and has the will and motivation to do,"

Van Riper regarded the stuttering block, most of the abnormality consisting of anticipatory reactions for avoiding stuttering and reactions of frustration in response to the experience of being blocked, as, to a large extent, learned behaviour. This indicated that stutterer can be taught to stutter "fluently."

Van Riper first tried Bryngelaon's (1935) "voluntary stuttering" technique, but soon found it unsatisfactory, and retained it only in the form of "faking" or "pseudostuttering" on non-feared words, He recommended a three-stage sequence for implementing the replacement response :

(1) after the stuttering instance has been completed, the stutterer stops and reproduces the stuttered word/syllable using the new response (cancellation) ;

(2) the new response is implemented during the old stuttering reaction (pullout) ; and

(3) the new response is just implmented before the old stuttaring reaction (preparatory set).

Van Riper did not provide any detailed sequential programme of reinforcement strategies, rather he used these therapeutic techniques in his own individualistic way. Van Riper (1973), while commenting on the out-come of this therapeutic techniques stated, " All that we can say is that it has given more stuttermers more relief and more permanent fluency than any other approach of which we have knowledge* "

Van Riper (1958) had published long term follow up data on the results of therapy. He reported that, five years after the end of the treatment, about half of his cases essentially had normal speech and many others have improved. Bloodstain (1979), while remarking on these results, said, "Remembering that Johnson has described Van Riper as possibly the most gifted speech clinician in the country, we must perhaps regard such results as better than average."

Recently, Van Riper (1973) has added a stabilisation phase to his stuttering management programme. The purpose of this phase is to stabilise the stutterer's fluent speech, resistance to stress and to consolidate the gains acquired during therapy. However, he advises that terminal therapy should be done carefully to prevent relapse.

It may be said that the different methods of treating stuttering are all based more or less on extended common sense interpretations. They hardly meet the rigour of scientific standards and objectivity. When most of the reports on stuttering therapies are examined one rarely finds any quantifiable data on those who have been treated. Most of the old therapies have been devoted to defining how the stutterer reacts in various speaking situations, understanding the stutterer's attitudes, feelings and emotions and to restructuring his attitude toward himself and his listeners. These reports on stuttering therapy have provided very little objective information about the treatment outcome. Webster (1974) stated, "... even Van Riper's (1958) well-respected report on experiments in stuttering therapy is rich in qualitative description and deficient in quantitative information on speech behavior ." These therapies have not been documented to provide reliable improvements in the speech fluency of stutterers.

TREATMENT OF STUTTERING
CONTEMPORARY PERSPECTIVE

In the recent years, a variety of therapeutic techniques have made their appearance. Many claims have been made about the efficacy of these procedures, though many speech pathologists are still sceptical about these claims. These techniques have been collectively put under the heading "behaviour therapy". The main distinguishing feature of these procedures has often been their association with learning theory. They also have in common all the attributes of scientific investigation including control of variables, presentation of data, replicability, and probabilistic view of behaviour. In this section, these techniques are reviewed.

RHYTHMIC SPEECH TECHNIQUES

The alteration or regulation of the rate of speech, to enable the stutterer to become more fluent, has been in use since long. Van Dantzig, in 1940, described a "syllable-tapping" therapy, which has led to the renewed interest in the use of rhythmic speech techniques.

Stutterers become markedly fluent when they pace their speech with an iterated stimulus. These effects

become very evident when the stimuli are rhythmic and externally generated such as when the stutterer begins to speak at an even measured syllable pace of the metronome.

The use of metronome for the treatment of stuttering goes back more than a century (Columbat De L'Ise're, 1831) and researchers are still actively interested in exploring this technique, despite the claims (Van Riper, 1973; Sheehan, 1970) that there is poor carry over of fluency from speaking with a metronome to speaking without one and the resulting speech pattern is too artificial and abnormal.

Meyer and Mair(1963) developed a portable metronome which resembled a hearing aid. five stutterers were asked to speak in time with the beat until they became fluent. Later on they were required to switch off the instrument and continue to speak as if the beat was still present. All of them achieved temporary fluency, when the beat was set at 90 per minute. It was noted that there was no carry over effect to the unaided speech. Fransella and Beech (1965) demonstrated that arrhythmic metronomic timer produced more fluency than a rhythmic one. Brady (1969) corroborated this.

Andrews and Harris (1964) reported the results of intensive training in syllable-timed speech with 35 stutterers, both adults and children, and noted an immediate reduction in stuttering for "all cases for at least a few days" though a relapse " in a major or minor degree has occurred in most of the subjects." Holgate and Andrews (1966) reduplicated the study in Australia but added psychotherapy and longer training. Their subjects showed a relapse and recurrence of stuttering after a short time. Brandon and Harris (1967) used psychotherapy and desensitization to outside situations in addition to syllable-timed speech training. They observed some long term improvement in about two-thirds of their cases.

Bredy (1968) combined metronomic speech with desensitization and reported that three of the six stutterers treated " have acquired fluency within the normal range " (without the metronome). Goldiamond (1965) also reported the use of metronome in his operant studies for controlling stuttering. Wolpe (1969) found that combination of syllable-timed speech and relaxation resulted in 90-95% improvement, which was " found to have been maintained as judged by him and by the patient's wife. "

Meyer and Comley (1969) used a miniature metronome to provide bilateral or unilateral signals. They found that 17 of 48 stutterers were unable to master rhythmic speech and most of these were those who showed "hard blockings". Half of the 48 stutterers received metronome aided and half unaided syllabic timed speech training for a period of twelve weeks. Six patients in the whole sample "equally represented in the experimental groups and the control group-achieved complete fluency." Bilateral metronome aids were less tolerated than monaural.

Ingham and Andrews (1971b) , and Ingham, Andrews and Winkler (1972) applied the technique of rhythmic, syllable-timed speech to several groups of stutterers. They reported that half of them did not stutter after 9 months of treatment , but only a quarter of them spoke at normal rates of speech. They stated those who showed the best results were those whose initial stuttering was mild and concluded " that syllable-timed speech is not a preferred method of treatment." Many of the stutterers also showed a reluctance toward using syllable-timed speech outside the hospital.

Brady (1971) described a "metronome conditioned speech retraining " programme (MCSR) and the results of follow up assessment. At first, the case is taught to make some fluent verbalizations, and later these are gradually and systematically shaped to approximate the rate and cadence of normal speech. The patient is helped to extend the fluency to other situations to which anticipatory anxiety and tension have been conditioned. "In brief, the principle is that one can usually reach a feared goal or situation and circumstances previously associated with intense anxiety and tension* if a goal is approached through a series of very small steps and in a psychophysiological state that is inhibitory to the anxiety" (Brady, 1970),

In this procedure, small steps correspond to a hierarchy of speaking situations arranged from those associated with minimal stuttering to those with severe stuttering. The patient must be successful in emitting relaxed, fluent speech with the aid of a metronome at each step before progressing to the next step of the hierarchy in natural environment* When the patient has learned to speak fluently and in a relaxed manner in the presence of a metronome's beat for a long time, the beats become conditioned stimuli to elicit a relaxed state and the

expectancy of fluency in virtually all speaking conditions he encounters, the use of metronome is discontinued. The transition from metronome aided to unaided speech becomes easier, when they are able to pace their speech to the beats of an imaginary metronome, at least for a while. Brady states that this phase of the treatment corresponds to gradual " fading out " of the unnatural cues of the metronome's beats as discriminative stimuli for a fluency and thereby allowing the cues in naturally speaking situations to take their place. Experiments in several laboratories have shown that non-auditory metronomes which emit stimuli in other sensory modalities are also effective in pacing the speech of the stutterers (Brady, 1969; Azrin, Jones & Flye, 1968).

The sample consisted of 26 chronic stutterers, predominantly late adolescent or adult in age. The follow up period ranged from six to 44 months with a mean of 13,8 months " after treatment ". In actual sense, only 12 subjects completed the treatment, as it was reported that they were not using the metronome at the time of evaluation. Three patients dropped out of the treatment and their results are not reported. Therefore, for the other subjects there seems to be little

justification in describing their assessment as " after treatment" assessment. There was an improvement rate of over 90%, and the mean percentage reduction in non-fluency was 67.3. These assessments were made while the patient was not wearing a metronome. The percentage of non-fluency for most of the patients While wearing the metronome was zero. Almost all patients continued to improve after the termination of active therapy.

Barman and Brady (1973) questioned clinicians on their judgement of the treatment value of a Pacemaker. They reported that 72% of the total number of stutterers treated with the unit were judged to have " improved ". Adams and Hotchkiss (1973) reported reaction and responses of those stutterers to MCSR and noted that one subject responded well to the programme, the second did not improve and the third refused to wear the metronome. The data do not provide sufficient evidence for assessing the improvement. The follow up, for over a year, for the subject who improved, indicated that he had maintained a low level of stuttering in all the speaking situations.

Ost et al. (1976) compared five stutterers treated for three months by MCSR with five stutterers treated by shadowing for the same period and another five who formed a control group. The subjects were

assessed immediately before and after the treatment. There was no change in speech rate in the MCSR group, though the results showed a 44% reduction in non-fluency. In comparison, there was no significant change in pre-and post-treatment percentage of non-fluency in speech of the other two groups, although the shadowing group showed a significant increase in the speech rate. In this study only one subject completed the five treatment stages of MCSR by the end of three months and speech improvement data were provided from three-minute samples in a clinical setting only.

Trotter and Silverman (1974) reported studies on the effect of pacing speech with a miniature metronome on stuttering. These studies indicated that the reduction in frequency and severity of stuttering was maintained when the earpieces were worn continuously or intermittently for approximately one month. Silverman (1976) reported wearing the pace master almost continuously for three years and found that the effect "wore-off" almost completely at the end of that time,

Herscovitch and Le Bow (1973) trained two 12 year old twin boy stutterers to use a private or imaginal beats to pace their speech. Subjects were first asked to practice with the beats of desk metronome, later the subjectspaced

their speech to rhythmic taps on their body and then to an imagined beat. The procedure began with pacing one syllable and then one word per beat and also the practice with parents and friends. The results indicated that stuttering remained near zero and there was a sharp increase in the speech rate during the follow up, but it is not known if the improvement was maintained beyond the clinic.

From the above studies, it may be concluded that stuttering is reduced in some "rhythmtherapies" and its effect may carry over in some subjects. The favourable reports are supported by little more than the clinician's judgements. In most of the studies, the measures used were not reliable. These studies need replication and more data on speech behaviour measures should be provided.

PROLONGED SPEECH TECHNIQUES

The use of these techniques have resulted in dramatic improvements in stutterer's speech, both in short and long term. The authors of these techniques have evaluated the outcome of their treatments objectively (e.g. Andrews and Ingham, 1972 ; Webster, 1975 and Ryan, 1974). Hence these techniques have come to be regarded as effective.

There are two outstanding features of the prolonged speech therapies : The training of unique speech skills and the specific training procedures which are employed. The prolonged speech procedures involve the instatement, shaping, generalisation and maintenance of fluent prolonged speech. "The speech skill- prolonged speech-originally referred to the slowing of speech by prolonging vowels, a pattern which usually occurs during artificially delayed auditory feed back of speech (DAP) at about a quarter of a second delay" (Howie and Andrews, 1985).

Goldiamond in 1965 discovered that under DAP some stutterers spontaneously used a prolonged style of speech in order to counteract the effect of DAP. Experiments have shown that DAF can serve as a stimulus which decreases the disfluencies in the speech of stutterers (Goldiamond, 1965 ; Webster and Lubker, 1968 ; Webster, Schumacher and Lubker, 1970),

Goldiamond's (1965) procedure required the subjects to orally read under DAP conditions which were performance-contingently altered in step* from approximately 25 words per minute at 250 msec. DAP through to normal or faster than normal speech rates, without delay. After a criterion of fluency is achieved, the delay level is reduced and reading

rate increased in programmed steps. Later on self-control procedures are used to aid transfer of the fluent speech pattern to nonlaboratory situations. In some cases a portable earpiece DAP unit has been used to further aid carry over (Goldlamond, 1967) . Goldiamond (1967) reported that, with DAP, he has been successful in treating 48 subjects with age ranging from 48 to 56 years, He further stated that prolonged speech could be effectively instated without the benefit of DAF.

Goldiamond's procedure has been instrumental in generating a large amount of research in the area of treatment of stuttering. Different methods have been employed to instate prolonged speech (or aspects of this speech pattern) and then shape this speech into normal speech. But most of these methods employ speech pattern described by Goldiamond.

Webster and Lubker (1968) reported the use of continuous, rather than response-contingent, DAF with 14 subjects. All subjects showed * marked improvement " within the clinic. Later on, Webster (1970) provided some data on the performance of eight subjects treated in the laboratory. There was a significant decrease in the number of words stuttered from the pretreatment baseline. In Webster's programme, subjects were simply instructed to use a slow

speech rate (30-35 words per minutes), and did not exercise any control over their rate of oral reading. The subjects were also instructed to make consonant sounds with a decreased speed and amplitude as well as smooth transitions between speech sounds within a word. Subsequently speech rate gradually increased to between 80 and 100 words per minute.

The combination of emphasized phonation, reduced speech rate and modulation of stress contrasts, which have been found to occur during prolonged speech, are said to be fundamental to the effectiveness of many conditions that improve fluency (Wingata, 1970 ; 1976). Many researchers have placed emphasis in their therapy on these features, in order to improve co-ordination of the speech process. Webster and Perkins have developed their programmes based on these features. On the other hand, the programmes developed by Ryan and Ingham take for granted, the efficacy of prolonged speech in producing fluency and concentrate their efforts more on the procedures which transfer and maintain the resulting fluency. These authors have also placed more emphasis on the application of operant methodology in their therapeutic programmes.

Webster (1971) in his programme stressed the need for " very explicit training in the acquisition of target behaviours." Once these behaviours are established , he

stated that only a slight social reinforcement is required for their generalization to the other situations. His report indicated that 70% of the cases treated have maintained fluency for long periods of time after treatment. The data presented concern only 16 subjects in whom, before treatment, the fluency of stuttering while reading is compared with same measure taken six to 18 months after treatment. Though there was considerable improvement, no subject was free from stuttering.

Curlee and Perkins (1969) reported another variation on the Goldiamond's procedure with conversational rate control therapy. Conversational rate control therapy consists of two phases. Curlee and Perkins (1961) reported preliminary results on 15 adults and adolescent stutterers with conversational rate control therapy and stated, "... in the clinical laboratory all of these stutterers have achieved conversational speech that could be judged as within normal limits of rate, fluency, and prosody in less than 30 hours of treatment". They also reported that subjects estimated their stuttering to have decreased "75% to 95% in outside situations", though details on assessment in these situations are not provided.

Toomey (1968) reported using the prolonged speech pattern in therapy without the use of DAP, and Van Riper (1970) has reported using DAF in therapy, None of these authors reported the results of the treatment.

Webster (1974) replicated Goldiamond's (1965) procedures with two stutterers and excellent laboratory fluency was generated. Subjects were unable to generalise the fluency outside the clinic even with extensive sessions and home practice exercise involving a tape-recorder* Webster, Schumacher and Lubker (1970) found that a continuous presentation of DAP was sufficient to increase speech fluency and thus eliminated the contingent relationship specified by Goldiamond(1965), But 'the two additional features " smoothing out " and " rate discrimination training " were used. Webster reported that all 16 subjects succeeded in transferring fluent speech to settings away from the clinic. After a 10 month follow up, all subjects reported that their speech was markedly improved. Several subjects also reported a recurrence of stuttering at approximately their previous levels.

Webster (1974) reported results of 17 male and 3 female stutterers approximately two years after their

completion of programme V. 19 subjects indicated that their post treatment speech quality improved, In the post- treatment oral reading task, 13 out of 20 subjects had disfluent word frequencies at or below 1 percent, While in the conversation measure, 9 out of 20 subjects scored at or below 1 percent disfluencies. But no data were reported on speech rate, speech quality or speech performance beyond the treatment setting.

Webster (1975, 1980) reported data on 200 randomly selected subjects who were treated between January 1971 and December 1974 and followed up. There were 173 males and 27 females represented in the sample. The average time from completion of therapy was 10 months and the longest was 41 months. Results revealed that 80% and 70% of those treated retained fluency within the normal range in oral reading task and conversational speech measure respectively. Though an additional 15% retained substantial improvement over the pre-treatment disfluency levels, they did not fall within the normal range. A total of 95% subjects reported that the programme had been worthwhile for them. As in this programme no effort was made to systematically programme speech rate increase, it is not certain if normal speech rate can be achieved with this programme. Mallard and

Kelley (1982) have reported very slow post-treatment speech rates on application of Webster's procedures.

Curlee and Perkins (1973) examined the results of a 90 hour treatment programme of conversational rate control therapy. The results indicated that each client showed significant reductions in the clinic and generalization was maintained in outside situations where measurements were made. Each client reduced stuttering by 80% , several by 100%, and there was over all decrease of 90% for the clients as a group. Though all the clients have reported that their speech had improved, on chance meetings, they were observed to be stuttering more than their tape recordings represented.

The mean stuttering frequency decreased from 16% before treatment to 1.3% S3 immediately after. The authors noted that the speech of their treated clients often sounded abnormally slow and monotonous. This led to the development of the breath stream management techniques currently used by Perkins and his colleagues.

Perkins et al. (1974) tested two behavioural methods of treating stuttering in adults for clinical effectiveness, efficiency and permanence. In method 1 conversational rate control was emphasized for shaping

fluency and delayed auditory feed back was used to obtain fluency at slow rates. By gradually reducing the delayed auditory feed back from 250 to 0 msec,, normal speaking rates were approximated that could be maintained with fluency (Curlee and Perkins, 1969, 1973). In method 2 the control of rate was used to facilitate normal management of the breath stream, phrasing and prosody as well as fluency.

Method 1 was used with 27 clients while method 2 was used with 17 clients. Ninety two percent of group 2 (method 2) retained some improvement six months after treatment. Seventy percent of both groups had reduced their stuttering by 85% or more at the termination of the treatment. Six months later, only 30% of group 1 retained that level of improvement, in contrast with 53% of group 2.

Whan 85% reduction in stuttering was viewed with criterion for normalcy (225 + syllables/minutes), only 44% of group 1, as compared to 65% of group 2, achieved normal speech during treatment. Listeners judged group 1 as being slower and less expressive than normal speakers, but not different in fluency. Group2 was

judged more fluent but otherwise no different from normals. At present the treatment involves the consecutive acquisition of seven skills (slow rate, phrasing, easy voice onset, soft contacts, breathy voice, blended words, and normal stress). Mastery of each skill is required before progression to the next is permitted. But the mastery of these skills is largely based on subjective judgements which, according to Perkins, are best made by the clinician (Perkins, 1981).

Ryan has developed a prolonged speech programme which has adhered firmly to the classical behaviour approach (e.g. Ryan, 1974 ; Ryan and Van Kirk, 1974) or other procedures. Ryan (1974) has provided complete programme data from a few subjects. His two adult stutterers stuttered less than one word per minute (for an unspecified period) from a pretreatment level of approximately 11 and 3 stuttered words per minute. But since these data are based on in-clinic conversation with the clinician, it is not known up to what extent the treatment gains generalized beyond the clinic. Therefore, it is difficult to make a direct comparison between the results of these rigorous

behavioural procedures and the broader approach of Perkins and his colleagues.

Schwartz and Webster (1977 a, 1977b) administered a " de-intensified" version of R, Webster's programme over 3 months rather than 3 weeks and provided data on 8 subjects who were followed up at least for 45 days after treatment. Data from oral reading task and an unspecified period of conversation revealed reduced disfluency. No data were provided on speech rate beyond the treatment setting. Only one subject was identified as stutter-free in both the conversational and oral reading tasks at follow up.

Ingham and Andrews (Ingham, 1975 ; Ingham and Andrews, 1973) reported the token programme involving the amalgamation of operant methodology with prolonged speech. The conversation or monologue speech is rate controlled through the DAT hierarchy and tape recorded models of prolonged speech are included to aid subjects (and clinicians) to use this speech pattern. During the fluency establishment and transfer stages, the subjects are admitted in the hospital to ensure the target speech behaviour is within prescribed limits

(zero stuttering and 170 to 210 syllables per minute speech rate) at almost all times. The maintenance phase is a contingent schedule of decreasingly frequent visits to the clinic, which is based on the target behaviour being maintained in some of the transfer stage situations. There was a lack of correspondence between the subject's speech behaviour in clinical and non-clinical situations (Ingham, 1975 ; Ingham and Packman, 1977). Even the normalcy of fluency after completion of the establishment stage is somewhat questionable (Ingham and Packman, 1978). "However, these limited reports on maintenance and normalcy of fluency, when taken together, indicated that treated adult subjects had shown some evidence of substantial improvement in fluency Which was also not radically different from normal speech behavior " (Ingham and Lewis, 1978).

Ingham (1980) described a procedure to maintain and generalize the gains achieved during stuttering treatment in nine stutterers. Prolongation technique along with token economy was introduced during the fluency instatement phase. The transfer phase included speech assignments, making telephone calls, interviewing of ward patients, etc, A performance contingent schedule of decreasing within clinic

assessments was evaluated When it was programmed with either contingent or non-contingent schedule conditions. The stutterers were divided into two groups and the effect of these schedules was evaluated on stuttering within BAB and ABA experimental designs. Speech behaviour of the subjects was assessed within and outside of clinic conditions and also covertly. The results from both the groups indicated that the performance contingent schedule was associated with both maintenance and generalization of improvement in stuttering. The covert assessment data were consistent with outside clinic performance for only six of the nine subjects which seriously limits the clinical validity of the findings.

Andrews, Craig and Feyer (1983) reported the Prince Henry Programme which represents the cumulative development of treating some 50 adult stutterers each year since 1971. Repeatedly objective and reliable evidence of its efficacy have been reported, The programme is an outgrowth of the original Andrews-Ingham Programme and it still uses systematic acquisition and generalisation of prolonged speech pattern.

The speech pattern taught is labelled smooth motion speech and is characterised by 6 skills (Gentle onset of phonation, continuous airflow, continuous movement of

articulators throughout each utterance, soft contact and extension of vowel and consonant duration). Smooth motion speech retains voiceless sounds. It does not use the more distorted continuous vocalization, which is sometimes associated with prolonged speech and slow rates. The training employs instruction and modelling (not DAP) for establishing the normal speech rate. At each step the client must display zero stuttering, correct speech rate (within 20 S.P.M. of target), and a specified minimum number of syllables spoken, all within the 45-minute rating session. The original token reward system has been abandoned but self evaluation training has been incorporated into the programme. The maintenance phase in this programme is less structured.

At the end of the programme, subjects who were stuttering on an average of 14% SB and speaking at 140 S.P.M. demonstrated virtually zero stuttering and speech rate within normal range (Howie, Tanner and Andrews, 1981; Howie, Woods and Andrews, 1982). A year or more later, average stuttering is still dramatically reduced. Clients treated before 1978 were achieving means of 3.9 % SS and 207 S.P.M. a year after treatment, but those treated in more recent modification of the programme show lower means of 1 to 2% SS (Andrews and Craig, 1982). In general,

while some clients are never heard to stutter, most still regard themselves as stutterers who are not able to speak fluently, and some have relapsed and are again in need of treatment (Howie et al. 1981) .

James et al. (1989) examined the relative efficacy of two treatment formats consisting of either 16 two-hour sessions of fluency training administered within a concentrated period of four consecutive days (intensive treatment), or two two-hour sessions per week for eight weeks (spaced treatment). Of 20 subjects (2 females and 18 males), 11 received intensive treatment and the remainder received spaced treatment. Ages ranged from 19 to 50 years, with a mean of 34 years. Fluency training consisted of a systematic programme of directed speech practice that combined slowed and " prolonged speech ", A shortened version of Erlickson S Scale (Erickson, 1969) was used to measure subjects' " communication attitudes". The fluency-training methods produced significant reductions in stuttering frequency that were partially maintained at six-month follow up. further, subjects showed significant generalized increases in speaking rate that were maintained and significantly improved communication attitudes that were also maintained. The treatment format had no discernible effect on treatment efficacy.

The evidence suggests that prolonged speech treatment procedures are effective both in short and long term. Many studies do not report complete data and speech measures taken after treatment are not representative of clients speech improvement. Only a few studies evaluate the speech rate and normalcy of speech. As noted earlier, the stutterers have been reported to be fluent and their speech rate is within the normal range after a year of treatment (Andrews and Craig, 1982). Even after successful treatment, the stutterer's speech can be easily distinguished from normal speakers. Reasons for this are not clear.

MASKING

The earliest use of masking noise for the treatment of stuttering had been reported by many investigators (Imhofer, 1927; Denes, 1931 ; and Kern, 1932). When the auditory feedback to a stutterer is attenuated or eliminated by external causes, decreases usually occur in the frequency of disfluency.

Shame (1955) reported that the 90 dB noise produced complete cessation of stuttering in eight of her subjects While others decreased their stuttering by 83%. Cherry and Sayers (1956) reported that When they used a very loud

masking noise sufficient to overcome bone conducted self-hearing, practically all the stuttering disappeared in the stutterers. They used high-and low-pass sound filters to see if there were differences, perhaps, due to elimination of feedback from bone conduction or the fundamental voice frequency. They concluded that the elimination of the low frequencies produced more decrease in stuttering. Stromsta (1958) found less stuttering as the noise changed from 500 Hz to 1000 Hz. However, May and Hackwood (1968) and Conture (1974) were unable to corroborate these findings.

Derazne (1966) reported about a masking unit (Derazna Correctophone) which he constructed in 1939 and had been using it for stuttering therapy since then. It has an output of 60 dB and low buzzer frequency of 50 Hz. In the majority of cases (8 to 10 years of age). Derazne stated, it was possible to remove stuttering. The treatment also employed training in smooth exhalation, increasing the rate of speech and prolonged speech. Trotter and Lesch(1967) reported the senior author's experience with two portable masking units. Dr. Trotter noted, "Although there is reduction in both the frequency and duration of my stuttering, it has never been entirely eliminated," He also indicated little carry over.

Parker and Christopherson (1963) designed a portable electronic masker to aid them in their psychotherapy with stutterers. Although no data was provided, they claimed that one subject recovered completely and others were sufficiently helped. Van Riper (1965) used another device with a group of stutterers and stated that a marked reduction in severity of stuttering and a slight decrease in frequency occurred in spontaneous speaking under stress in his subjects when the noise was turned on only at the moment of stuttering.

Perkins and Curlee (1969) reported the use of one masking device which produced a pulsing signal of variable rate and intensity and another device which produced white noise on three adult stutterers who had been receiving rate control therapy previously, but had been unable to transfer the fluency gained in the clinic to outside situations. Both types of units eliminated or decreased stuttering but the device without white noise was preferred over the other one. Subjects did not get the benefit from the unit while talking on the telephone as they had to remove the ear plug. Two subjects reported brief carry over after three to five days with the unit. The other subject's stuttering became more severe after the unit was removed. The studies of Sulston and Chase (1961) and Webster and Dorman (1970) employed four conditions : 1) noise onset made contingent on phonation ; 2) noise cessation made contingent on

phonation ; 3) a continuous noise condition ; and 4) a no-noise control condition. In these experiments, all noise conditions yielded significantly less stuttering than the no-noise control conditions,

MacCulloch, Eaton and Long (1970) presented the findings of long term auditory masking on eight subjects. These subjects underwent 23 weekly half-hour sessions which consisted of oral reading and conversation under masking noise (300 Hz). The intensity of the noise was individually adjusted to prevent self-monitoring of speech. The oral reading rate almost remained same despite a decrease of more than 30% in errors. Authors did not provide any data on reliability, follow up, or assessment on other than the same reading passage.

Many other workers have corroborated the reduction of stuttering under masking (Maraist and Mutton, 1957; Conture, 1974; Alrowe and Bryden, 1977). There are only a few negative findings. One of them by Hutchinson and Norris (1977) found no significant decrease in the frequency of stuttering under masking noise, when their subjects spoke spontaneously, but the same subjects did show a decrease during oral reading. Others, however, (Trotter and Leech, 1967; Dewar and Barnes, 1976), have demonstrated that

masking effect is not confined to reading. The normal disfluencies of non-stutterers also decrease under masking (Silverman and Goodban, 1972).

The decrease of stuttering under masking noise has been shown not only for the molar moments of stuttering but also especially for sound and syllable repetitions and for prolongations (Conture and Brayton, 1975 ; Altrows and Bryden, 1977). Certain changes in the manner of speaking occur under masking noise. According to Lane and Tranel (1971), Adams and Moore (1972), Adams and Hutchinson (1974) and Conture (1974), vocal intensity increases (the Lombard effect). The stuttering subjects of Cherry and Bayers (1956) , and Parker and Christopherson (1963), however, were able to speak quietly under loud noise and still showed reduced stuttering. Brayton and Conture (1978) reported longer vowel duration.

In stuttering, the fundamental frequency also tends to rise under masking (Lechner, 1979), but this pitch rise has long been known to occur in normal speakers too (Atkinson, 1952). Changes in the rate of speaking have also been noted, but the research is equivocal. Soderberg (1968) reported slower rates under masking. Yairi (1976) found a faster rate under binaural masking but not under monaural masking.

Continuous masking noise brings about more decrease in stuttering than does intermittent noise (Murray, 1969; Burke, 1969). Altrows and Bryden (1977) using intermittent masking noise prior to, during, and after the speech attempts found that masking noise was effective only when it coincided with the speech. This finding conflicts with the reports of Sulston and Chase (1961) ; and Webster and Dorman (1970).

Dewar and Barnes (1976) describe the use of Edinburgh masker, a device which uses a throat microphone to automatically trigger the masking noise and permits the wearer to hear other speakers. Significant decreases in stuttering were found in group data of 53 stutterers while wearing this unit during oral reading, reciting and spontaneous speaking conditions, but no transfer to general speech occurred even after 22 weeks of use. In another report Dewar , Dewar and Anthony (1976) claimed that abnormal concomitant movements were reduced While wearing the unit.

Many clinicians have attempted to use masking in therapy. But they have found the lack of carry over, along with the disinclination of stutterers to use the instrument. Ingham and Lewis (1978) make this observation : " It may indicate that procedure has not been used appropriately, but

it may also imply that the procedure controls stuttering only while it is in operation and may, therefore, have utility as prosthesis only."

SHADOWING

"Essentially, shadowing involves two speakers. The person who stutters reads orally from one text or imitates the concurrent oral reading by another person. Sometimes the other person may read from a text that differs from the stuturer's text " Ingham and Andrews (1973). A few studies have demonstrated that shadowing can reduce or eliminate stuttering.

Cherry and Sayers (1956) found that when stutterers "shadowed" the speech of a model speaker almost complete "suppression" of stuttering occurred. Cherry, Sayers and Marland (1956) trained five stutterers in shadowing over a period of from two to four weeks and stated that there was marked improvement. Walton and Black (1958) applied the method to a telephonic conversation with a 32 year old male stuturer. The results showed that the total number of "stammers and hesitations" per 10 minute talphone conversation declined from 80 to approximately 15 ever 20 sessions. But it is not known if there was any carry over effect of this reduction in the clinic.

A case report of improvement in which shadowing was combined with systematic desensitization was provided by Walton and Mather (1963) . They reported that after six months of treatment there was " still room for further improvement although progress he has made so far is considerable," Kelham and McHale (1966) treated 38 subjects using a shadowing therapy, involving a hierarchy of speaking situations which gradually increased in difficulty. An overall success rate of 74% was reported.

Kondas (1967) used combination of " exercises in relaxed breathing " followed by clinic and home exercises in shadowing for 19 children and one adult stutterer. "Desensitization treatment " was added When progress with shadowing was not sufficient. Kondas reported that frequency of stammering was reduced from " 12.2 to 2.2 " between the beginning and the end of the treatment, When subjects rated as " cured " or " much improved " were combined, 70.6% of subjects were reported " successfully treated ". This figure dropped to 58.8% after a follow up evaluation period, Which lasted from 3 to 5 years. Jones (1969) gave a less favourable report. Fifty adults were given training in shadowing practice over a period of 8 weeks and it was stated, " ... although a few patients improved dramatically, the overall success of the therapy is unlikely to be

greater than When more traditional methods are employed over the same period."

Shelton (1975) reported a case study, using the shadowing technique for treatment. The subject read aloud to the accompaniment of a recording of the clinician reading a passage which contained " difficult words ". The treatment was given in 20 minute sessions over 3 months. The subject showed improvement after six weeks treatment and on a follow up 14 months later. The subject's counts of his frequency of stuttering per day were used as data and no reliability checks were carried out.

As noted earlier, Ost, Gotestam and Melin (1976) treated five stutterers by shadowing for 3 months (a part of the larger study). The results did not indicate any significant difference between pre-and post-treatment percent of non-fluencies in speech, though there was a significant increase in word per minute rate during post-treatment reading tests. Kondas and Pukacova (1977) stated that 20 subjects, who practiced repeated reading during shadowing conditions, showed marked Improvements in speech fluency, which was stable at follow up. The measurement of Improvement was based on pre post and two months follow up assessments of reading and spontaneous speech.

from the above studies and reports utilizing shadowing procedures it is difficult to judge the clinical efficacy of this method for the treatment of stutterers. These studies need more systematic replication for extended periods to prove " shadowing " as a therapeutic technique for changing stutterer's behaviour and maintaining improvement

AIRFLOW THERAPIES

Many fluency management therapies which have proved valuable and acceptable for the treatment of stuttering have been reported. Among these are airflow management therapies. Azrin and his colleagues (Azrin and Nunn, 1974; Azrin, Nunn and Prantz , 1979) trained stutterers to control a wide range of aspects of airflow; smooth breathing, exhalation prior to speech, blending words into the exhalation pattern, continued exhalation after the last sound of utterance, pausing at natural juncturing points, and smooth inhalation during the prespeech pauses as well as formulation of general speech content. Specifically the relaxation training involves three procedures : 1. the relaxed posture procedure, 2. the relaxed breathing procedure and 3. the self-directed relaxation procedure.

Azrin and Nunn (1974) considered stuttering " ... not as a specific speech problem but as one type of nervous habit." They state that stuttering is a habitual disorder

of the initiation and maintenance of airflow , and it should be possible to eliminate it, if the stutterer emits behaviours that are incompatible to stuttering. The treatment is exceptionally brief : one or two sessions of 2 hr. duration plus several follow up telephone calls. In a recent treatment description (Azrin et al. 1979), breath management skills are provided first in reading, then in spontaneous speech, gradually decreasing the frequency of pauses. There is very little structured generalisation of skills and it is restricted to clinic only,

Aarin and Nunn (1974) stated that stuttering decreased by 94% on the first day after the treatment. The stuttering increased slightly but was still reduced by 90% on the second day. 8 of the 14 clients showed 98% decrease in stuttering at 4 months follow up. The analysis of the data of the individual clients showed that stuttering was reduced at least by 85% for all clients on the very first day after treatment and by at least 93% When the client was observed last. " ... on the last available follow up report, all reported that they stuttered so few times and so mildly that they no longer considered stuttering a problem for them. All reported that stuttering episodes never occurred when they used the prescribed procedures." The results are based

on client's self recorded stuttering episodes and ten minutes telephone calls with the clinician during the last follow up.

Azrin et al., (1979) put 21 subjects under the regulated breathing procedure and remaining 17 under the abbreviated desensitization procedure. Both the group of patients were seen for one or two sessions, each session lasted for 2-3 hours. The results showed that stuttering decreased by 94% on the first day and further decreased to 97% and was stable at the 3 months follow up in the regulated breathing group. For clients treated by desensitization procedure, stuttering decreased by about 15% on the first two days, at the third month 12% decrease from the pre-treatment level was observed. A minimum follow up period of four weeks to 16 months was attempted by telephone contacts. Each stuttering episode was recorded and totalled by the client at the end of the day. The data were mailed to the counsellor. The frequency of stuttering episodes was reported to the counsellor during the frequent telephone calls. To validate the client's report about stuttering, a family member or a close person to the stutterer was contacted regularly. However, it was noted that when telephone contact with the stutterers was not established a few of them began stuttering again. This emphasised the

need for frequent support or instructions and as well as booster treatment for some clients in order to maintain the therapeutic gains achieved.

An interesting study which used regulated breathing procedure on several characteristics of the speech of an adult stutterer is reported (Williamson, Epstein and Chris Coburn, 1981). All baseline and treatment sessions were of approximately 45-60 minute duration and were scheduled once or twice per week. During each session, the patient's speech was tape recorded during four 5 minutes periods. The four periods were 1. Reading aloud from current periodicals. 2. Therapist interviewing the subject regarding a variety of different topics. 3. Role played talking in social situations. 4. Speaking over telephone or intercom. E.M.G. recordings from masseter were taken during the entire session with the exception of first three sessions. The subject's wife was also instructed in the use of regulated breathing procedure.

During baseline, the subject's disfluencies/word ranged from 0.16 to 0.46 in all the four situations. When regulated breathing procedure was applied in each of the situations, rate of disfluency was immediately reduced to 0.10 with a mean of 0.036 across the four conditions. The procedure also produced a level of masseter muscle tension

that was within the EMG range found during fluent speech. Mean rate of subject's speech was found to be 33.20 words/minute, with only 0.02 disfluencies/word.

The results reveal that breathing procedure was an effective method for reducing stuttering and improving the quality of speech as judged by unbiased observers. The procedure was found to systematically increase rate of speech and reduce facial muscle tension. The treatment effects generalized to several laboratory and non-laboratory settings and persisted for a 3 month period.

Jones (1981) reported the use of regulated breathing technique for nine 2-hour sessions with a severe stutterer. The pre-therapy assessment showed the percentage of stutters for free speech to be 46.1 and for reading to be 27.4. The method was combined with relaxation and biofeedback. After treatment, stuttering had been reduced to 5.2% for free speech and 3.2% when reading. The improvement was generalized to every day functioning and was maintained at 3 month follow up.

Two other independent studies, based on objective speech measures, have reported consistent data suggesting that immediately after this treatment, stuttering frequency

is about 5% SS, but deteriorates to 8% SS 2 to 3 months later with speech rate probably slow (Andrews and Tanner, 1982a; Ladouceur , Cote, Leblond and Bouoherd, 1982).

Saint-Laurent and Ladouceur (1987) evaluated the effectiveness of (1) massed versus distributed practice of regulated breathing and (2) the presence versus the absence of a maintenance programme. The subjects were 27 men and 13 women , their ages ranged from 18 to 50 years. The results suggested that the subjects treated with Regulated-Breathing experienced greater improvement than the subjects in the placebo group. The speech performance was improved (decreased percentage SS and increased S.P.M.). Behavioural data indicated that stuttering was decreased by 52% after the RB treatment and decrease was 41% ten months later. When subjective measures were used, results indicated a 50.3% decrease after 24 hours of therapy whereas at the 10 month follow up the decrease was at 47% . Only 46% of subjects reached the normalcy criterion (3.65% of stuttering) and ten months after treatment, fluency was maintained for only 34% of the subjects. Intensive application of therapeutic intervention did not improve the efficacy of the usual spaced treatment and also the maintenance programme did not increase therapeutic efficacy. In conclusion they state that, " It is an efficient treatment:a 24-hour

therapy program is relatively short in comparison with most stuttering treatments. Another advantage lies in speech rate. The treatment herein administered decreases stuttering and increases the rate of speech."

Schwartz (1976) described "flow and slow" for fluency management treatment by airflow. The technique is based on the assumption that stuttering is the result of excessive tensing of vocal folds before speech, producing a feedback that triggers conditioned struggle behaviours. But this has not been substantiated by empirical evidence. Stutterers are taught to initiate passive airflow prior to speech and to slow the first syllable of each utterance. Treatment involves five days of intensive practice of the flow and slow skills in increasing the long and complex utterances, and finally in generalization tasks. Daily home assignments are carried out and audiotape samples are mailed to the clinic. He stated that 84% of 185 patients who had enrolled in his "Airflow Therapy" programme were completely symptom free in all situations within a week, 83% were symptom free even after a year. As no other objective data about treatment outcome has been provided, the clinical efficacy of treatment is still open to question.

Reports by Schwartz (1976) and Lee (1976) of "symptom free " speech in large number of stutterers at long term follow up are encouraging, but they lack quantitative data on the treatment outcome. Andrews and Tanner (1982b) have provided objective data for these procedures which suggest that the immediate outcome of the 5 intensive days of treatment (means of 2.8% SS and 184 S.P.M.) is less convincing than the prolonged speech therapies. It is difficult to say anything about the long term effect* of this technique, till more data about the treatment outcome, showing maintenance of treatment gains over a considerable duration of time, becomes available. There is no doubt about it that application of airflow techniques can reduce stuttering dramatically in the short term. These techniques may prove very useful in more structured programme and as an adjunct to other therapies.

OPERANT CONDITIONING

Operant conditioning ~~refers to the control~~ of the form of speech for a smooth sequential execution of a skilled act. A substantial number of studies seem to support the view that stuttering can be considered as belonging to the operant class of learned responses because it decreases When aversive stimuli (electric shock, a burst of very intense light or sound, verbal reprimands, etc.) are applied contingently.

Flanagan, Goldiamond and Azrin (1958) asked three stutterers to read till adaptation had taken place and base rate became stable. Then a 105 dB tone was presented continuously through earphones except that, when stuttering occurred, the noise was turned off for 5 seconds (negative reinforcement). There was an increase in stuttering for all subjects. The frequency of stuttering decreased to the baseline when the contingent tone was no longer presented. Later on, noxious tone of one second duration was administered contingent on each stuttering moment, and the stuttering decreased; one subject became entirely free in laboratory. In a similar study, Goldiamond (1965), using delayed auditory feedback as a "punishment" instead of loud noise, showed that when a short pulse of DAP was made contingent on stuttering, stuttering decreased.

Biggs and Sheehan (1969), in an attempt to replicate Flanagan, Goldiamond and Azrin's research, used a 108 dB high frequency tone as an aversive stimulus in three conditions : presented contingently with the moment of stuttering, presented randomly, and stopping it when stuttering occurred. As stuttering decreased under all three conditions, they attributed the decrease mainly due to distraction.

Martin and Siegel (1966 a) studied the effects of administering contingent shock for different types of stuttering behaviour (nose-wrinkling, tongue protrusion, etc.) on three stutterers and found that these specific stuttering behaviours decreased but returned to baseline as soon as the contingent shock was removed. However, at the same time, increase in prolongations occurred. Martin and Siegel (1966 b) simultaneously " punished " stuttering by the words " not good " and rewarded fluency by the word " good " in two male stutterers. Both these contingencies increased fluency, and when they were removed, more stuttering occurred. A nylon strap used as a discriminative stimulus was found to have some effectiveness.

Moore and Ritterman (1973) studied 12 adult subjects under following four conditions :

1. concomitant contingent punishment of stuttered behaviour and contingent, tangible reinforcement of fluent behaviour,
2. punishment contingent upon, and following a stuttered response,
3. punishment presented during a stuttered response and continued beyond the termination of response and
4. the effects of stimulus control on the rate of stuttering frequency.

The results indicated that contingent punishment of dysfluent responses administered under 2 contingencies and a combined procedure of contingent reinforcement for fluency and contingent punishment for stuttered responses resulted in statistical significant decrement in stuttering frequency. Spontaneous recovery during stimulus control segments was not demonstrated.

Brady (1967) used electric shocks contingently for each moment of stuttering on his subjects when they were reading a 1000 word passage and found that there was less stuttering in this condition than when no shock was employed. Quiat and Martin (1967) used the word wrong as a consequence for any repetition and prolongation in one stutterer and for "uh" or prolonged "n" sounds in two others after baselines had been established. They reported reductions in frequency under these contingencies. When the contingencies were removed, responses returned to baseline rates, Hegde (1971) found that contingent shock reduced stuttering in oral reading. According to Gross and Holland (1965), stuttering was significantly reduced when either the stutterer or the listener was shocked contingently. Further, mere instructions that punishment is to follow significantly reduced stuttering during the five adaptation readings of the experimental conditions over the control. There is a

discrepancy between the findings of this study and findings of Van Riper (1937) and Frick (1952), which showed that when stutterers were told that at the end of their reading they were to receive as many electric shocks as they had blocks, their stuttering tended to increase.

There are other findings which are in apparent conflict with those of Van Riper and Frick. Oxtoby (1955) reported that instructions to "try to avoid stuttering" had no effect on the frequency of blocks. Wingate (1959) found an increase in stuttering when the subject was penalised after each block by an interruption in an electronic communication link with his listener or when each block was simply called to his attention by a recording counter. Martin and Siegel (1966 a) pointed out one important difference, that in some cases an aversive stimulus is presented immediately contingent on the stuttering block, while in other cases it is not. In this regard, Hegde (1972) stated: "It has been suggested that introverts with anxiety symptoms may react badly to avoidance conditioning particularly when shock is used (Eysenck and Rachman, 1965). The conflicting evidence cited in the literature (Van Riper, 1937; Frick, 1951; Siegel et al., 1965) on the effect of electric shock on

stuttering may at least partly be due to the presence or absence of anxiety in the subjects of these different studies. Consequently, the use of shock as a procedure of therapy for stutterers may be of doubtful value."

However, Moore and Ritterman (1973) explain the discrepancy between their study and those of Van Riper (1937), Prick (1952) on the basis that punishment and threat of punishment cannot be equated as contingency paradigms,

Haroldson et al, (1968) studied the effect of making time-out from positive reinforcement (TO) contingent on stuttering in four adult stutterers. All the four subjects evidenced a marked decrease in stuttering frequency during TO sessions. Some extinction of the suppression effect was observed during those sessions in which TO was removed. Adams (1970) claimed that reported base rates in the above study were so unstable that their findings should be considered doubtful.

Not all research has corroborated the usual findings that contingent punishment decreases stuttering. Timmons (1966), using an experimental and control group of stutterers, gave the first group the word wrong as a punishment contingent upon stuttering in the middle series

of the repeated readings of the same material. The control received no "punishing word." There was no significant increase or decrease in stuttering. Daly and Cooper (1967) studied adaptation in successive readings in which shock was administered first during, and then after each moment of stuttering, in a third condition no shock was given to subjects, The differences among three conditions were non-significant. Stevens (1963) gave a sample shock prior to the stutterer's readings and found no significant changes as a result of making it contingent on stuttering moment.

Several studies by Cady and Robbins (1968) ; Cooper, Cady and Robbins (1970) ; and Daly and Kimbarrow (1978) have shown that the contingent use of such words as right, wrong or tree all produce the same decrease in stuttering or in normal disfluencies. Curlee and Perkins (1968), after instructing their subjects to signal expectancies of stuttering prior to speech attempts, shocked them for doing so. This resulted in decrease in both the frequency of signalled anticipation and the frequency of stuttering, Daly and Prick (1970) obtained only a moderate reduction in expectancies and no reduction in stuttering in their study, while Harris, Martin and Haroldson (1971), using time-out from speaking as a punisher, obtained variable results with three subjects.

Investigations by Webster (1968); Starkweather (1970); Zenner and Webster (1975); and Janssen and Brutten (1973) showed that certain specific component behaviours in the molar moments of stuttering do not always decrease under punishment. Some remain unchanged while others may increase or decrease. When the performance of individual subjects under contingent punishment is examined, it becomes evident that all of them do not show decrease in frequency. Martin, St. Louis, Haroldson and Hasbrouck (1975) found that, of their five stutterers, the percentage of words stuttered increased for two subjects, decreased for two others, and remained the same for the fifth one under contingent condition.

Starkweather (1970) found that mild contingent shocks decreased stuttering while very severe ones increased its frequency. Hegde (1979) noted that short term experimental sessions may show suppression, but long term application of aversive stimuli may show, instead, an increase.

William and Martin (1974) reported no significant differences in the decrease of stuttering between immediate delivery of the aversive stimulus and delayed delivery, but they did report that contingent electric shock had some effect in reducing frequency of stuttering. But as noted earlier Moore and Ritterman (1973) stated that punishment

contingent upon and following a response resulted in a statistical decrement in stuttering. According to operant model, immediate delivery of shock would have brought about more decrease.

Van Riper (1957) reported that When a male stutterer was rewarded by being kissed by a pretty girl, rather than an increase, an immediate and dramatic decrease in stuttering was observed. In another report. Van Riper stated that When a very hostile boy was rewarded for stuttering moment by being contingently permitted to give him (Van Riper) a very severe electric shock, the stuttering was almost eliminated. Stevens (1963) found no significant increase in stuttering When verbal approval was made contingent on stuttering. Ryan (1967) found an initial decrease and later on an increase in stuttering When his single subject was paid a penny every time he stuttered. Patty and Quarrington (1974) used a light Which signalled subjects that they had earned a nickel. This did not effect subjects' sound or syllable repetitions or prolongations, or hard contacts. It did serve to decrease the subjects' visible struggle behaviour (defined as inappropriate and stereotyped movements and fixations of the face and head). This behaviour also decreased When the contingent signal was replaced by notification that

reward for stuttering would be given later on the basis of experimenter's count. When a neutral signal light was made contingent on stuttering, it affected only the "visible struggle behaviour", though it increased it. Starkweather and Lucker (1978) administered tokens (redeemable for other rewards) contingent upon stuttering and found that three of his four subjects showed a decrease in stuttering, while only one of them showed an increase (It was believed that stuttering was probably "faked" to get the reward). Contingent monetary gain for moments of stuttering decreased stuttering rather than increased it (Lanyon and Barocas, 1975). It becomes evident from the positive and negative research on stuttering that it does not behave consistently according to the operant modal.

Few investigators (Adams and Popelka, 1971; Moore and Ritterman, 1973) have shown that there is some difficulty involved in making a stimulus contingent on stuttering and the attempts to do so are frequently unsuccessful. When Adams and Popelka questioned eight subjects who have served in a study on the effect of time-out from speaking, they found that six did not perceive the time-out as punishment but instead took it as a chance to relax. James and Ingham (1974) did not find this reaction to be common, but only six of the fourteen subjects evaluated the

time-out in terms suggesting unpleasantness.

Martin, Kuhl and Haroldson (1972) found that two pre-school children reduced stuttering to near zero during weekly sessions of 20 minutes in which interaction with a puppet show was terminated for ten seconds following each stuttering. Follow up and carry over assessments indicate, stuttering was reduced from approximately 6% and 2.5% words to slightly below 1% and near zero respectively, about a year after cessation of treatment. Reed and Godden (1977) used the verbal contingency "slow down" after each stuttering with two children of same age during twice a week sessions of 20 minutes each. Carry over and follow up data gathered from home recordings indicated stuttering was near one percent and zero, eight months after treatment.

Ryan (1974) and Mowrer (1975) described therapy programme involving performance contingent increase in words read aloud or spoken. These also involve transfer and maintenance programme similar to those by Ryan (1974) to sustain DAF instated fluency. In these programmes, parents and friends are trained to dispense social or token reinforcers. Ryan (1974) presented the results of the gradual increase in length and complexity of utterance (GILCU) programme 4 for the nine clients ranged in age from 7 to 35, The programme was highly successful for the younger

Children (post means of stuttered words par minute in monologue and conversation were zero or almost near zero), While the post means of stuttered words per minute in monologue for adults were 1.5 and 1.2 respectively (Ryan, 1974). Mowrer (1975) also reported preliminary data where three subjects (two adults and a child) completed the maintenance programme and, on unspecified post-treatment test, were much improved, but only the child warn completely free from stuttering.

Ingham and Packman (1977) reported an experimental treatment programme for an adult stuturer using contingency management and rate control procedures. This resulted in maintained stutter-free speech within laboratory conditions, further, this was maintained for about three months and also during follow up sessions six months later. Meanwhile her frequency of stuttering in the non-clinical situations remained virtually unchanged.

There is very little evidence to support the use of operant treatment procedures in stuttering therapy. This may be due to the more demanding therapeutic conditions Which are needed for the application of these procedures, as it will be very difficult to monitor all the apeech behaviour and apply the contingent reinforcement schedules.

SELF MANAGEMENT PROCEDURES

Self management procedures are used widely in the behaviour therapies, but their use in stuttering therapy so far has been very limited. These procedures are considered essential for long-term maintenance of therapeutic change (Mahoney and Arnkoff, 1978). It involves the subject's counting each appearance of a problem behaviour, delivering their own contingent rewards or punishment for their responses. The possible mechanism involved in self-monitoring is its self-reactivity and readiness or anticipation towards the occurrence of undesired behaviour (Azrin and Nunn, 1973). The self-observation or recording reduces the undesired behaviour in a desired direction.

Goldiamond (1965) attempted to analyze the effects of self monitoring on stuttering in 14 subjects who were instructed to press a hand switch whenever they stuttered while reading aloud. The data did not show any discernible effect or a transient change in frequency of stuttering in some subjects during oral reading conditions. LaCroix (1973) reported results from two stutterers who counted each disfluency on a digital counter during a 30 minute session in which they conversed with each other. The treatment sessions were associated with a relatively low percentage of disfluencies but carry over, follow up or speech rate data was not reported.

Ingham, Adams and Reynolds (1978) noted the effects of self-recording the frequency of stuttering or the word "the" during spontaneous speech by three adult stutterers within a single-subject experimental design. The results showed a variety of effects on the stuttering behaviour of different individuals. The effects of these procedures on stuttering frequency, use of the word "the", and speech rate differed for each subject,

James (1981) examined the effects of self-monitoring among 33 adults and adolescent stutterers. These were divided into three equal groups representing the three levels of self-report accuracy, high medium and low. Over all stuttering frequency was significantly attenuated under the self-monitoring condition. The results of this study were in general agreement with numerous previous reports of ameliorative effects of self-observation (Ciminero et al. 1977). When reactivity was examined in relation to level of self-monitoring accuracy, only the group which was composed of subjects who had been least accurate in self-reporting moments of stuttering exhibited significant reductions in disfluency rate. These results differ from the general findings of previous research that reactivity is largely independent of self-monitoring accuracy (Kasdin, 1974). The author explains these differences on the

basis that the discrepant conclusions of the previous research on the self-monitoring of stuttering may have been the result of a failure to investigate sufficiently large and representative number of subjects. He further states that this unexpected result may have been due to the influence of differences in the severity of disfluencies between the subjects,

Martin and Haroldson (1982) reported the results of contingent self-stimulation in 30 stutterers. The subjects were divided equally into three random groups, an experimental administered time-out (EATO) , a subject-administered time-out (SATO) and a non-contingent stimulation (control) condition. In this study, stutterers who received a time-out from speaking contingent on stuttering experienced a marked reduction in stuttering. This was true Whether time-out was presented by the experimenter or the stutterers themselves.

NEGATIVE PRACTICE

Speech pathologists have employed the deliberate use of stuttering-like behaviour in their therapy for many years. The first clinical application of negative practice can be mainly attributed to Knight Dunlap. He recognised the untenability of earlier theories which hypothesised

that a response repeated under similar stimulus conditions increases the probability of occurrence of that response. Dunlap (1928) hypothesised that past appearance of the response may not have any effect on the probability of the same stimulus producing the same response ("beta hypothesis" and contended that the past appearance of response may decrease the frequency of future response (" gamma hypothesis")

Dunlap used stuttering as one of the first disorders to test the negative practice hypothesis. He noted that "negative practice " had improved some stutterers, Fishman (1937) reported the use of negative practice with 5 adolescent and adult stutterers. The treatment was carried out for a month and 60% showed definite improvement. No control group was used and the cases were not followed up

Fahmy (1950) employed negative practice (modified version of Dunlap's procedure) in therapy with eight stutterers aged 8 to 14 years. Half of the subjects worsened, while the other half showed a reduction in percentage of stuttering after the first six weeks and it was maintained at the final follow up assessment. Case (1960) treated 30 stutterers whose mean age was 24 years. The subjects were divided into two groups : speech blockers (N = 5) and non speech blocker(N = 25). It was also decided to assess the effect of "positive adjustment techniques" separately or in conjunction with negative practice. Case

used Dunlap's (1932) procedure along with punishment (shock) Whenever there was a mistake in the attempt to stammer involuntarily. Most subjects received an hour and half of therapy a week for upto 13 months. The results indicated that 10 of the patients were "cured", 15 showed improvement and the five speech blockers worsened under negative practice. The results of this study are similar to that of Fahmy's (1950) study which also reported that the four subjects Whose stuttering was characterized by blockages worsened.

The discrepancy in the findings may be due to the kind of practice employed or how it was taught, or to the kind of stuttering behaviours exhibited, the " speech blockers" profitting less than those whose stuttering consisted primarily of syllabic repetitions. Sheehan (1970) attributes the efficacy of voluntary stuttering to its substituting of an approach response instead of usual avoidance one. It helps the stutterer to learn that he does not have to flee in face of speaking situations and remain calm in real life situations.

Except for a few studies, negative practice has not been used much in the therapy of stuttering and its therapeutic potentials need to be explored further.

ANXIETY REDUCTION

Anxiety reduction techniques have played a central role in the treatment of stuttering for long. These techniques mainly include systematic desensitization and assertive training. Wolpe (1958) has devised a procedure called "systematic desensitization" in which a relatively relaxed state is induced in the stutterer by a modified version of Jacobson's method or by suggestion. Then, based upon a preliminary interview, a hierarchy of speaking situations graded in terms of their anxiety potential is presented step by step to the stutterer while in the relaxed state as he imagines himself participating in the situation. The stutterer begins with the lowest step on the hierarchy (or the least feared situations) and keeps imagining vividly till the anxiety has completely subsided. Later on the stutterer is asked to imagine the next situation on the hierarchy which brings about slightly more anxiety than the first one. This process is repeated till all the situations in the hierarchy are exhausted. Systematic desensitization is based on the mechanism of reciprocal inhibition (Wolpe, 1958).

Speech related anxiety is commonly accepted as a frequent concomitant of the clinical syndrome of stuttering, though the specific role it plays and the degree of

involvement in the nature and management of stuttering are not well understood. Despite the ambiguity of research findings, it can be safely said that most stutterers are frequently anxious to an abnormal degree about common speech situations (Lanyon, 1969) and would like to be helped in this regard.

Gregory (1969) studied the results of therapy with 16 stutterers . All stutterers were evaluated (1) 9 months prior to therapy, (2) immediately prior to therapy, (3) immediately after therapy, and (4) 9 months after therapy to determine the status of stuttering behaviour, speech related anxiety, general anxiety, personality characteristics, avoidance of speaking situations and attitudes towards speaking. As a group " there was substantial, and statistical significant reduction in stuttering during the therapy period" (Gregory, 1969). However, " The program of stuttering did not bring about a change in specific speech associated anxiety as measured by palmar sweat prints." The reduced speech anxiety was not an immediate and direct consequence of improved fluency.

Brutten and Shoemaker(1967) described stuttering as fluency failure due to learned negative emotion and advocated the use of reciprocal inhibition and systematic desensitization as described by Wolpe (1958) as a major procedure in its management. Wolpe (1969) reported of a stutterer

Whom he trained to relax and to undergo a desensitization hierarchy focused about humiliation in addition to training in rhythmic syllable timed speech. "After nine desensitization sessions in the course of four months, his fear of these 'humiliation' situations steadily declined and This speech was judged to have improved 90-95 percent."

Lanyon (1969) trained one mild stutterer in "Jacobson" relaxation in four sessions, then presented a hierarchy of 27 fear-evoking situations centred about speaking. After 24 weeks of this therapy, Lanyon reported that a 40 percent improvement in frequency of stuttering during reading and a 56 percent improvement in narration occurred together with significant change in attitudes, Perkins (1967) gave systematic desensitization to two stutterers who had previously undergone training in rate control and he reported unsatisfactory results. Kuchner (1970) reported an individual case in which systematic desensitization resulted in improved fluency.

Adams (1972), Aten and Burgraff (1969), Webster (1970), and Gray and England (1972) reported group data on the effectiveness of reciprocal inhibition therapy. Adams (1972) found that 9 of 12 subjects showed improvement in fluency associated with the use of reciprocal inhibition.

Aten and Burgraff (1969) found that systematic desensitization resulted in nearly total fluency in one stutterer and stuttering rates were halved in six others. Webster (1970) found that on a reading passage stuttering rates were reduced and there was no spontaneous recovery of stuttering after adaptation as a result of systematic desensitization to the content of reading passage.

Gray and England (1972) attempted to determine the effectiveness of systematic desensitization in improving fluency and reducing speech related anxiety. Fifteen subjects were given systematic desensitization therapy over a period of several months. During the therapy, fluency and anxiety levels were monitored at several points. They noted that (1) anxiety reactions were reduced, (2) fluency failure was reduced on oral reading tasks and (3) little correspondence appeared to exist between anxiety reduction and fluency improvement. In addition, the experimenters rated subjectively 14 of the 15 subjects (four cured, two greatly improved, one improved, three marginally improved, and four no change). Another consistent observation was that the severity of the blocks had noticeably decreased even when little improvement was noted in stuttering frequency.

Fried (1972) reported a combination of psychoanalysis and systematic desensitization in the treatment of a young adult stutterer and claimed that procedures cured him. Tyre, Maisto and Companik (1973) treated an adult stutterer with systematic desensitization. They reported spontaneous speech (10 min.) and self rating data at pre,post and six months after treatment occasions. Significant reduction in stuttering frequency and self-ratings of severity of stuttering was reported.

Boudreau and Jeffrey (1973) made comparisons of the pre-and post-therapy assessment of eight young adult stutterers treated by systematic desensitization and four control subjects who received no treatment. Across oral reading and spontaneous speech assessment made in the presence or absence of ether persons, they observed that percentage of words stuttered decreased significantly only in the treatment group.

Burgraff (1974) first trained a group of stutterers in relaxation. Their treatment consisted of systematic desensitization with visualized imagery or traditional therapy which included discussions about feelings on the desensitization hierarchy plus Van Riper's (1963) symptomatic therapy approach (pull-outs, cancellations, easy prolongations and preparatory set). Pre-and post-therapy

assessments indicated significant differences on speech measures for both the groups of stutterers receiving systematic desensitization and the group receiving traditional symptomatic therapy, but no differences were noted in the degree of improvement between the two groups of stutterers.

Weiner (1981) provided speech therapy to a 36 year old male stutterer, with emphasis on desensitization of abnormal emotional response to speaking situations. He was also taught techniques of vocal control for fluency. Within a 6 month period, he underwent 14 sessions, each of one hour duration. Another two booster sessions were given within a 2 year period. The follow up consisted of unplanned telephone calls. Though there was improvement in the speech, it was not completely stutter-free.

These studies suggest that reciprocal inhibition therapy and systematic desensitization are effective in reducing speech-related anxiety and, in some cases, improving fluency. However, the exact dynamics underlying stuttering and anxiety reduction and fluency improvement remains unclear.

ASSERTIVE TRAINING

Salter(1949) has shown that assertive outgoing behaviour seems to reduce fear and anxiety which is inhibitory in nature. The principle of reciprocal inhibition of anxiety through the use of assertive responses has been used since long for a variety of psychological disorders (Freund, 1966).

Wolpe (1958) reported the successful treatment of a stutterer through assertive training. The patient's anxiety was deconditioned through training in assertive behaviour when faced with feared speaking situations, van Riper (1973) provides an account of a stutterer who stuttered very little after he started using assertive responses in his daily life situations. The researches by Shearer and Williams (1968), Wingate (1964) and Sheehan and Martyn (1966) provide similar evidence,

Dalali and Sheahan (1974) reported a study in which 24 subjects were randomly distributed across three groups. The subjects were matched for severity of stuttering and initial degree of assertiveness. The first group received an active assertion training as advocated by Wolpe, While the second group simply discussed their feelings about situations in which they regarded themselves

as unassertive, the third group received parallel sessions with Avoidance- Reduction Therapy (Sheehan 1975). The comparison revealed no significant differences within or between the groups on either stuttering, assertiveness or any of the other personality variables on the scores derived from rating scales and measures of speech behaviour before and after treatment. They pointed out that the assertion training did not add anything to Avoidance- Reduction Therapy, As all subjects were part way through Avoidance- Reduction Therapy, it is difficult to be certain if the effects of assertion training were not " submerged ".

Balson (1976) reported the treatment of an adult stutterer with behavioural techniques which included relaxation training, assertive training with behavioural rehearsal and role play. He noted the complete elimination of symptoms in five sessions, each lasting fifty minutes. No deterioration was observed at a 6 month follow up. Burns and Brady (1980) used assertive training as an adjunct to other treatments like behaviour rehearsal in a 28 year old stutterer. The subject showed improvement and was able to handle various situations effectively after treatment. Both these studies did not provide any quantitative data on speech performance.

BIOFEEDBACK

Feedback of electromyographic activity (EMG) has been used to treat several disorders that involve muscle tension. Lately electromyographic feedback is being used in the stuttering therapy. Guitar (1974) decreased the stuttering of four subjects by training them to reduce EMG activity at several places in the speech musculatures, particularly the lip and larynx, prior to speech attempts. Aten and Blanchard (1974) have also reported favourable responses to the clinical use of EMG feedback in several cases.

Hanna, Wifliag and McNeil (1975) used EMG feedback for the treatment of stuttering. The surface electrodes were attached above the thyroid prominence and the ground electrode to the left wrist. The feedback which was presented through a speaker at patient's side consisted of a tone that increased in frequency in proportion to the amplitude of EMG signal. It was explained to the patient that the tone reflected tension in his speech muscles. His task was to produce low frequency tone as often as possible. After giving some practice with biofeedback session. It was followed by four talking periods that lasted 9 minutes each. Biofeedback was presented for the first and third periods but not for the second and fourth* The second session was similar to first one except that the subject was given false feedback during one nine-minute condition.

Results showed that stuttering was reduced to less than 50% of the baseline during the two biofeedback conditions in each session. The general decline in stuttering over each session probably reflects the familiar adaptation effect (Van Riper, 1971) plus some carryover of the biofeedback effect. These two effects are difficult to separate and probably tended to obscure differences between 'off' and 'on' conditions. Nevertheless, an on-off reversal is clearly evident. False feedback condition produced a slight decrease in stuttering relative to no feedback which indicates that the results cannot be explained in terms of distraction, masking or suggestion.

Guitar (1975) provided an account of treatment in which auditory feedback of EMG signals from chin was used. After training, the subject was simply instructed to "reduce muscle action potentials" without feedback. The results showed that stuttering initially reduced in the laboratory from around 17% syllables stuttered to near zero, similar results were noted when the subject spoke over the telephone. Nine months later the subject provided a tape-recording of the conversations and telephone calls which were reported to be free from stuttering and at normal speech rate.

REVIEW OF INDIAN LITERATURE

There are hardly any accounts of, how the stutterers were treated in India till a few years ago. Most of the scientific investigation in speech and hearing started after the Government of India established All India Institute of Speech and Hearing at Mysore in 1965.

Upadhyaya, et al. (1968) reported the use of masking technique with four male stutterers whose age ranged from 10 to 25 years. Each session consisted of three to five trials, each of 10 minute duration, in which the noise was presented contingently on repetition, addition, or omission of a part of a word or words. There was a decrease in the number of errors in the subsequent sessions. They reported that one case was completely stutter-free after 20 sessions, while others improved.

Mahananda (1970) reported a study of a 19 year old male who had moderate stuttering without many prominent secondary symptoms, but with neurotic and introversion tendencies. The sharp click-like noise whose intensity varied from 78 to 124 dB was presented through headphones whenever he stuttered while reading. He was seen for a total number of 60 sessions. Each session lasted for 25 minutes. The average number of blocks in each session

decreased from 156.55 to 0.86 from the first week to the ninth. At the time of discharge, the case reported a 70% improvement in his speech which was maintained at the follow up made after 7 months. This study did not use any experimental design and it is not known whether the subject still had neurotic and introvert tendencies.

Hegde (1971a) evaluated the short and long term effects of response contingent aversive noise on stuttering in eight and five subjects respectively. The first experiment was conducted in two days, with two sessions on each day. Each session lasted 25 minutes and the subjects received an aversive stimuli of 124 dB. The aversive noise was not made contingent on any aspect of stuttering* but all hesitations, repetitions and prolongations with or without the secondary adjustive behaviour were defined as stuttering and aversive noise was made contingent on it. The results revealed that the stutterers stuttered significantly less under aversive noise condition though the relative severity of stuttering did not seem to affect the outcome, whether a stutterer stuttered relatively less or more. In the second group (Long term effects), the therapy was carried out for 3 months and reassessment at the end showed that stuttering had remained practically the same. Hegde stated, "... the frequency of stuttering response gets reduced under

brief experimental session may be due to ... external inhibition." He further explained that the long term application of aversive noise leads to adaption to the stimulus and the initial effect is lost.

Nandur (1982) observed the effect of noise on rate of speech and frequency of stuttering in four male stutterers in the age range of 17 to 23 years. All subjects read two different passages, under two conditions (1) in the absence of noise (2) in the presence of 90 dB HL diotic noise. The results indicated that stuttering reduced during the binaural masking conditions in stutterers. The study is limited in its values as it did not use any control group.

Hegde (1971b) examined the effects of response contingent shock on stuttering in 5 male stutterers with a mean age of 19.6 years. All the subjects participated in four experimental sessions- two shock and two control conditions. The sessions were held on alternate days. The results revealed that all the subjects stuttered more under the shock than the control conditions and it was not related to the relative severity of the stuttering in the subjects. The results were explained on the basis that

shock induced over-arousal (anxiety) Which facilitated stuttering response and it shared certain properties of the original traumatic situations that were probably associated with stuttering. Vlashwanath (1971) also reported similar results with an adult case whose stuttering was characterised by repetitions, prolongations and "secondaries" like tongue protrusion, abnormal mandible depression, extraneous sounds, eye brow rising and rapid eye blinking. Viahwanath (1972) reported the five cases of stuttering in his dissertation, who showed significant decrease in the selected responses When they were punished. Repitition of sounds and syllables, when punished, either decreased or were unaffected.

Manohar at al., (1973) reported the results of correspondence therapy programme for 406 stutterers. The cases were divided into two groups : 1. Group A, the cases who did not come to the Institute but needed help and 2. Group B, the cases who came to the Institute for help but who could not stay to receive therapy. Group A consisted of 119 cases. While group B of 287 cases. Shadowing or prolongation techniques were recommended for therapy. In both the groups, with both the techniques, 63,95 percent of the cases have reported improvement. Stutterers in group 'B' showed greater improvement than group 'A'. The author* stated that this could be

due to the fact that in group 'B' the cases have been counselled face to face and were demonstrated as how to carry out the techniques. Prolongation technique was more effective with severe stutterers whereas shadowing was more effective with mild and moderate stutterers.

Vijayalakshmi (1973) studied the effects of three verbal stimuli "Good" "No" and "Zehu" (Nonsense word) on the fluency aspect of 8 stutterers verbal behaviour. All the three verbal stimuli were given to each subject after their base-rates became stable. A 100 percent contingent reinforcement schedule was adopted. The results indicated that 5 subjects showed a decrease in stuttering for all the three stimuli While the other 3 subjects showed an increase in stuttering for one or more of the stimuli. These results suggested a need for classifying the subjects in different groups as they responded differently to the same treatment.

Dattatraya (1973) investigated the effects of continuous contingent, random contingent, and random negative stimulation on 8 stutterers. The results showed that both continuous contingent and random contingent negative stimulation decreased stuttering. Random

negative stimulation did alter the stuttering response significantly, though there were no significant differences between the effects of continuous contingent and random contingent negative stimulation.

Basavaraj (1980) in his dissertation examined the effects of time-out under four stimulus conditions :

1. Light with time-out for a duration of five seconds (LTO)
2. Light without time-out (LNTO)
3. Sound with time-out (SNT0),

Stuttering increased in all conditions except the last. This study raised the possibility What the time-out may not act as a punisher, When made contingent on stuttering,

Bharath Raj (1974-75) reported the results of response contingent shock on the stuttering behaviour of five adult male stutterers between the age range of 20-25 years. Each subject was base rated for three sessions. The three base rates were as under ;

1. The frequency of stuttered responses while reading/ spontaneous speech.
2. The frequency of stuttered responses while reading/ spontaneous speech with electrodes attached but no shock.
3. The frequency of stuttered responses while reading after therapy.

Each session lasted for 20 minutes, Pre-and post-therapy evaluations were done independently by a clinical staff, the student therapist and the self evaluation by the subject on a special proforma Which provided a quantitative estimate of stuttering rate for each subject. The results indicated that three subjects showed definite improvement, While one subject discontinued the treatment without providing any reason. The other case showed decrease in stuttering in the 5th session as compared to the base rate, but he requested to be discharged as he wanted to attend college elsewhere.

Lal, Latthe and Bharath Raj (1976) reported about the treatment of an adult stutterer with systematic desensitization. The case used to sweat and experience fear in speaking situations. He found it extremely difficult to talk with his lady classmates. He avoided people and social situations, A hierarchy of 10 situations in the increasing order of producing anxiety was prepared in consultation with the case. As described by Lazarus, systematic desensitization therapy (SD-1) under imagination was tried.

Each session lasted about 30 minutes under which fairly deep relaxation was ensured. In the beginning speech fluency appeared to be restricted to therapy

sessions only, but with more and more sessions of therapy, generalization took place to outside situations. Soon after relaxation subject received training in talking to others. Twenty sessions of therapy were given, and case showed remarkable fluency after treatment. The case himself reported 75% improvement. There was also considerable overall improvement as he did not have difficulties in initiating and sustaining conversation with others.

Srinivas (1982) investigated the effect of sampled highlighting of fluency on disfluency and fluency in 5 adult stutterers using ABA design. The stability of base rates was - checked in pre - and post - experimental sessions by the use of Wilcoxon- matched pair signed rank test. The results indicated decrease in the frequency of stuttering blocks or disfluencies and an increase in fluency and syllable output,

Mahapatra (1983) studied the effects of highlighting fluency and disfluency separately in six adult male stutterers. All the subjects underwent three experimental conditions. The subjects were base rated for three sessions (on reading task and spontaneous speech for 15 minutes each) before and after experimental session. The experimental session, in which no highlighting, highlighting, no highlighting (A'B A) was used, consisted

of ten minutes each. Five such sessions were conducted for each subject. Three of the six stutterers underwent highlighting of fluency in reading, and one person received highlighting disfluency in spontaneous speech while other two in reading. In the three subjects where fluency was highlighted, there was no change in the mean number of blocks, though there was a significant increase in the syllable output both in reading and spontaneous speech. While in other three cases in which disfluency was highlighted, they showed significant differences in number of blocks as well as syllable output in reading and also in spontaneous speech.

Ojha and Bettagere (1982) treated a group of six adult male stutterers with group psychotherapy. The therapeutic techniques used included speech relaxation exercises combined with discussions on patient's feelings, and attitudes toward stuttering and related psychological problems. The therapy sessions lasted one and half hours, twice a week, for six months. Two stutterers became fluent and three showed marked improvement after the treatment while the other did not continue the treatment. The group therapy helped them in expression of interpersonal difficulties, feelings and resolution of conflicts. Their attitude towards stuttering and speaking situations also changed for the better.

CHAPTER IV

RESEARCH METHODOLOGY (PART I)

The study of individual differences can be traced to Adolphe Quetlet, a Belgian astronomer. Who discovered that human traits followed the normal curve (Stilson, 1966), but this approach became prominent only in the first half of the twentieth century. It had its origins in Darwin's observation on individual variations within a species, A concern with individual differences led to an emphasis on groups and averages, but differences among individuals, or intersubject variability, and the distribution of these differences necessitate a comparison among individuals and concern for a description of a group or population as a Whole.

As part I of the study aimed at finding out the personality differences among stutterers and non-stutterers, it was felt that comparative approach will be best to fulfil the aim. There are three group designs which are used in a comparative research. These are ;

1. The Random Group Design
- 2 Counter Balanced Design
3. Matched Group Design. The first design needs a very large group of subjects, which is most often not possible

in clinical research and the second design was not relevant for the purpose of the study, it was decided to use the Matched Group Design in the present study. Subjects in both the groups were matched for age, sex and intelligence.

A total of 119 normals and 102 stutterers served as subjects for the Part I of the study. The initial selection of individuals for study in the investigation of personality differences was made from the cases who consecutively registered themselves for the treatment of stuttering at the Medical Records of All India Institute of Speech and Hearing, Manasagangotri, Mysore. This included those cases that came in response to newspaper item which appeared in almost all the local dailies in English and Kannada and those who came for follow up. Although this kind of inclusion of subjects does not necessarily make it a representative sample, the sheer size of the sample being 102 and 77 being collected consecutively does make it more or less a near representative sample.

The news item is reproduced below :

FREE TREATMENT FOR STAMMERERS

" In view of helping adult stammerers the Department of Clinical Psychology has undertaken a Research Project. This project envisages both detailed

testing and complete treatment to stammerers. These services are free. Those who need such help are advised to contact Dr.J.Bharath Raj, Professor, Head, Department of Clinical Psychology, All India Institute of Speech and Hearing, Mysore -570 006."

ತೋರಣಿ ಉಚಿತ ಸೇವೆ

ತೋರಣಿ (ಉಗುಣ) ಇರುವ ವ್ಯಕ್ತಿಗಳ ಹಿತೋದ್ದೇಶದಿಂದ ಮೈಸೂರಿನಲ್ಲಿರುವ ಅಪು ಭಾರತ ವಾಕ್ ಶೈಲಿ ಸಂಸ್ಥೆಯು ಚಿಕಿತ್ಸಾ ಮನೋ ವಿಜ್ಞಾನ ವಿಭಾಗವು ನೆನೋದನೆಯನ್ನು ಕೈಗೊಂಡಿದೆ. ಈ ತೋರಣಿ ಇರುವವರಿಗೆ ಸಂಪೂರ್ಣ ಪರಿಷ್ಕಾ ಕ್ರಮಗಳು ಮುಕ್ತವಿರುವ ಚಿಕಿತ್ಸಾ ಕ್ರಮಗಳನ್ನೂ ಏರ್ಪಡಿಸಿಕೊಂಡಿದೆ. ಪರಿಷ್ಕ ಮತ್ತೂ ಚಿಕಿತ್ಸಾ ಎರಡೂ ಉಚಿತ. ತೋರಣಿ ಇರುವವರು ಸಹಾಯ ಪಡೆಯಲು ರಾಜ್ಯ ಭರತ ರಾಜ, ಪ್ರಾಧ್ಯಾಪಕರು ಚಿಕಿತ್ಸಾ ಮನೋ ವಿಜ್ಞಾನ ವಿಭಾಗವನ್ನು ಮೇಲ್ಕಂಡ ಸಂಸ್ಥೆಯಲ್ಲಿ ಸಂಪರ್ಕಿಸಬಹುದೆಂದು ಕೋರಲಾಗಿದೆ.

For the first twenty months of the study, a total of 102 cases of stuttering contributed their responses to different personality tests for the data. Out of 102 cases, 10 and 15 cases respectively were examined at Speak-well Association, Bangalore and Institute of Speech and Hearing, Kariyannanapalya, Hennur Road, Bangalore. As it was difficult to obtain a sizeable sample of stammerers at AIISH Mysore only, the investigator was under compelling circumstances to collect the data for stammerers at place mentioned above.

The following table shows institution-wise break-up of the cases :

Table 4 - 1

Institution-wise break-up for 102 stutterers.

<u>Institutions</u>	<u>status</u>	<u>No. of cases</u>
Ml India Institute of Speech & Hearing, Manasagangotri, Mysore	New (on their own)	60
	New (due to news item)	13
	Old(follow up)	4
Speak-well Association, K.Kamraj Road, Bangalore		10
Institute of Speech & Hearing, Kariyanna n apalya, Hennur Road, Bangalore		15
	Total	1 0 2

The data for the control group of 119 individuals was selected out of 162 normals tested under identical conditions with the experimental group individually. The normal group is finally constituted for this investigation, has been established from selected segments of student community. More specifically, it has been developed primarily from and sustained by the academic community associated with University department and other educational institutions* It provided a wide range of socio-geographic and educational backgrounds just as the

stuttering group. There have been other sources of subject recruitment too. The institution-wise break-up is given below *. A comparison of the experimental group subjects and the control group subjects would certainly put them at equal par as regards a number of variables like sex, age, socio-economic status, level of education, etc. All in all, it could be said that the two groups closely matched each other on most variables except for stuttering.

The statistics as reported represents the status of the individual at the time of investigation. A total of 102 stutterers and 119 normals cooperated actively with the investigation. The age range of the study subjects is from 16 to 42 years for both the groups (Tables 4-3 and 4-4), Stutterers and non-stutterers were matched for mean age and, as might be expected, most of them (86 stutterers or 84.3% and 99 non-stutterers or 83.19%) were in the 16-27 age bracket and their percentage almost being the same.

* See table 4-2

Table 4- 2

Institution-wise break-up for 119 normals

Name of the Organization	No. of normals tested
All India Institute of Speech and Hearing, Manasagangotri, Mysore-6.	11
Sarada Vilas College, Mysore.	23
Mahajana's College, Jayalaxmipuram, Mysore.	20
Department of Statistics, University of Mysore, Manasagangotri, Mysore.	6
Department of Physics, University of Mysore, Manasagangotri, Mysore.	17
Department of Chemistry, University of Mysore, Manasagangotri, Mysore.	5
Department of Botany, University of Mysore, Manasagangotri, Mysore.	5
Department of Zoology, University of Mysore, Manasagangotri, Mysore.	6
Mysore University Library, University of Mysore, Mysore-6.	26
Central Institute of Indian Languages, Mysore-6.	
Regional College of Education, Mysore-6.	
S.J. College of Engineering, Mysore-6.	
Total	119

Table 4-3

Male population of 102 stuttering subjects

Age	No.	inter- viewed	No. selected
16 - 18		19	18
19 - 21		23	28
22 - 24		32	30
25 - 27		10	10
28-30		8	7
31 - 33		5	5
34-36		4	2
37-39		0	0
40-42	22		
Total		<u>108</u>	<u>102</u>

Table 4-4

Male population of 119 non-stuttering subjects

Age	No.	inter- viewed	No. selected
16 - 18		43	22
19 - 21		44	32
22 - 24		38	31
25 - 27		15	14
28-30		8	8
31 - 33		6	6
34-36		3	3
37-39		2	0
40-42	33		
Total		<u>162</u>	<u>119</u>

To enable the matching of the two groups to be nearly the same, some subjects had to be excluded.

From an educational standpoint the research population is weighted toward higher standard of formal training than would be true for a cross-section of the total population. This particular bias is due to the test materials used in the study. Tables 4-3 and 4-6 list the educational backgrounds of the stuttering and the non-stuttering subjects respectively.

Table 4-5
Education among stuttering study subjects

Age	Number	HighSchool	College	Post-graduate
16 - 18	18	2	16	0
19 - 21	28	2	26	0
22 - 24	30	1	25	4
25 - 27	10	2	6	2
28 - 30	7	0	5	2
31 - 33	5	0	3	2
34 - 36	2	0	2	0
37 - 39	0	0	0	0
40 - 42	2	0	2	0
Total	102	7	85	10

For purposes of statistical simplicity, listing in the High-School column is dependent only upon matriculation. There were no active study subjects whose formal education did not include matriculation in High

School. Both the groups of study subjects in College and Post-graduate training were either pursuing or had already completed their education and have not been listed separately.

Table 4- 6

Education among non-stuttering study subjects

Age	Number	High School	College	Post-graduate	
16-13	22	0	22	0	
19-21	32	0	19	13	
22-24	31	0	11	20	
25-27	14	0	3	11	
28-30	8	0	1	7	
31-33	6	0	2	4	
34-36	33	0	1	2	
37-39	0	0	0	0	
40-42	3	0	1	2	
Total		119	0	60	59

The level of formal education was consistently higher for non-stuttering study subjects than for stuttering study subjects. There were only 7 stuttering study subjects whose formal education was high school, while there were none in the non-stuttering study subjects. Though the

minimum level of non-stuttering subjects was college training, the stuttering subjects (85 or 83.3%) exceeded the non-stuttering subjects (60 or 50.42%) in this group. On the other hand, non-stuttering study subjects (59 or 49.57%) outnumbered the stuttering study subjects (10 or 9.8%) in the post-graduate training group. Obviously the inordinately high percentage of study subjects with exposure to post-graduate training is a direct reflection of both the educational institutions and particularly the University departments from which a dominant percentage of the total non-stuttering study subject population has been drawn.

The research design for the Part I of the study is descriptive. First the question to be answered in the Part-I of the study was : Do stutterers differ from non-stutterers on important personality traits ? In order to approach this problem, preliminary concentration was focused on the use of valid and reliable personality tests, as the aim here was the objective assessment of personality in quantifiable terms. This necessarily meant that projective techniques of personality such as Rorschach, Thematic Apperception Test do not find a place here simply because of the fact that they are not experi-

mentally validated. It is true that they have high reliability coefficients but their validity coefficients are considerably small. In the same vein, rating scales of personality could not be made use of, as they demand a direct observation of the individual in question under a series of situations. Moreover, in order to objectify the ratings, at least three different observers will have to be made use of. These constraints compelled us to omit both protective techniques as well as rating scales. However, self-ratings of individual himself, particularly if he is a patient, will find a definite place, as his self-ratings become really dependable in clinical context. Thus the Revised Willoughby Questionnaire For Self Administration has been used. The tests used are as under :

1. Eysenck Personality Inventory
2. Self-confidence Inventory
3. Revised Willough by Questionnaire for self-administration.
4. Surface Trait Inventory.

for measuring the intelligence of subjects. Advanced Progressive Matrices Set I was used (The detailed descriptions of these tests have been provided).

The following criteria for subject selection/matching/exclusion were used,

1. Age 16 years and above
2. Sex Male only
3. Educational background Matriculation or Higher with good knowledge of English
4. Intelligence Average or above average on Advanced Progressive Matrices test
5. Absence of other speech and hearing defects
6. Absence of organic pathology

The criteria listed above were chosen keeping in view the nature of the study. By the time individual reaches his 16th year, an almost complete personality development has taken place. Moreover, they would have also acquired proficiency in the use of English. As all the personality inventories used were in English only, it was easy for them to understand the instructions. It is well known that there are always more males than females who stutter. This holds true at all age levels. It was felt necessary to keep the study limited to adult males only, A test of intelligence was also administered to rule out any individual with mental retardation. Similarly, individuals with other speech and hearing defects or organic pathologies were excluded to avoid the confounding of results or findings in any way.

THE DESCRIPTION OF THE TESTS* USED

1. THE EYSENCK PERSONALITY INVENTORY (EYSENCK AND EYSENCK, 1964)

The Eysenck Personality Inventory (E.P.I.) is the final revision of the Maudsley Personality Inventory (M.P.I.). It measures two important dimensions of personality, extroversion and neuroticism. It correlates highly with M.P.I. The improvements incorporated in it make it useful from many practical points of view. Though the E.P.I. consists of two parallel forms but in this study, only Form 'A' has been used. The E.P.I. items are carefully worded so that they can be easily understood even by the subjects of low intelligence and/or education. The E.P.I. contains a Lie Scale which is used to eliminate subjects showing "social desirability response set." The retest reliability of E.P.I. is quite high (0.85) even after period of several months and moreover, direct evidence is available of the validity of the E.P.I. as a descriptive instrument of the behaviour manifestation of the personality,

ADMINISTRATION OF E.P.I

Instructions for literate subjects are printed on each copy of the E.P.I. The subjects were asked to read them silently when tested individually. When the questionnaire.

* All these tests are attached in Appendix I, II, III, IV, and V

was collected after completion, care was taken to check that all questions have been answered; wherever answers were missing, subjects attention was drawn to it and he was asked to complete them.

Scoring was done by aligning the scoring keys (prepared for the purpose) and counting one point for each underlined answer uncovered by the holes in the key.

INTERPRETATION

The test, standardized on Indian population, used norms provided by Bharath Raj and Pranasha Rao (1970),

INDIAN NORMS

Extroversion	16 and above
Introversion	8 and below
Neuroticism	16 and above
Emotionally well adjusted	6 and below
Lie score	7 and above not valid

SELF - CONFIDENCE INVENTORY

(BASAVANNA, 1975)

This inventory measures the level of self-confidence among adolescents and adults. The inventory consists of 100 items. The answers are forced type, either true or false. The split half reliability for the inventory was found to be 0.94, which is quite high. The construct validity studies on this test have reported high values (Basavanna, 1971; Aruna, 1975).

ADMINISTRATION OF THE TEST

This inventory is essentially a self-administered one, since all the directions were given on the first page of the form. The subjects were asked to read the instructions silently when tested individually. The subjects marked their answers on a separate answer sheet. The answers were scored according to the key provided in the manual. All the positive items answered positively and the negative items answered negatively received a zero score. The positive items answered negatively and the negative items answered positively were given one point each. The above scoring procedure yielded each individual a score that was indicative of his level of self-confidence. The items have been keyed in such a way that lower the score, higher was the level of self-confidence and vice-versa. However, the directionality of this inventory was changed by rotating the original raw score at P 50 (percentile point) being the centre, so as to indicate higher score for higher level of confidence to facilitate the commition

with other scales.

A key for the purpose of scoring the answer sheet was prepared. The scoring key was kept on the answer sheet and each underlined answer uncovered by the holes in the key was counted as one point.

INTERPRETATION

Basavanna (1975) tested 800 normal subjects with the inventory and provided a Mean of 38.85 and S.D. of 17.21 for these individuals. As per the format of norms in Basavanna's S.C.Inventory, the lower the score, the individual is rated as having higher self-confidence, a transpositioning was attempted so as to make interpretations in the usual conventional way i.e., higher the score, higher the self-confidence of the individual. The S.D. of 17.21 was subtracted from the Mean of 38.85 to have a better estimate of the self-confidence of normals. This original score of 21.64 gave a corrected raw score value of 58. This . has been used as a cut-off point. The individuals' scores in excess of this value are labelled as self-confident.

REVISED WILLOUGHBY QUESTIONNAIRE FOR SELF-ADMINISTRATION

The Willoughby Personality Schedule (WPS), derived from Clark-Thurstone Personality Inventory, was designed to measure neurotic behaviour in relation to social anxiety in inter-personal situations (Willoughby, 1932; 1934). Wolpe's (1982) revision of the WPS (hereafter referred to as the WPS-R) converted the WPS from a clinician completed instrument to one that is self-administered.

The WPS-R (Wolpe, 1958,1969,1982) contains 25 items, each of which is rated on a 5 point scale, ranging from 0 (no, never) to 4 (yes,practically always), "About half of the items yield-information about common areas of neurotic activity, mainly interpersonal and other half indicate degrees of general emotional sensitivity " Wolpe (1982,p,61). "The questionnaire is a highly significant indicator of neuroticism "Wolpe (1958 p.110).

Willoughby (1932,1934) reported a split-half reliability of .91 and a test-retest reliability of .89 for the WPS* Turner et al. (1980) found a reasonably high level of internal consistency (coefficient alpha = .82) for the WPS - R. This is a widely used test among clinicians.

ADMINISTRATION,

This questionnaire is designed for self-administration, instructions along with the rating scale are printed on the sheet. The individuals were asked to read the instructions silently when tested individually. To ensure against ambiguity the investigator explained the questions to the individuals, Wham specifically asked to do so. Before the subjects left, it was ascertained that he had answered all the questions.

INTERPRETATION

The full scale score is obtained by adding the points for each item. Which yields a range of possible scores from 0 to 100, Normative data for clinical and non-clinical population have been reported (Wolpe, 1958, 1982, Hestand, Howard and Gregory 1971; Eisler, Miller and Hersen, 1973; Turner, Dltomasso and Murray, 1980; Greiner, Fitzgerald, Cooke and D'Jurdjic, 1985),

Wllloughby (1934) using the WPS reported a mean of 28.9 While Hestand, Howard and Gregory (1971) for a sample of college students reported it to be 31.0 +or- 14 (N * 55). The mean score for 41 non-stutterers as

by Greiner, Fitzgerald, Cooke and D'Jurdjic (1985) warn
29.1+or-10.8.

SURFACE TRAIT INVENTORY

Surface Trait Inventory has been devised by Sen and Bharath Raj (1978) to measure the personality traits of the individuals. The inventory has 12 scales, consisting of 180 items or statements in all, relating to attitudes, interests, feelings and ways of behaving in everyday life. Only 8 scales which have been validated by Bharath Raj (1982b) were used in the present work for analysis. These scale are :

1. Activity
2. Cyclothymia
3. Depressive Tendency
4. Emotional Instability
5. Introversion
6. feelings of Inferiority
7. Psychosomatic Disorders
8. Interpersonal Communication Disorders

ADMINISTRATION

The instructions are printed on the first sheet of the Surface Trait Inventory. The subject is asked to read the

instructions carefully and silently. A separate answer sheet is provided for marking the answers. The subject's responses are rated on a 3 point rating scale. Yes (usually or generally true), No (not true or rarely true) and ? (Unsure). That every item had to be answered was a requirement as specified in instructions.

INTERPRETATION

In the surface trait inventory, the 'yes' endorsement by the subject gets a weightage of 2, doubtful '?' of 1 and 'no' of 0, The full scale score is obtained by adding the points for each item, which provides a range of possible scores from 0 to 30 for each individual on each scale. The normative data for this inventory has been provided by Bharath Raj (1982b) for 348 males and 194 females with a mean age range of 31.67 + or - 10.46 and 24.33 + 7.27 respectively.

The mean values for 542 normals alongwith S.D. for 12 scales are given below :

<u>Scales</u>	<u>Mean</u>	<u>S.D.</u>
Activity	22.57	5.74
Cyclothymia	17.53	5.96
Depression Tendency	12.21	6.79
Emotional Instability	13.56	7.13
Introversion	14.29	6.29

<u>Scale</u>	<u>Mean</u>	<u>S.D.</u>
Feelings of Inferiority	12,19	7.46
Psychosomatic Disorders	5.61	5.38
Interpersonal Communication Disorders	8.32	6.97
Super-ego	22.84	5.06
Dominance	18.05	5.72
Lie-scale	16.55	6.37
Suggestibility	18.24	4.71

The graphic profile has also been provided for the inventory, the individuals trait is classified into 3 areas; undesirable, normal and desirable. Normal zone consists of the Mean + or - 1.S,D. for particular scale beyond Which lies desirable and undesirable zones.

THE ADVANCED PROGRESSIVE MATRICES SET I

Prof. Raven prepared the Advanced Progressive Matrices Set I in 1943 and it was further modified in 1947. In Set I there are 12 problems. This test is used to indicate whether a person can be classified as belonging to 'average', 'bright' or 'dull' categories depending upon the scores obtained by him. The norms have been given by Prof. Raven, and actual trial of this test in the normal population has shown the test to be consistently valid. It is a non-verbal test of intellectual efficiency with which at the time of the test, a person is able to form comparisons between figures and develop a logical method of reasoning. Over verbal test, it has the advantage that the clarity of person's thought processes is assessed independently of any educational attainments. Moreover, the information obtained from the test is more exact and valuable for the minimal amount of time spent in giving the test. This test can be considered as highly economical and culture-fair test.

ADMINISTRATION

For this purpose, the person is shown the first problem of the set. He is explained that the upper larger figure is a pattern with a place cut out of it. The

examiner points to the figures below and says, "There are eight choices provided for solving the problem of filling the space. But all of them are not correct. Only one of them is the pattern which came out of the space. Point to one which, if it was placed in the empty space, would complete the pattern properly both along and down." The subject usually grasps the principle without difficulty. If the subject did, not point at all, further explanation was given, until he had clearly grasped what he had to do* Only when the investigator was satisfied that the subject has understood what he has to do , other problems were presented one by one.

INTERPRETATION

Usually after the first problem, a person's first choice counts right or wrong, but in this study, as subjects were prompted to find out the answer themselves, rather than suggesting or providing answer to them, even the first problem's choice was counted towards scoring for both the groups. The individuals were classified into three categories: Bright, Average and Dull, depending upon obtained scores.

Bright > 10

Average < 10 But > 6

Dull < 6

"Dull" people meet with difficulty in the first five problems and except for a chance solution, their total score on the set is less than 6. Persons of "average" ability find no difficulty with the first four problems, make mistakes in problems 5 to 10 and seldom solve the last two problems, in the set. "Bright" people grasp the principle quickly and, except for a possible careless mistake near the beginning seldom fail to solve more than one problem.

PROCEDURE

The cases visiting All India Institute Speech and Hearing, Mysore, are first registered in the Records Room. Later a detailed case history is taken and cases are examined in the Departments of Speech Pathology, Speech Sciences, Audiology, Clinical Psychology and Otorhinolaryngology. Once the case was diagnosed as having stuttering problem he was taken up for the research work. The information about the case and the problem was collected by directive as well as non-directive interview. He was explained the purpose of study and was requested to cooperate for testing which usually involved an hour. The different tests were presented in the following order and necessary instructions were given .

1. Advanced Progressive Matrices Set I (Raven, 1965)
A pilot study on 20 subjects was done to see its applicability to Indian conditions and it was found to be satisfactory.
2. Eysenck Personality Inventory (Eysenck and Eysenck, 1964)
3. Self-confidence Inventory(Basavanna, 1975)
4. Revised Willoughby Questionnaire for self - administration (Wolpe, 1982).
5. Surface Trait Inventory(Sen and Bharath Raj, 1978, an unpublished test)

It was ensured that the cases which were taken from institutions other than All India Institute of Speech and Hearing, Mysore, had only stuttering problem.

The normal subjects were matched with the experimental group on the criteria outlined earlier. It was ascertained through interviewing that they did not have any speech and hearing defects. The procedure for testing the normal subjects was similar to that of experimental group. They were also tested individually.

RESEARCH METHODOLOGY (PART II)EXPERIMENTAL DESIGN

The experimental design used in the present investigation was non-concurrent multiple baseline design across subjects (individuals) (Watson and Workman, 1981; Barlow and Hersen, 1984) as it suited best to the clinical nature of the study.

The experimental design was used in the Part II of the study to find out the effectiveness of the treatment methods on stuttering. When a given subject became available for the use of specific treatment of interest, he was randomly assigned to one of the pre-determined baseline lengths. There were five time lag conditions used in the present study: 3 days , 6 days , 9 days , 12 days and 15 days. The subject allotted to the 3 day baseline time lag received experimental variable for the first time after 3 days; the subjects who were on the 6 day baseline time lag received the experimental variable for the first time after 6 days; and the subjects who were on the 9 day/ 12 day/ 15 day baseline time lag received the experimental variable for the first time after 9 days/12 days/15 days respectively. Observations were continued through the treatment phase as in simple A-B design.

DISCUSSION ON EXPERIMENTAL DESIGN

Selection of a research methodology depends to some extent on what the clinical researcher wants to know, the design with which investigator feels comfortable , and the kind of design suitable to obtain the knowledge. Among the single-subject research designs, a number of options are available to investigators.

The use of rigid outcome designs like traditional double or multi-group type is not appropriate for applied clinical research as they fail to discover whether or not the therapeutic change in any single subject leads to clinical significant level of improvement and isolate what treatment or its component led to clinical significant effects. Bergin and Strupp (1973) demonstrated that, even under more favourable conditions, the application of group comparison approach poses many difficulties. Barlow and Hersen (1984) classify these difficulties or objections under five headings which tend to limit the usefulness of group comparison approach in applied research; (1) ethical objections , (2) practical problems in collecting large number of patients, (3) averaging of results over the group, (4) generality of findings, and (5) intersubject variability.*

* for more details, see Barlow and Hersen (1984), Single Case Experimental Designs ; Strategies for Studying Behavior Change , 2nd Ed. Pergamon Press, N.J. pp. 14 -17.

Many of these practical and methodological difficulties seemed, to clinicians and applied researchers, so great that some investigators wondered if serious, meaningful research on evaluation of treatment procedures was even possible. It was the rediscovery of the study of the single case in basic research, coupled with new approach to problems in the applied area, that marked the beginnings of new emphasis on the experimental study of the single-case in applied research.

Single-subject experimental designs are being used more and more often for examining the effects of proposed treatment in a variety of service disciplines (e.g. clinical psychology, social education, physical rehabilitation, etc.). Since the introduction of the Journal of Applied Behavior Analysis in 1968 , a journal devoted almost exclusively to experimental analysis - that is, single-subject studies of treatment variables , a considerable increase in research using single-subject experimental designs has been evident. This increase is seen in the introduction of new journals such as Analysis and Intervention of Developmental Disabilities, The Analysis of Verbal Behavior , Behavior Modification. The increased use of experimental analysis designs is further reflected in the many books devoted to the topic (Bergln and

Lambert, 1978 ; Evans, 1983 ; Hartmann, 1982 ; Sackett, 1978). In fact, the use of single-subject experimental research is on the rise in speech-language pathology (Connell and Thompson, 1986; Kent, 1985b).

The flexible use of single-subject designs provides certain benefits and advantages Which are listed below a

1) They pragmatically fit into the practical problems of clinical setting which are : the number of subjects available for research with the same symptom/target, behaviour, is limited; the referral times of subjects/patients with the same target behaviours are always unpredictable with the result that a ready "pool" of subjects cannot be formed and kept awaiting for the experiment (Watson and Workman, 1981).

2) These designs use single subjects or small number of subjects, yet maintain control on necessary variables eg., "history " within the respondents (Campbell and Stanley, 1963), a possible experimental contaminant , and other non- specific variables without the need for "matching" of subjects. Thus, any process within the respondent(s) must operate as a function of the passage of time, e.g., the circadian and ultradian rhythm which is, however, directly (experimentally, rather than statistically) controlled by the varying baseline time lag across

subjects (Watson and Wrokman, 1981). To be more specific , in case the treatment effect tn the first individual/ subject was due to some " process within the respondent " working as a function of the passage of time (and not due to the treatment), then,in the second subject, the " process within " should exhibit its effects some time in the time-stretched baseline before the treatment starts. The other variable. " history " or the specific events occurng between the first and the second measurements of dependent variable as factors outside the treatment variable (Campbell and Stanley, 1963),is controlled by the demonstration that the change in dependent variable occurs only When the treatment/independent variable is introduced and the first and the second measurements of dependent variable do not record change in the second subject involving more prolonged baseline preceding the treatment (Watson and Workman , 1982).

3) The use of statistics is avoided in these designs, thereby retaining the maximum " contact with the reality of of the raw data " (Hawkins and Fabry, 1979) by means of visibly demonstrating experimental variables functional- rather than statistical-control over the dependent variable by sequentially trying and trying again.various experimental controls/treatments/independent variables until the control

on the dependent variable reaches the socially/clinically (not statistically) significant stage.

4) These designs lend themselves to a priori flexibility and ad hoc flexibility, thus providing certain benefits that can be taken advantage of while designing the experiment (Connell and Thompson, 1986).

Within the group of experimental single-case research design, the choice had to be between - the A-B-A design - and its many variants. But the use of sequential withdrawal or reversal designs is inappropriate when treatment variables cannot be withdrawn or reversed due to practical limitations, ethical considerations, or problems in staff cooperation (Baer et al. 1968; Barlow et al. 1977 ; Barlow and Hersen, 1973; Kazdin and Kopel, 1975). Practical limitations arise when carry over effects appear across adjacent phases of study, particularly in the case of therapeutic instructions (Barlow and Hersen, 1973), Ethical considerations (When the question of informed consent arises) are of paramount importance When the treatment variable is effective in reducing self - or other- destructive behaviours in subjects. In such cases, the withdrawal of treatment is not required even for brief periods of time. Though the behaviour in question may not have immediate destructive effect on the

environment, if it is considered aversive (i.e, by teachers, parents or the client himself),the experimenter will not obtain sufficient cooperation to carry out withdrawal or reversal of treatment procedures. In still other instances, withdrawal of treatment, despite absence of harm to the subject or others in his or her environment, may be undesirable because of the severity of the disorder . Here the importance of preserving therapeutic gains is given priority, especially when a disorder has a lengthy history and previous efforts at remediation have failed.

As the purpose of the research (Part II) was to study the effectiveness of some treatment methods on stuttering of the options available for conducting a treatment - no treatment comparison,none is as versatile as the multiple baseline design, that was the reason for choosing multiple - baseline design for research . In addition to their versatility, multiple baseline designs are eminently practical and provide a powerful alternative to reversal designs, when a reversal either cannot be obtained or is undesirable for ethical or practical reasons.

There are three principle variations of the multiple baseline design :

- 1) The multiple baseline design across behaviours - the same treatment variable is applied sequentially to

separate (independent) target behaviours in a single subject.

2) The multiple baseline design across subjects - a particular treatment is applied in sequence across matched subjects presumably exposed to ' identical ' environmental conditions.

3) The multiple baseline design across settings - a particular treatment is applied sequentially to a single subject or a group of subjects across independent situations.

It was not feasible to use the multiple baseline design across behaviour, as, in the case of stuttering, the question is whether different forms of dysfluencies (such as part-word repetitions, interjections , and prolongations) and associated motor behaviours (such as an eye blink) belong to the same or different response classes. Although there are some conflicting results (Brutton, 1975), stuttering behaviours as a group have been generally described as entering into response class relationship with other kinds of behaviour, such as, direct covariation between stuttering and certain off-task behaviours (Wahler, Sperling, Thomas, Teeter, and Luper, 1970), inverse behavioural covariation between stuttering and positive attitudinal statements

(Shames, Egolf, and Rhodes, 1969), and both direct and inverse behavioural covariation between stuttering and anxiety (Read and Lingual, 1976). The bulk of evidence suggests that most forms of disfluencies of stutterers belong to the same response class (Costello and Hurat, 1981 ; Ingham, 1984). This would have contaminated the findings and violated the basic considerations of the design.

The use of multiple baseline design across situations was thought to be unnecessary as it was not suitable to answer the questions posed in this research.

The multiple baseline design across subjects involves concurrent observations for several subjects for a long time. There are times, however, when one is unable to obtain concurrent observations for several subjects, in that they may be available only in succession (this is specially true in less frequently seen speech and hearing disorders), Keeping such circumstances in view, more recently Wataon and Workman (1981) have propoaed an alternative - the nonconcurrent multiple baseline design across individuals. This is the specific design Which has been used in the present work and does not require concurrent observations. Unlike the traditional concurrent design, it involves the observation of different individuals

at different times. The experimental variable is applied to the first subject, the baseline observations continue for other subjects at other time for longer period of time* This design allows for flexibility, while maintaining the functional relationships between treatment variables and behaviour changes.

PROGRESSIVE MUSCULAR RELAXATION TRAINING

Each case was given relaxation training (Wolpe 1982) and instructions for this were completed in a single session lasting two hours, before starting the treatment. Patients were also asked to maintain differential relaxation in daily life situations and practice relaxation exercises at least once daily for about 45 minutes before therapy. They were also given P.M.R. handouts which contained detailed instructions for doing relaxation (See Appendix VII). The patient is told that relaxation is one of the several available methods for combating anxiety and it is a skill, and that, like other skills, improves with practice. He is further told :

Relaxation works by producing emotional calmness. Even the ordinary relaxing When one lies down often has quite a noticeable calming effect. There is a definite relationship between the extent of muscle relaxation and the production of calmness to oppose to anxiety. I am going to teach you how to relax

far beyond the usual level, and with practice you will be able to " switch on " at will.

(Wolpe, 1982)

The relaxation training usually began with the arms because they are convenient for the purpose of demonstration and it is easy to check their relaxation , Head region is tackled next because the most marked anxiety inhibiting effects are usually obtained by relaxation there, and then we move downwards.

Further relaxation training is initiated as under :

The patient is asked to grip the arm of his chair with one hand to find out if he can distinguish any qualitative difference between the sensations produced in his forearm and those in his hand. He is told to take note of the quality of the forearm sensation because it is caused by muscle tension in contrast to the touch and pressure sensation in the hand, The gripping action tenses both the flexor and extensor muscles of the forearm. The patient must note the exact location of tensions. Next, the therapist grips the patient's wrist and asks him to bend his arm against resistance, thus making him aware of the tension in his biceps , Then, by having him straighten

his bent elbow against resistance in the opposite direction, he draws attention to the extensor muscles at the back of the arm.

Gripping the patient's wrist a second time, the therapist has him tense and then gradually relax the biceps. When the forearm is close to the horizontal, he releases the wrist, allowing the patient to complete the movement on his own. He then exhorts him to "go on letting go, " to * keep trying to go further and further in the negative direction, " to " try to go beyond what seems to be the farthest point."

(Wolpe, 1982).

The second lesson in relaxation begins with the muscles of the face, demonstrating the tension produced by contacting the muscles of the forehead and then relaxing them. The patient is then told to contract his eyebrow-raising muscles and is given a few minutes to relax them as far as possible. This lesson usually concludes by drawing attention to the muscles in the region of the nose by getting the patient to wrinkle his nose, and to the muscles around the mouth by making him purse his lips and then smile. All these muscles are relaxed in turn.

In the third lesson the patient is asked to bite on his teeth, thus tensing his masseters and temporales. The position of the lips is an important indicator of relaxation of the muscles of mastication. Lips are parted by a few millimeters when these are relaxed. He is also told to relax the muscles of the tongue in this lesson. These may be felt contracting in the floor of the mouth when the patient presses the tip of his tongue firmly against the back of his lower incisors.

The fourth lesson deals with the two muscle groups in the eye region. They are circumorbital muscles, identified by turning the eyes sharply to the right, left, up, and down in turn.

The fifth lesson deals with the neck and shoulders. The main target is the posterior muscles that normally maintain the head's erect posture. Relaxing these muscles makes the head fall forward. Those who find the discomfort of the forward-leaning head too great are instructed to practice relaxing the neck muscles with the back of head resting against a high-backed chair. In the same way the patient is taught to relax the shoulder muscles (deltoid, lateral neck muscles and scapulo-spinal groups).

The sixth lesson deals with the muscles of the back, abdomen and thorax . The back muscles are contracted by backward arching of the spine. The abdominal muscles are tensed as if in anticipation of punch in belly. After contracting these muscles, the patient lets them go as far as he can. In some patients the respiratory rhythm can often be used to augment relaxation.

During the seventh lesslon,the patients are taught to relax the muscles of the lower limbs by adduction and abduction of various muscles.

The assessment of a patient's ability to relax depends partly upon his reports of the degree of calmness that relaxing brings about in him, and partly upon impressions gained from observing him.

TREATMENT PROCEDURE

PROLONGED SPEECH

Howie and Andrews (1985) stated two hallmarks of the prolonged speech therapies : The unique speech skills which they train and specific training procedures which they use. The prolonged speech procedures involve the instatement shaping, generalization and maintenance of fluent speech. The speech skill- prolonged speech -

originally referred to the slowing of speech by prolonging vowels, a pattern which usually occurs during artificially delayed auditory feedback of speech (DAF) at about a quarter of a second delay. Goldlamond's experiments in the 1950s and 1960s showed that when stutterers were subjected to DAF, many became either completely fluent or else had easy, repetitive or prolonged stutters as opposed to hard blocks. However, over the years, the term prolonged speech has embraced various combinations of gentle onset of words, soft - articulatory contacts, smooth transition between sounds and exaggerated continuity of speech,

Various techniques have been evolved and researched by Perkins (1973a,b,1974) and Wingate (1976) in America, Howie, Tanner and Andrews (1981) in Australia and Helps and Dalton (1979) in Britain, Helps and Dalton (1979) stated that the technique was effective in establishing a normal sounding speech pattern in the clinic. It was possible to teach the speech pattern by modelling and imitation of the therapist without the use of DAF apparatus. The technique consists of collection of features, which are described below .

1) Prolongation : One of the most prominent features of DAF speech is syllable prolongation resulting in reduced

rata of speaking . From it follows, that slowing down the rata of speech will facilltata fluency. The client is taught to speak at approximately 45 syllables per minute(SPM) by prolonging syllables (average speaking speed is 200 + 40 SPM, Andrews and Ingham, 1971), hence the syllable rate is slowed by slowing the rate of articulation. Few stutterers stutter at this extraordinarily slow speech. Speech is them shaped towards normalcy by gradually decreasing the amount of prolongation,

2) Pausing : It is important that the clients learn to pause to take in air in a relaxed manner when he needs to breathe. At the slowest rates, this often results in the loss of meaning . The overriding need is to help the client feel that ha can speak without wanting to rush. Relaxed pausing is incompatible with urgency . Pausing also gives the client the feeling of control over his speech; as now he chooses When and how he will speak rather than feeling that something else is propelling him ever forward. Pausing is an aspect of normal fluent speech and it seems that, for many clients, it is the most important feature of the technique.

3) Flow : Flow is described as a characteristic of fluent speech. Although there are breaks for thinking, breathing, revising, etc., speech is essentially a

flowing, fluent process. Words are not spoken as isolated units. Stuttering with tension, especially blocking, obviously disrupts this flow. Clients are asked to deliberately focus on ' running the words together ' and to start thinking in terms of phrases rather than word by word. Flow within word is also emphasized to develop the transition from sound to sound.

4) Light/Soft contacts : This aims at teaching a way of articulating sounds with less pressure than is used during stuttering itself and, initially in therapy, using less pressure than is used by the fluent speaker. This seems particularly relevant to the articulation of plosives. Soft contacts give the speech a slurred quality and facilitate the flow aspect of this technique. As the therapy progresses, this feature is shaped towards normalcy.

SYLLABLE TIMED SPEECH/METRONOME CONDITIONED SPEECH

RETRAINING

A marked increase usually occurs in fluency when stutrerer paces his speech with an iterated stimulus. The effect is most dramatic if the stimuli are rhythmic and externally generated, such as when a stutrerer paces

his speech with a metronome. The method as described by Brady (1971) was used with some modifications in the present investigation.

At first the client is taught to make some fluent verbalisations and then these are gradually and systematically shaped to approximate the rate and cadence of normal speech. It is demonstrated to the patient that he can speak with normal fluency with the aid of the metronome in the clinic. The patient is also provided with an overview of total programme in the first session. In the beginning, the speed of the metronome is kept at a level at which the subject could read or speak without difficulty, later on the rate is increased gradually and systematically. The subject is also instructed to vary the number of syllables between each beat in order to improve speech quality. If the subject has difficulty with the speed of the metronome at any rate, then immediately the speed of metronome is reduced to the previous speed at which he was able to speak comfortably. This process is continued till the subject reaches the maximum speed of the metronome i.e., 180 beats per minute.

The metronome used for the purpose of treatment is electronic. It is a desk model and commercially

available. The number of beats could be increased or decreased as desired. It operated on 12 V D.C. which is provided either through battery or A.C. Mains. It gave auditory as well as visual feedback.

Each session involving the use of the metronome lasts 2 hours, divided into approximately two equal halves. In the first half, the subject reads from a book, while in the second half, the subject speaks on the topic of his choice with the help of the metronome. When the subject completes all the speeds of the metronome both in reading and spontaneous speech, evaluation sessions are conducted.

SYSTEMATIC DESSENSITIZATION PROCEDURE

Before starting systematic desensitization the problems of the patient are carefully studied, The technique involves four separate sets of operations :

1. Introduction of the subjective anxiety scale,
2. Training in deep muscle relaxation.
3. The construction of anxiety hierarchy.
4. Counterposing relaxation and anxiety - evoking stimuli from the hierarchies.

Introduction of the Subjective Anxiety (sud) Seale

It is vary essential to have the knowledge of the magnitude of the patients anxiety responses to specific stimuli. This helps in grading of stimulus situations for their relative anxiety-arousing effects in judging the efficacy of relaxation training , in determining the anxiety baseline prior to and during the main procedure, and in assessing the anxiety aroused by presented stimuli. As verbal descriptions are not very adequate , a subjective anxiety scale is therefore used by Which the patient reports his anxiety levels on a private scale of 0 to 100, Where 100 represents the highest anxiety that he has or could have experienced.

The SUD scale was introduced to each patient by telling him as follows :

Think of the worst anxiety you have ever experienced, or can imagine experiencing, and assign to this the number 100. Now think of the state of being absolutely calm and call this zero. Now you have a scale of anxiety, ... The unit is the SUD (subjective unit of disturbance).

(Wolpe, 1982)

Then the patient was asked to rate various items of anxiety according to the amount of anxiety in terms of SUD, he would experience on exposure to them.

Training in Relaxation

Training in relaxation was carried out as described earlier.

The Construction of Hierarchy

An anxiety hierarchy is a thematically related list of anxiety evoking stimuli, ranked according to the amount of anxiety they evoke (Wolpe, 1982), The stimulus that evokes the greatest anxiety is kept at the top of the list.

Hierarchy construction usually begins at about the same time as relaxation training, but is subject to alterations and additions at any time. The raw data from which a hierarchy is constructed comes from four main sources : (a) the patient's history ; (b) interview; (c) responses to the Willoughby Questionnaire which reveals anxiety in certain interpersonal contexts ; (d) special probings into situations in which the patient feels unadaptable anxiety. When needed, further information was sought by assigning to the patient the home work task of listing all situations, thoughts, or feelings that he finds

disturbing , fearful, embarrassing , or in any other way distressing. When all the identified sources of neurotic disturbance were listed , they were classified into themes.

While constructing the hierarchy , care was taken to have a reasonably evenly spaced progression. To have the hierarchy in a quantifiable form, the subjective anxiety scale is used. The patient is asked to rate the items of the hierarchy according to the amount of anxiety he would have upon exposure to them. When the differences between items were similar, and generally speaking, not more than 5 to 10 Suds, the spacing was regarded as satisfactory,

DESENSITIZATION PROCEDURE

In systematic desensitization, neurotic anxiety-response habits are broken in piecemeal fashion. It is based on the therapy of experimental neurosis. A physiological state that is inhibitory of anxiety is induced in the patient by means of muscle relaxation ; he is then exposed to a weak anxiety-arousing stimulus for a few seconds. On repeated exposures, the stimulus progressively loses its ability to evoke anxiety. Later on "stronger" stimuli are introduced and treated in the same fashion.

After establishing appropriate hierarchies, and as soon as the patient has attained the ability to calm himself by relaxation, the desensitization procedure begins. Before putting the patient on desensitization programme, it was ascertained that patient had achieved a positive feeling of calm i.e., a negative of anxiety, if not, at least, zero subjective units of disturbance.

In the first desensitization session, the patient was asked to relax; and when he was relaxed, he was asked to imagine certain scenes. Every time the scene was clear, he was to indicate this by raising his index finger.

The patient lied down comfortably with his eyes closed, then a deep state of relaxation was brought about by suggesting to the patient to relax various parts of his body. Then the patient was asked to report the amount of anxiety he felt on the subjective scale. If it is zero or close to zero, scene presentations began. When the patient continued to have anxiety despite his direct efforts at relaxation, various imaginal devices were used.

A standard routine was followed in the introduction of scenes at the first desensitization session. The first scene presented was a "control", As this scene is neutral, patient is not expected to have any anxiety.

The patient was asked to imagine scenes as indicated by the therapist. He was told to raise his index finger when the image was clear. Then a scene was presented and it was allowed to remain for about 5-7 seconds. The scene was terminated by saying, " Stop the scene ", and then the patient was asked to report how much it disturbed him in terms of units. The patient was told to report to the therapist, if he felt disturbed or worried at any time. When the scene ceased to arouse any anxiety, the scene next in the hierarchy was presented. All relevant occurrences during the desensitization session were noted on a card by concise notation as described by Wolpe (1982).

Generally, up to four items in a hierarchy were drawn upon in an individual session and three to four representations of a scene were usual to bring the response to zero. The duration of a scene was usually of the order of five to ten seconds. It was quickly terminated if the patient indicated strong anxiety. The usual interval between scenes varied from 10 to 30 seconds. But when it was felt that the patient has been more than slightly disturbed by the preceding scene, the interval continued till the patient felt relaxed, during this time, repeated suggestions were given to him to relax. The sessions were held daily.

REGULATED BREATHING PROCEDURE/TRAINING PROGRAMME

The procedure used for the regulated breathing condition was essentially the same as that described in broad outline in Azrin and Nunn (1974) and in detail with slight changes in Azrin and Nunn (1977), except for some modifications. The treatment included 12 components which are summarised here :

- 1) Inconvenience Review : In order to enhance client's motivation for treatment, a detailed review of the inconveniences and the annoyances resulting from stuttering was performed.
- 2) Awareness Training : The client was required to stutter deliberately and to describe the nature of the problem such as, type of words stuttered and the situations or persons that provoked stuttering. This procedure clearly identifies for the client the circumstances under which he stutters, so that he can prepare himself better for those circumstances.
- 3) Anticipation Awareness : When the client anticipated a stuttering episode, he signalled this to the therapist by pausing in his speech . The therapist also alerted the client, when he detected such stuttering related signs as neck tensing , eye-blinking or hand movements.

5) Incompatible Activities : In order to regulate breathing, the client was instructed to stop speaking when a stuttering episode occurred , to take a deep breath by exhaling and then inhaling. Also the client was instructed to consciously relax his chest and throat muscles, to formulate mentally the words to be spoken, to start speaking immediately after a deep breath, to emphasize the initial part of a statement, and to speak for short durations. To synchronism speech further with the respiratory pattern , the clients were told to exhale slightly before speaking without taking too deep a breath and to initiate phonation without interrupting the exhalation.

6) Corrective Training : The client was given practice in initiating the competing activities whenever he stuttered.

7) Preventive Training : When the client anticipated that he would stutter, he engaged in incompatible activities.

8) Symbolic Rehearsal : The client imagined himself in stuttering prone situations and described as well as demonstrated the competing activities, he would perform within such circumstances.

9) Positive Practice : Several types of structured practice were given :

- (1) The client practiced the "competing breathing pattern " while reading.

(ii) As he spoke to the therapist, he practiced "interrupt - and - breathe pattern."

(iii) While not speaking, he practiced the various relaxation exercises.

10) Social Support : The client asked a friend or a family member to give feedback on his progress and to remind him to use the method.

11) Public Display : The client was encouraged to confront situations or words or people that had been previously avoided and to speak in those circumstances using the prescribed procedures.

12) Post - treatment Practice : The client was instructed to use the prescribed procedures continually and, further, to practice the new breathing pattern at regular times each day.

Two modifications to Azrin and Nunn's procedure were provided, The awareness- training phase was changed as follows : in order to help subjects to identify stuttering , the therapist provided an operational definition of stuttering and gave an example of each category . Progressive Muscular Relaxation (Wolpe,1982) was administered to the subjects before beginning the Regulated Breathing Procedure,

A total of 30 stutterers were examined for Part II of the study. The initial selection of 20 individuals for studying the effectiveness of treatment methods on stuttering was made from the cases who registered themselves for treatment of stuttering at Medical Records Unit of All India Institute of Speech and Hearing, Mansangangothri, Mysore -6 . This included 4 cases that came in response to brief research note which was sent to the heads of different organisations* for circulation and display* The research note is reproduced below :

TREATMENT FOR STUTTERERS

In the Dept, of Clinical Psychology a research project has been undertaken for the treatment of young adult stammerers. The project focuses on detailed examination and treatment for stammerers. The treatment is free and will be of 2-3 weeks duration. Those who need such services are advised to contact :

Harpreet Singh, Jr. Research Fellow,
Dept. of Clinical Psychology,
All India Institute of Speech and Hearing,
Mansangangothri, Mysore - 570006

* The list and addresses of the organisation are provided in Appendix - VIII.

The records of stuttering cases were checked in the Medical Records Unit of All India Institute of Speech and Hearing, Mysore from 1.1.93 to 31.12.87. follow up cards were sent to 85 stuttering cases which were found to be suitable for research work and were from the areas in and around Mysore City, Only 11 cases Who responded to the follow up measures were taken for investigation, A few of the cards were returned to the investigator marked as " Addressee not known," indicating probably that the cases do not reside any more there. While some of the cases expressed their inability to come, the others did not respond.

Out of the total 30 subjects, 16 subjects* co-operated actively with the treatment programmes, after they have been explained the nature and purpose of investigation. None of the subjects withdrew from active treatment till the completion of their schedules except for one subject who discontinued treatment after 3 sessions. The results are reported only for these sixteen subjects. four subjects left during the pre-treatment baseline measures. One subject had to prepare for the forthcoming examination , the other one wanted to attend to his job in the factory Which had re-opened after

* The detailed case history on each subject taken by the investigator for treatment is given in Appendixes .

strike , the third subject had to go to his native place for some work. The fourth subject discontinued after two evaluation sessions of baseline measures. The remaining 10 cases which were excluded, 6 had frequency of stuttering less than 3.65% SS; 2 had other speech and hearing problems; and each other one had problem with language and time scheduling.

Subject Characteristics

All the subjects (refer table 4-7) were male, their age ranged from 19 to 31 years, with a mean of 24.87 years. All were single, except two. Educational background of the subjects varied from matriculation to graduation. 7 subjects were actively pursuing their studies either in science, art or other professional subjects; 9 others had already completed the formal education and were in service except for one who was doing his own business. Only 5 subjects out of 16 had received prior treatment for their stuttering without satisfactory improvement from a qualified Speech Pathologist / Clinical Psychologist either at All India Institute of Speech and Hearing , Mysore , or elsewhere. No stutterer reported physical impairment, such as auditory deficits based on past audiological examination ; they did not have other kind of abnormalities either.

Table 4 - 7

Subject Characteristics

S. Subjects No.	Sex	Age	Educa- tion	Occupation	Single/ married	Baseline Time Lag in Days	History of pre- vious treatm.
1. GAK	M	21	B.E.	Student	S	3	-
2. MCD	M	31	PUC	Service	S	6	-
3. KCH	M	28	B.E.	Service	S	12	-
4. SCS	M	20	D.Pharm	Student	S	9	-
5. IND	M	26	DCE	Service	M	15	-
6. JAY	M	26	DTI	Service	S	3	+
7. VPD	M	24	B.E.	Student	S	6	-
8. DSR	M	23	BVSc	Service	S	12	-
9. NMK	M	20	B.E.	Student	S	9	-
10. HBC	M	25	B.A.	Service	S	15	-
11. SAK	M	28	DME	Service	S	12	-
12. NPR	M	25	B.E.	Student	S	6	+
13. NBS	M	30	DHMCT	Business	S	15	+
14. CHR	M	19	B.A.	Student	S	6	+
15. RDS	M	27	B.Sc.	Service	M	9	-
16. VEG	M	25	B.Sc.	Student	S	12	+

Subject Selection

The following criteria for subject selection/ inclusion were used :

1. Age 16 years and above
2. Sex Male only
3. Educational background Matriculation or higher with ability to understand and vocalise effectively in English.
4. Intelligence Average or above average on Advanced Progressive Matrices Test,
5. Absence of other speech and hearing defects.
6. Absence of organic pathology,
7. Consistently high degree of availability and cooperation,
8. Percentage of syllables stuttered > 3.65 either in reading or spontaneous speech,

The criterion used for exclusion of non-stutterers was based on the work of Ladouceur and Saint-Laurant (1986). They obtained an average percentage of stuttering of 2.71% (S.D. = .94) in eight adult non-stutterers, assessed in the following conditions ; telephone, interview and public speaking. This suggested 3.65% (M + S.D.,) as the normalcy criterion. Individuals who stuttered at least on 3.65% of the syllables during pre-treatment assessment were included in the study. Consistently high degree of availability and co-operation from

the subject was necessary for completing the treatment programmes as per the design. The reasons for other criteria have been explained earlier in the chapter.

The non-specific factors and intra-organismic factors e.g, "history" and "process within the organism working over time" were controlled by the very nature of the experimental design used in the study (Campbell and Stanley, 1963). Each subject constituted a sub-experiment in the sense that the same subject passed through all the phases of the study, thereby the intra-organismic variables were controlled across phases. No subject was under any other treatment during the period of study.

Procedures of data collection, recording and evaluation were the same for all subjects. The adaptation effect of reading from written passage as part of evaluation session was controlled by Changing the written passage to be read every time for a particular subject. Other factors e.g., distraction, and unplanned presence of stranger were controlled by conducting the sessions in an isolated room. In terms of education all the subjects were literate.

PROCEDURE

The basic format consisted of baseline measures, treatment procedures and evaluation sessions. Pre-treatment baseline measures for Part II were same as used for Part I of the study, the more crucial part of the study was to take baseline measures of stuttering prior to therapy* Hence speech measures were added to evaluate the state of stuttering. The evaluation sessions both preceded and followed the treatment sessions. It included the tape recording of reading and spontaneous speech of the subject. The recording sessions were conducted once a day only.

Baseline data was collated continuously for subjects with short baselines (e.g., 3 days and 6 days) . As continuous measurement was not feasible for the subjects with longer baselines (e.g., 9 days, 12 days and 15 days), baseline data was collected continuously for these subjects in the initial three sessions only. After that a gap was given for 3,6 and 9 days respectively for theme subjects and continuous baseline data recorded in the last three sessions.

During reading condition, the subject was asked to read a non-emotional simple passage from the English literature book. The passage to be read was different

each time , The subject spoke extempore on a topic of his choice, during spontaneous speech condition. Speech measures were taken before, during and after treatment phase. Spontaneous speech and reading materials were recorded for three minutes each and preserved for analysis and scoring by an observer for reliability estimate. The details of analysis and scoring of these taped data are given at the end of this chapter. After the treatment phase was concluded, all the pre-treatment measures were repeated.

Each treatment procedure is labelled as a " Treatment Phase ". Thus, there were prolonged Speech Treatment Phase, Rhythmic Syllable timed Speech Treatment Phase, Regulated Breathing Treatment Phase, and Systematic Desensitization Treatment Phase. Each treatment phase was preceded by a single session of Progressive Muscular Relaxation. After a stable baseline was observed, treatment was applied.

The following therapeutic intervention procedures forming independent variables were used in Part II of the study :

1. Prolonged Speech
2. Rhythmic Syllable Timed Speech
3. Regulated Breathing Procedure
4. Systematic Desensitization

The subjects were randomly assigned to one of the pre-determined baseline lengths and treatment procedures. After the baseline measures were completed , a single session of Progressive Muscular Relaxation was given and later on, ten, 2 hour sessions of treatment were provided for each case. Training in PMR was given by the therapist, till he ensured that the patient had adequately learned to reach a deep relaxed state. This obviously took a little longer time. The method of relaxation, as described by Wolpe (1982), was essentially applied in each case, This has been explained in detail earlier in the chapter.

The duration of single session of treatment was decided based on the total therapy time of other programmes. For example, Ryan and Kirk (1971) devoted ten to twenty hours of total therapy time ; Gray and Kngland (1972) spent 13.5 hours per subject in actual reciprocal Inhibition * speech programme used by Howie et al. (1981) requires some 30 hours of treatment per person while Saint* Laurent (1987) reported the use of 24 hours of Regulated Breathing Treatment.

The dependent variables in this study were various measure* of dysfluency and scores on the personality traits listed hereunder :

1. Syllables par minutes as the measures of rate .
2. Percentage of syllables stuttered as the measure of stuttering.
3. Artlculatory rate as a second measure of the speed of speech.
4. Extroversion,
5. Neuroticism.
6. Self-confidence.
7. Social-anxiety.
8. Activity.
9. Cyclothymia.
10. Depression Tendencies.
11. Emotional Instability.
12. Introversion.
13. Psychosomatic Disorders.
14. Interpersonal Communication Disorders.

SPEECH MEASURES

As Bloodstain (1975) indicated, stuttering can be affected by a variety of conditions. one of these is nature of speaking task , i.e., reading aloud versus spontaneous (conversational) speech . Johnson, Darlay and Sprlestbach (1963) recommended sampling both the behaviours, Similarly, Andrews and Ingham (1971) also underscored the need to assess prose reading in addition to speech, since the former task prevents stutterers from circumlocuting difficult words. Therefore, dependent variables were measured under conditions of both reading and spontaneous condition .

Three indices of speech behaviour were employed;

1) Percent syllables stuttered (% SS)

$$\%SS = \frac{\text{total number of stutterings}}{\text{total number of syllables spoken}} \times 100$$

The total number of stuttering is obtained by counting the entire number of moments of stuttering in the talking sample. The total number of syllables spoken is calculated by counting the total number of syllables spoken during the entire sample. The total number of stutterings and the total number of syllables are used to calculate % SS in the above formula.

2) Overall speaking rate calculated in syllables per minute (SPM) .

$$\text{Overall speaking rate (SPM)} = \frac{\text{Number of syllables spoken in 3 minutes}}{3}$$

Overall speaking rate was determined by dividing the number of syllables spoken by the number of minutes.

3) Articulatory rate

$$\text{Articulatory rate (SPM)} = \frac{\text{Total number of non-stuttered syllables}}{\text{Total amount of talking time}}$$

Articulatory rate is the measure of the client's speaking rate unimpeded by disfluencies or stutterings. It is also measured in S.P.M. To calculate articulatory rate, total number of non-stuttered syllables were counted. The total amount of talking time in the sample is measured by listening to the entire sample and activating a stop watch any time the client is talking. Pauses greater than 2 second are eliminated. The time obtained in this fashion is the total amount of client talking time (CTT) .After putting these numbers in the above formula articulatory rate is calculated.

The speech behaviour of each subject was assessed by the investigator from the tape-recordings obtained during each session. Stuttering was identified on the basis

of speech characteristics described in detail elsewhere in the study . Each of the audiorecording was timed using a stop watch. From these data, the dependent variables, percent age of syllables stuttered, rate of speech and articulatory rate per minute were derived.

RELIABILITY OP SPEECH MEASURES

To evaluate the reliability of investigator's speech rating, all the tape-recordings of each subject were assessed independently by a qualified Speech-Language-Pathologist. Percentage of agreement warrn computed for syllables stuttered , rate of speech and articulatory rate for all the subjects in reading and speaking conditions by dividing the smallest number of the two observers by the largest number for each of the audiorecording. If average agreement was found to be less than 85%, the two observers again independently scored the speech recording until 85% agreement was achieved.

Inter-observer reliabilities in percentage of agreement are presented in Tables: 4-8,4-9,4-10 and 4-11 for Prolonged Speech Group, Rhythmic Syllable Timed Speech Group, Systematic Desenaitization Group and Regulated Breathing Procedure Group respectively. From the tables it becomes evident that percentage of agreement" was above 90 between the investigator and the observer in most of the instances and it was not below 85% in any case.

Table 4-9 Inter-observer reliabilities in percentage of agreement for Prolonged Speech Group

SUBJECT	CONDITION VARIABLE	PRE-THERAPY						POST-THERAPY										
		1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10	
GAK	S.P.M.	99.10	99.58	98.17				99.20	98.46	98.72	98.85	98.91	98.52	98.98	98.63	98.29	98.08	99.34
	READING	%S	100.00	88.88	100.00			100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	A.R.		99.08	98.12	98.14			99.19	98.72	98.84	98.90	99.25	98.98	98.62	98.29	98.09	99.55	
MCD	S.P.M.	98.54	97.76	98.95			99.14	99.06	99.45	99.07	98.03	99.04	99.33	98.26	98.50	98.09	98.78	
	SPEAKING	%S	89.28	95.23	94.44			96.55	100.00	90.00	100.00	85.71	100.00	97.50	98.88	100.00	100.00	
	A.R.		99.11	98.13	98.52			99.58	97.90	99.16	99.29	98.25	99.03	99.13	98.44	98.47	97.28	99.50
KCI	S.P.M.	98.48	98.24	98.99	98.20	99.30	98.91	98.62	98.70	98.32	98.94	98.73	98.43	98.65	98.73	98.16	98.76	98.95
	READING	%S	98.98	97.77	97.36	97.61	93.87	96.29	96.55	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	A.R.		99.10	98.28	99.10	97.90	99.57	98.32	98.37	98.70	98.31	98.93	98.94	98.42	98.87	98.73	98.16	98.75
GAK	S.P.M.	98.22	98.65	98.99	97.60	98.39	98.49	98.90	98.36	97.84	98.34	98.67	97.73	98.29	97.69	98.13	97.17	98.66
	SPEAKING	%S	91.66	97.50	87.79	97.95	96.42	95.01	93.33	98.98	100.00	91.65	100.00	100.00	100.00	100.00	97.50	100.00
	A.R.		97.47	97.74	97.82	97.34	97.92	97.42	97.22	98.66	97.82	97.54	98.55	97.71	98.29	97.68	98.13	96.80
KCI	S.P.M.	99.00	99.60	99.29	98.97	99.43	98.80	99.03	98.33	97.03	98.42							
	READING	%S	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	A.R.		98.99	98.60	99.55	98.97	98.43	98.60	99.03	98.23	97.03	98.42						
KCI	S.P.M.	98.39	98.66	98.49	98.73	99.40	98.43	98.48	96.85	97.51	98.78							
	SPEAKING	%S	95.00	100.00	100.00	92.85	89.28	92.85	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	A.R.		98.55	98.60	98.43	99.10	90.00	96.49	98.42	96.85	97.51	98.78						

Table 4-9 Inter-observer reliabilities in percentage of agreement for Rhythmic Syllable Timed Speech Group

SUBJECT	CONDITION	VARIABLE	PRE - THERAPY						POST - THERAPY											
			1	2	3	4	5	6	1	2	3	4	5	6						
SCS	READING	S.P.M.	98.50	98.98	98.50	98.79	97.96	98.10	98.77	98.13	98.17	97.68	97.48	98.70	98.63	98.33	98.38	98.45	98.30	
		%SS	90.00	93.75	88.88	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		A.R.	96.20	99.06	98.58	98.78	97.94	98.08	99.12	98.13	98.17	97.67	97.48	98.69	98.62	98.33	98.38	98.10	98.30	98.30
	SPEAKING	S.P.M.	96.68	96.94	97.72	96.98	94.91	98.52	97.22	96.85	98.10	97.48	98.40	97.93	98.32	98.11	98.01	98.25	97.86	97.86
		%SS	88.23	96.55	96.42	93.33	92.00	95.83	92.85	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		A.R.	97.65	96.99	97.84	97.31	97.43	98.69	97.52	96.79	98.08	97.48	98.37	97.92	98.31	98.10	98.01	98.24	97.86	97.86
IND	READING	S.P.M.	96.00	97.65	97.99	97.35	97.51	97.27	97.45	98.20	97.53	97.18	97.91	97.97	97.29	97.50	97.11	98.25	97.94	97.94
		%SS	91.30	97.82	91.02	93.33	95.23	93.75	94.11	100.00	100.00	100.00	88.88	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		A.R.	96.94	96.83	98.69	97.96	97.85	96.80	96.57	98.18	97.48	97.10	97.64	97.94	97.27	97.67	97.08	98.24	97.93	97.93
	SPEAKING	S.P.M.	98.28	97.23	97.57	97.07	97.87	97.78	97.30	98.53	98.15	98.52	97.72	98.31	98.11	98.44	98.11	98.41	98.22	98.22
		%SS	97.61	94.73	95.55	95.00	94.73	96.15	93.33	94.73	91.66	100.00	100.00	100.00	100.00	100.00	92.00	100.00	100.00	100.00
		A.R.	97.71	96.20	97.82	97.35	97.05	98.00	97.59	98.47	97.93	98.47	97.64	98.29	97.66	98.43	98.00	98.40	98.20	98.20
JAY	READING	S.P.M.	97.89	98.16	98.10				97.18	97.45	97.86	97.69	97.76	97.93	98.51	97.77	98.00	98.28	98.44	98.44
		%SS	90.56	93.33	90.90				100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		A.R.	96.63	97.26	98.27				97.08	97.45	97.35	97.68	97.75	97.98	79.51	97.77	98.00	98.28	98.44	98.44
	SPEAKING	S.P.M.	97.84	97.36	97.55				97.77	96.60	97.92	99.26	98.16	97.90	98.13	98.41	98.25	97.69	97.87	97.87
		%SS	91.65	96.00	95.08				90.90	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		A.R.	97.57	97.57	97.94				97.73	99.59	97.89	99.26	98.16	98.35	98.13	98.40	98.21	97.56	97.86	97.86
VPD	READING	S.P.M.	97.80	98.71	97.08	98.22	98.11	98.27	98.13	98.33	98.48	97.71	98.07	98.60	98.35	98.12	98.09	98.26	98.15	98.15
		%SS	88.88	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		A.R.	97.75	97.97	97.06	98.21	98.09	98.43	98.10	98.33	98.48	98.95	98.58	98.59	98.34	98.10	98.07	98.26	98.14	98.14
	SPEAKING	S.P.M.	97.59	98.35	97.09	98.19	98.37	98.46	97.41	97.19	98.40	98.30	98.43	98.25	97.18	98.27	98.44	98.88	98.20	98.20
		%SS	92.00	90.90	92.30	96.00	95.65	93.33	96.00	100.00	90.00	100.00	92.30	92.85	100.00	92.95	92.30	100.00	100.00	100.00
		A.R.	97.99	98.83	94.48	98.32	95.79	98.82	97.52	97.12	98.63	98.26	98.65	98.45	97.10	98.40	98.12	98.97	98.17	98.17
DSR	READING	S.P.M.	97.69	98.20	98.08	98.39	98.34	98.51	98.27	98.57	98.95	98.37	98.60	99.05	98.14	98.49	98.23	98.37	98.45	98.45
		%SS	91.66	100.00	88.88	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		A.R.	97.49	98.58	97.94	98.37	98.33	98.50	98.27	98.56	98.94	98.37	98.60	98.40	98.13	98.49	98.22	98.37	98.44	98.44
	SPEAKING	S.P.M.	97.38	98.84	98.44	97.79	97.69	98.43	97.53	98.60	97.95	97.92	98.48	98.46	98.18	97.88	98.29	95.22	98.42	98.42
		%SS	95.53	94.59	94.73	100.00	100.00	100.00	92.85	93.75	88.88	100.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	100.00
		A.R.	97.70	98.20	98.27	97.50	97.46	98.29	97.23	97.92	98.47	98.47	98.27	97.91	97.91	97.94	98.27	98.20	98.20	98.20

Table 4-10 Inter-observer reliability in percentage of agreement for Systematic Desensitization Group

SUBJECT	CONDITION	VARIABLE	PRE - THERAPY						POST - THERAPY											
			1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10		
CHR	READING	S.P.M.	97.10	98.48	98.21	98.16	98.22	97.59	97.94	98.55	98.20	97.55	98.31	98.59	98.26	98.29	98.59	98.34	97.7	
		%SS	100.00	100.00	95.65	95.22	93.33	100.00	90.90	100.00	91.66	90.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		A.R.	96.96	98.42	98.35	98.81	97.87	97.45	98.36	98.46	97.83	97.50	98.27	98.57	98.23	98.26	98.58	98.33	97.7	97.7
	SPEAKING	S.P.M.	98.06	98.58	98.24	98.06	97.59	98.38	98.24	97.65	97.75	98.85	98.55	98.43	98.88	98.17	97.96	98.00	98.2	
		%SS	93.75	94.44	91.66	100.00	100.00	92.30	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
		A.R.	97.83	96.94	97.76	97.96	97.45	97.98	98.21	97.61	97.70	98.83	98.32	98.41	98.87	98.15	97.94	98.00	98.2	
RDS	READING	S.P.M.	98.57	98.63	98.04	98.44	98.20	98.14	98.10	98.44	97.14	99.00	98.12	98.28	98.27	98.67	98.48	98.16	98.5	
		%SS	100.00	100.00	91.66	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
		A.R.	98.65	98.62	98.17	98.43	97.89	98.13	98.10	98.44	97.12	99.00	98.11	98.27	98.26	98.66	98.48	98.15	98.5	
	SPEAKING	S.P.M.	97.88	98.23	98.07	98.25	98.42	97.82	98.83	98.26	98.07	98.38	98.33	98.26	98.43	98.90	98.73	97.69	98.0	
		%SS	94.44	95.65	94.73	94.11	95.00	94.73	92.30	91.66	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
		A.R.	98.03	98.15	97.77	97.92	98.65	97.96	99.00	98.02	98.02	93.36	98.31	98.25	98.42	98.08	93.72	97.66	98.0	
VTS	READING	S.P.M.	98.20	93.77	97.35	98.19	97.90	98.25	97.86	93.17	93.94	98.69	97.16	98.54	97.74	98.33	98.42	97.92	98.5	
		%SS	90.47	94.73	93.33	94.44	91.66	96.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
		A.R.	97.71	98.01	97.63	98.48	98.20	98.49	97.84	98.16	98.93	98.67	97.43	98.34	97.71	98.51	98.41	97.69	98.5	
	SPEAKING	S.P.M.	98.18	98.43	98.08	97.76	97.99	98.38	98.03	98.63	98.29	98.31	98.08	98.25	98.67	98.17	98.33	98.19	98.13	
		%SS	94.73	100.00	95.65	99.00	91.30	100.00	91.75	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
		A.R.	97.29	98.42	97.97	97.24	98.31	98.30	98.17	98.50	98.25	98.23	98.05	98.23	98.55	98.08	98.31	98.17	98.10	
NTE	READING	S.P.M.	98.03	93.21	98.24	98.52	98.26	97.85	98.27	98.70	98.25	98.65	98.27	98.80	98.71	98.39	98.10	97.91	98.04	
		%SS	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
		A.R.	99.01	98.20	98.23	98.52	98.25	97.70	98.27	98.70	97.93	98.55	98.27	98.80	98.71	98.30	98.10	97.91	98.40	
	SPEAKING	S.P.M.	98.05	97.71	98.16	98.23	98.38	98.41	98.67	97.60	98.44	98.36	98.02	98.14	98.16	98.46	97.38	98.86	98.31	
		%SS	92.00	95.23	95.65	96.15	93.75	93.33	100.00	93.33	100.00	89.88	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
		A.R.	98.16	97.89	98.06	98.50	98.29	98.67	98.65	97.27	98.43	98.33	97.99	98.13	98.15	98.44	97.86	98.85	98.30	

Table 4-11 Inter-observer liabilities in percentage of agreement for Regulated Breathing Group

SUBJECT	CONDITION	VARIABLE	PRE - THERAPY					POST - THERAPY											
			1	2	3	4	5	6	7	8	9	10							
NPR	S.P.M.	READING	98.42	98.61	98.71	98.45	98.95	98.37	99.15	98.92	98.26	98.67	98.97	98.65	98.40	98.51	98.31	98.9	
		% SS	85.71	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	A.R.	READING	97.98	98.60	98.70	98.68	98.94	98.35	99.15	98.46	98.28	98.67	98.97	98.69	98.40	98.50	98.31	98.9	
		% SS	98.45	98.85	98.12	97.95	98.17	98.73	97.64	98.94	99.36	98.11	98.37	98.08	97.92	98.39	98.19	98.42	98.69
	S.P.M.	SPEAKING	96.42	96.55	97.26	100.00	96.66	100.00	87.87	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		% SS	98.70	99.31	98.30	97.59	98.41	98.50	96.66	99.46	99.35	98.09	98.35	98.08	97.92	98.39	98.19	98.41	98.59
NMK	S.P.M.	READING	98.84	98.59	98.45	99.19	98.90	99.00	98.35	98.52	98.46	98.66	98.80	98.62	98.49	98.00	98.81	98.31	98.12
		% SS	96.42	92.59	90.70	94.28	96.00	94.11	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	A.R.	READING	98.96	98.30	98.25	98.33	99.00	97.12	98.33	98.52	98.46	98.65	98.80	98.62	99.49	98.00	98.81	98.31	98.12
		% SS	98.86	98.97	98.71	98.00	97.85	98.70	98.52	99.58	98.73	98.63	99.04	98.70	98.41	97.75	97.62	98.09	98.14
	S.P.M.	SPEAKING	97.61	94.44	94.44	97.77	95.08	97.50	92.85	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		% SS	98.97	99.14	99.01	98.34	98.21	98.78	98.19	98.58	98.73	99.63	99.04	98.70	98.41	97.74	97.62	98.06	98.14
BAC	S.P.M.	READING	97.28	98.56	99.21	98.94	99.14	99.47	99.13	99.37	99.06	99.55	98.78	98.87	99.30	98.50	98.20	98.75	98.72
		% SS	95.45	98.38	91.66	92.59	96.42	96.77	95.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	A.R.	READING	99.44	99.05	99.59	99.32	98.22	99.26	99.10	99.37	99.05	99.55	98.78	98.87	99.29	98.50	98.19	98.75	98.72
		% SS	97.22	97.49	97.43	97.62	98.64	97.91	97.48	98.39	98.38	98.74	98.71	98.15	98.57	98.32	98.57	98.66	97.99
	S.P.M.	SPEAKING	96.15	95.23	93.73	91.33	96.29	94.23	96.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		% SS	98.35	98.77	98.05	98.02	98.92	98.33	97.61	98.37	98.97	99.74	99.20	99.14	98.56	98.31	98.66	98.33	97.36
HBC	S.P.M.	READING	98.24	98.79	98.32	98.05	98.36	99.24	98.34	99.43	99.55	99.23	99.52	99.19	99.13	99.09	98.05	98.85	98.35
		% SS	93.33	96.00	95.96	97.36	95.55	97.61	97.14	90.90	100.00	100.00	100.00	100.00	100.00	87.50	100.00	100.00	97.50
	A.R.	READING	96.70	97.50	97.27	97.28	98.84	99.55	98.40	99.71	99.54	99.21	99.51	99.18	99.12	99.37	98.01	98.83	98.56
		% SS	98.72	99.41	98.66	98.63	98.21	99.44	97.14	99.06	98.85	99.12	97.86	98.61	98.90	98.59	98.10	99.47	98.74
	S.P.M.	SPEAKING	100.00	98.46	97.22	95.00	94.73	96.42	95.23	94.44	90.00	94.11	95.00	100.00	100.00	100.00	100.00	87.50	100.00
		% SS	98.42	97.91	98.94	99.20	98.90	100.00	95.29	99.48	98.19	99.52	97.20	97.63	98.86	98.54	98.03	100.00	98.71

CHAPTER V
DATA ANALYSIS

The information gathered from respondents in the study constituted the basis for analysis. The data were collected on suitable formats as laid down in the tests' requirements. The completed questionnaires and schedules were the raw data. To simplify and organise the data for subsequent analysis, the raw data was transferred into chart and tabular form. Systematic checking between the raw data and the transferred data was carried out and it was ensured that there were no errors. During transferring of the data, all the incomplete data were rejected. When the data have been transferred, transformed, the analysis began.

Statistical analysis constituted another important aspect of research, as it provided an important link between data gathered and the hypothesis. The selection of the appropriate statistical methods for the study was dictated by (1) the nature of the measurement of the data, and (2) the purpose of the research effort. The following statistical measures were found to be adequate for the study.

1. Mean.
2. Standard Deviation.
3. T - test (for the significance of the difference between means)
4. Correlation.
5. Chi Square
6. Hotelling's T Square, Linear Discriminant Function and Mahalanobis' D Square
7. Factor Analysis.

The first four statistical measures are routinely used in the analysis , therefore only the detailed description of the last three statistical measures is highlighted here.

Chi Square :

Chi square has many uses, but it was employed in this study in testing the hypothesis concerning the significance of differences of the responses of stuttering and non-stuttering subjects to a particular item of the test. The data obtained from personality tests was in the form of 2×2 , 2×3 and 2×5 contingency tables. When, for any test item, the obtained expected frequencies in one or more of the cells were less than 5, it indicated that Chi square test is not applicable and, if computed, is likely to be an over estimate . There is disagreement

among the experts here. Some say no expected frequency should be less than 5, but about as many others hold out for 10. A few, not surprisingly, show various forms of confusion. We have accepted 5 as an absolute minimum. In the case of 2 x 2 table, a correction, called Yate's correction for continuity, was applied. The Yate's correction is never used in 1 x 3, or 2 x 3, or any larger tables. In such situation, Downie and Heath (1970) describe three possibilities in handling the data. First, the frequencies of the particular group can be combined with those of some other group, if there is any logic for such a combination. Secondly, more individuals can be sampled for this category. Third, the data can be dropped from the analysis. As the first two options were not found to be feasible, the last option was exercised. In much cases, the observed scores causing the error were removed and Chi square was calculated in 2 x 2 contingency tables, but despite this, if the expected frequencies in any one of the cells was less than 5, Yate's correction was applied. This difficulty was mainly encountered in the case of Surface Trait Inventory where the data was in the form of 2 x 3 contingency tables. A Chi square programme with different options was developed in Basic and used for analysis of the data.

Retelling's T Square, Linear Discriminant function and Mahalanobis' D Square :

Hotelling (1931) defined the distribution for the statistic T^2 , which is a multivariate generalisation of the univariate Student's t . When hypotheses are multivariate analogs of univariate hypotheses that can be tested using the familiar t test, they can be tested using the Hotelling T^2 statistic.

The Hotelling T^2 statistic was used to test the hypothesis that two groups can be considered random samples from populations having identical multivariate mean vectors. The researcher frequently finds that one or more simple t tests will yield "significant" results, but he still may worry that one or two such results might have been obtained by chance, because of the number of hypotheses tested. This is not the kind of situation where one can employ a range of tests or specify easily how many significant results might be expected by chance, because of the correlations among the variables. In this situation the multivariate hypothesis of no difference in mean vector is an appropriate hypothesis to test.

In the case of two Independent groups, the T^2 statistic is computed as follows :

$$T^2 = \frac{n_1 n_2}{n_1 + n_2} (\bar{X}_1 - \bar{X}_2)' S^{-1} (\bar{X}_1 - \bar{X}_2)$$

where \bar{X}_1 and \bar{X}_2 are the mean vectors for the two independent samples and S^{-1} is the inverse of the pooled within-groups covariance matrix.

To test the significance of T^2 it must be converted into a quantity F following Snedecor's F distribution . To do this T^2 is multiplied in general by :

$$F = \frac{N_1 + N_2 - p - 1}{(N_1 + N_2 - 2) p} \times T^2$$

This has the variance ratio of F distribution with degrees of freedom p and $N_1 + N_2 - p - 1$, Where p is the number of separate testa in the sample.

When we wish to construct a linear component or index for summarizing observations from the groups on a one-dimensional scale that discriminates between the population by some measure of maximal separation, this can be accomplished with the help of Linear Discriminant Function. It can be obtained while calculating T^2 and is :

$$y = (\bar{X}_1 - \bar{X}_2)' S^{-1}$$

To use the linear discriminant function for classifying an observation of unknown population. we begin by computing the mean values of the scores for the two samples:

$$\bar{y}_1 = (\bar{x}_1 - \bar{x}_2)' s^{-1} \bar{x}_1 \quad y_2 = (\bar{x}_1 - \bar{x}_2)' s^{-1} \bar{x}_2$$

The mid point of these means on the discriminant function scale is

$$1/2 (\bar{x}_1 - \bar{x}_2)' s^{-1} (\bar{x}_1 + \bar{x}_2)$$

and we might adopt the classification rule : Assign the individual with observation X to population 1, if

$$(\bar{x}_1 - \bar{x}_2)' s^{-1} X > 1/2 (\bar{x}_1 - \bar{x}_2)' s^{-1} (\bar{x}_1 + \bar{x}_2)$$

and to population 2, if

$$(\bar{x}_1 - \bar{x}_2)' s^{-1} X \leq 1/2 (\bar{x}_1 - \bar{x}_2)' s^{-1} (\bar{x}_1 + \bar{x}_2)$$

That is, sampling units are assigned to the group with the closer discriminant mean score.

The Mahalanobis distance or D_{12}^2 or the two multinormal populations can be obtained from Hotelling's T^2 . It is

$$D_{12}^2 = (\bar{x}_1 - \bar{x}_2)' s^{-1} (\bar{x}_1 - \bar{x}_2)$$

When, with the help of linear discriminant function, the subjects have been classified to population 1 or 2, their probabilities of misclassification can be obtained from Mahalanobis D_{12}^2 .

Thus, the probability of misclassifying a subject who belongs to population 1 is

$$P_{21} = \Phi \left(\frac{1}{2} D_{12} - \frac{l_{12}}{D_{12}} \right)$$

and the probability of converse misclassification is

$$P_{12} = \Phi \left(\frac{l_{12}}{D_{12}} - \frac{1}{2} D_{12} \right)$$

where $\Phi(z)$ denotes the standard or unit normal distribution function with zero mean and variance one,

$$\text{and } l_{12} = l_n \frac{p_1}{p_2} .$$

The computer programmes for the above tests were developed in BASIC and made use of.

factor Analysis :

The principal concern of factor analysis is the resolution of a set of variables linearly in terms of (usually) a small number of categories or "factors". This resolution can be accomplished by the analysis of the correlations among variables. A satisfactory solution will yield factors which convey all the essential information of the original set of variables. Thus, the chief

aim is to attain scientific parsimony or economy of description.

Kim and Mueller (1978a and 1978b) and Kerlinger (1973) provide an extensive explanation of the usefulness and limitation of factor analysis. Although factor analysis has been criticised by some authors, Kerlinger (1973) , in his seminal text on research methods, concludes the chapters on factor analysis with the following:

" If we examine empirical evidence rather than opinion, we must conclude that factor analysis is one of the most powerful tools yet devised for the study of complex areas of behavioral scientific concern."

In this study* the factor analysis was performed to analyse some aspects of the data using Sample Main Programme for Factor Aanalysis - facto which calls five sub routines to perform a principal component solution and the varimax rotation of factor matrix. The method used was that of Dixon W.J. (1964) . The data was collected from the following three groups on the personality questionnaires.

I Group : Five variables N = 102 (experimental)
II Group : Twelve variables N = 50 (experimental)
III Group : Twelve variables N = 119 (control)

The group II also contains the data for five variables on which the Group I was tested.

The responses of the individuals to personality questionnaires constituted the observed variables. The data on these variables were fed into a computer to obtain correlation coefficients and a rotated factor matrix. For the group I on five variables* it gave a matrix of $5(5-1)/2 = 10$ correlation/coefficients. The matrix consisted of 66 correlation coefficients for each of the stuttering and non-stuttering group. A rotated factor matrix was then obtained.

The orthogonal factor solution was preferred, as we wished to develop constructs as independent of one another as far as possible, and the too easy acceptance of oblique solutions may inhibit the search for truly independent constructs. Comrey (1973) states his position as under :

Often, an orthogonal solution may give for all practical purposes a perfectly adequate impression of the nature of the constructs in a domain and a reasonably adequate impression of the degree of obliquity that is involved from inspection of the orthogonal plots without actually executing an

oblique solution, Furthermore, the data variables that define the oblique simple structure factor most clearly are usually the same ones that have the highest loading on the corresponding orthogonal factors.

Decision on the number of factors to be retained was based on two statistical criteria namely :

- 1) Eigen values*of retained factors should be greater than one.
- 2) The retained factors should each account for at least 5% of the total variance.

For a variable to be retained in a factor, a minimum loading of + .35 was considered necessary as suggested by Overall and Klett (1972), though Comrey (1973) recommended a cutoff level of +.30. Wherever necessary and for the ease of interpretation, the sign of all the coefficients of the factor has been changed as this does not alter the adequacy of the solution (Harman, 1969) and above all it makes them consistent with the directional orientation of the factor named.

* The roots (λ 's) of a characteristics equation are referred to as "eigen values".

Whether statistical tests should be used to draw inferences from single-case research remains an issue. Recently, Ingham (1989) stated that "... the debate about the appropriateness or otherwise of using statistical procedures to identify experimental effects within these designs has remained at about the same level that it reached more than a decade ago. ... a treatment effect should be so decisive that a statistical 'proof' of its significance should be unnecessary."

The non-concurrent multiple baseline design has been used in Part II of the study. As in this design, the experimental variable's control over the dependent variable can be demonstrated either (1) by replicating the changes within and/ or across subjects, or (2) by the absence of overlap of the post-treatment phase data with the pre-treatment phase data. Therefore, the method of visual inspection was used for evaluating the experimental criteria. It consisted of examining the graphic display of the data.

CHAPTER VI

RESULTS AND DISCUSSION (PART I)

Table 6-1 summarizes means and standard deviations for stutterers and non-stutterers for the following 4 personality tests consisting of 12 traits in all .

1. Eysenck Personality Inventory
2. Self-confidence Inventory
3. Revised Willoughby Questionnaire for Self-administration
4. Surface Trait Inventory

There were no significant differences between stutterers and non-stutterers on Extroversion scale of Eysenck Personality Inventory ; Activity and Psychosomatic Disorders traits of Surface Trait Inventory. The critical ratios (C.Rs.) for these scales were 0.79, 0.90 and 1.38 respectively. There were significant differences between stutterers and non-stutterers on other 9 scales, namely, Neuroticism (E.P.I.), Self-confidence (S.C.I.), Social Anxiety (WPG-R); Cyclothymia, Depression Tendencies, Emotional Instability, Introversion, Feelings of Inferiority and Interpersonal Communication Disorders (S.T.I.). The critical ratios for these scales were 9.91, 7.76, 8.02, 3.87, 6.09, 4.35, 3.40, 4.37 and 8.23 respectively.

Table 6-1. Means, Standard Deviations(SD) and critical ratios (CR = $D/\sigma D$) for stutterers and non-stutterers on the 4 personality tests.

Test	Scale/Trait	Stutterers		Non-stutterers			P Level Signifi
		Mean	SD	Mean	SD	CR	
Eysenck Personality Inventory	Extroversion	11.34	3.44	10.99	3.02	0.79	NS
	Neuroticism	14.17	5.10	7.93	4.09	9.91	.01
Self - confid- ence Inventory	Self-confidence	33.20	17.87	50.82	15.48	7.76	.01
WPS-R	Social Anxiety	42.21	18.99	24.62	12.29	8.02	.01
	Activity*	22.72	5.12	21.98	4.13	0.90	NS
	Cyclothymia*	20.42	4.82	17.27	4.79	3.87	.01
	Depression Tendencies	16.46	6.29	11.59	5.43	6.09	.01
	Emotional Instability*	17.16	6.92	12.31	5.74	4.35	.01
	Introversion*	18.25	6.43	14.73	5.33	3.40	.01
	Feelings of Inferiority*	17.86	8.02	12.32	6.08	4.37	.01
Surface Trait Invent- ory	Psychosomatic Disorders *	7.22	5.63	5.90	5.63	1.38	NS
	Interpersonal Communication Disorders*	18.03	7.43	8.27	5.97	8.23	.01

* Indicates that the data was obtained from 50 stutterers only.
NS= Not significant.

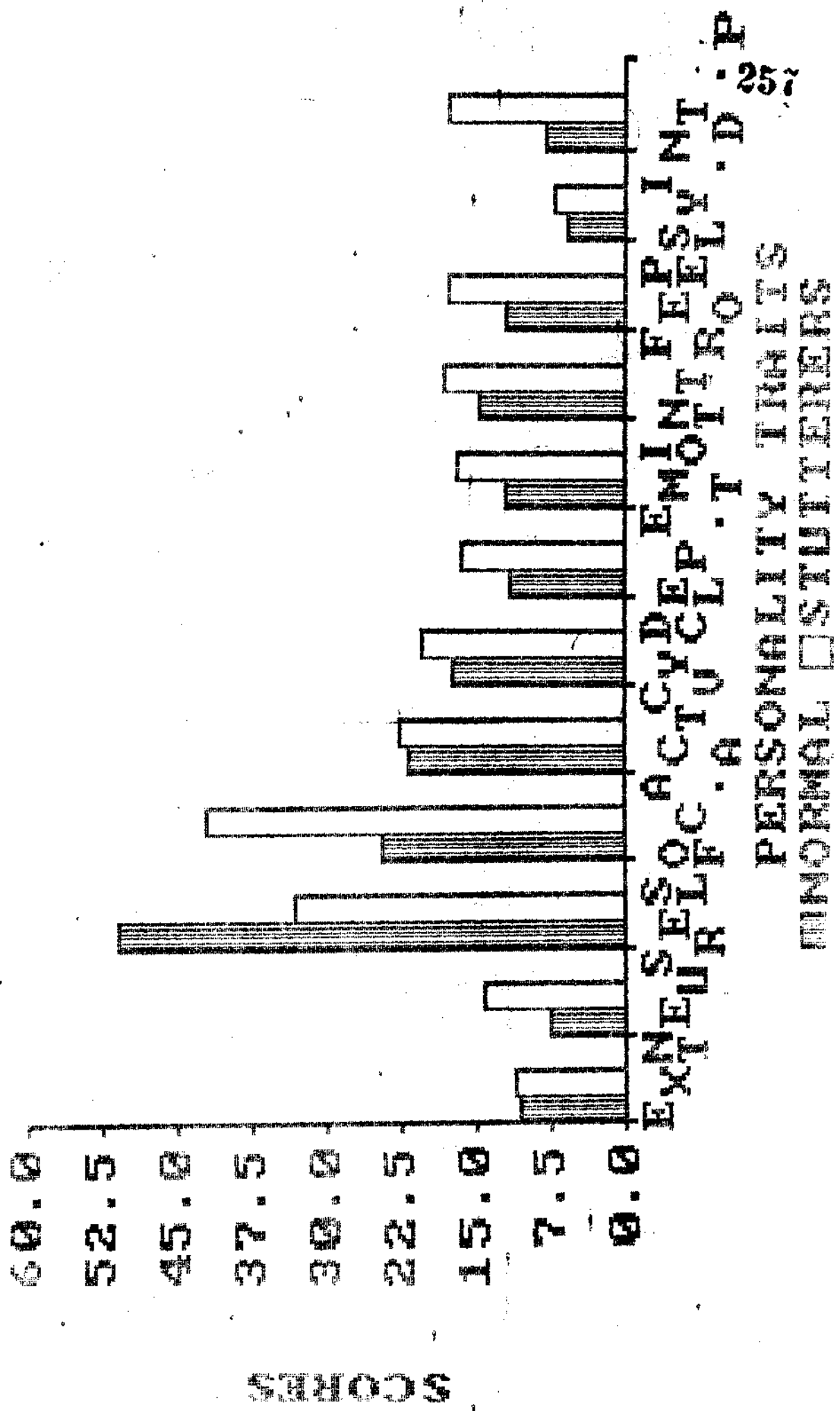
Figure 6-0 shows the mean scores of normals and stutters on 12 personality traits. Normals had lower scores than stutters on all traits except Self-confidence trait.

The Extroversion scale of the Eysenck Personality Inventory (E.P.I.) did not differentiate stutters as a group from non-stutters. Though stutters obtained slightly higher mean scores than non-stutters, when the scores were subjected to the statistical T-test, they did not differ on this dimension significantly. Stutters did not obtain scores as low as those reported for them from other clinical studies. Compare, for example, the stutters* mean score of 11.34 with a mean of 9.60 (Bharath Raj and Pranesha Rao, 1970), 9.63 for stutters (Hegde, 1972). However, the mean score of 11.34 is very close to the mean of 11.90 as reported by Guitar (1976) and further the results are in agreement with the study conducted by Gudi et al., (1986) on 75 stutters and equal number of normals. Therefore, no conclusions can be drawn regarding the position of stutters on the Extroversion trait of E.P.I.

Analysis of the mean score of the two groups on Neuroticism Scale revealed a critical ratio of 9.91, which is highly significant at .01 level indicating that stutters have greater tendencies towards neuroticism. Stutters' mean score is about 6 points higher than the normals indicating them to be highly neurotic (Table 6 - 1),

Figure 6-0 Mean Scores of Normals and Stutterers on 12 Personality Traits.

PERSONALITY TRAITS NORMALS STUTTERS



Results of the present investigation are in agreement with the studies undertaken by Bharath Raj and Pranesha Rao (1970), Hegde (1972), Guitar (1976) and Harpreet Singh (1986).

The stutterers' score of 14.17 in the present study is very close to that of mixed neurotic group. The score for the mixed neurotic group being 14.41. Therefore, stutterers can be said to have definite neurotic tendencies.

Boland (1953) reported that degree of neuroticism as measured by Neuroticism Index failed to differentiate stutterers from non-stutterers. Gudi and Kumar (1986) also did not find any significant differences between the scores, in either, the experimental or control group, on neuroticism.

On Self-confidence Inventory, the mean score of the non-stutterers differed significantly from the stutterers at .01 level. Normals scored almost two times greater than the stutterers. This indicates that stutterers are definitely low in Self-confidence. These findings support the results reported by other investigators (Brown and Hull, 1942* Anderson, 1967; and Sermas and Cox, 1982).

The mean score for non-stutterers was 24.62 (S.D. = 12.29), whereas for stutterers it was 42.21 (S.D. = 18.99) on Revised Willoughby Questionnaire For Self-Administration (WPS-R) . The mean scores and T-test values obtained by non-stutterers were consistent with those reported by other investigators for non-clinical populations, Though the mean score of 24.62 is somewhat lower, it compares favourably with the mean of 28.9 reported by Willoughby (1934), the mean of 31 reported by Hestand, Howard and Gregory (1971), and the mean of 29.1 reported by Greiner et al,(1985) for a sample of college students.

Only 8 (7%) non-stutterers scored over 40, 58 (56.86%) stutterers obtained scores exceeding 40. These results are similar to those obtained by Greiner et al., (1985). They reported that 6 non-stutterers (15%) scored over 40, 22(54%) stutterers received scores exceeding 40. These findings are further substantiated by the study of Turner et al.,(1980) with adult male neurotics; approximately 64% of their sample obtained scores exceeding 40.

Although stutterers scored significantly higher than non-stutterers, they did not obtain mean scores as high as those reported for individuals from other clinical

populations. It becomes evident when we compare the stutterers' mean score of 41.5 with a mean of 50 for neurotic males (Wolpe, 1958) and 48.3 for low assertive psychiatric patients (Eisler, Miller and Hersen, 1973) and 46.49 for individuals with psychoneurotic complaints (Turner et al.,1980).

In the current study, stutterers did score significantly higher than the non-stutterers on a test that has been demonstrated to measure " hypersensitivity to interpersonal stress " (Turner et al.,1980) or neuroticism in social situations (Wolpe, 1958, 1982). Turner et al.,(1980) defined the above dimension as " ... an inability to establish effective contact with the social environment because of over-whelming anxiety."

Turner et al.,(1980) isolated three factors in their analysis of the data obtained from psychoneurotic adults* Hypersensitivity, Labile Affect, and Fear of Criticism. Greiner et al.(1985) reported three separate and reliable dimensions which were labelled : Social Isolation, Social Confidence and Social Sensitivity and identified three types of anxiety that has been linked to stuttering : general anxiety, speech situation anxiety, and word specific anxiety. Further, they

conceptualised differences in WPS-R performance as points on continuum, although many stutterers and non-stutterers obtained extremely high scores ; scores as high as those obtained by Turner et al.'s subjects.

Jenssen and Kraaimat (1980) suggest that the influence of general anxiety may be restricted to stutterers whose speech is excessively fast and repetitive and to those whose speech is dominated by excessively slow repetitions. Hence, there will be some stutterers for whom anxiety is not a contributing factor in their dysfluency but for others all the three types of anxiety may be responsible.

The mean score of the stutterers and non-stutterers did not differ significantly on two scales of S.T.I., Activity and Psychosomatic Disorders. This suggests that there is no difference between the activity level of the two groups and they are equally prone to psychosomatic disorders. There is a statistically significant difference at .01 level between the mean score of stutterers and non-stutterers on the Cyclothymia Trait of S.T.I. The stutterers scored three points higher than the normals, but were still within the normal range, as seen on the Person-Scan interpretation Profile. The

higher score of the stutterers on Cyclothymia Scale can be interpreted as their having more disturbance of the emotional mood towards extreme depression.

Mean score of the stutterers differs significantly from that of normals beyond 0.001 level on Depressive Tendencies Trait of S.T.I, This suggests that stutterers have more tendency towards depression than normals. The results of this study are supported by Richardson (1944b) She reported that her stutterers were more depressed and less happy-go-lucky type. Walnut (1954) stated that stutterers had significantly poorer scores than the controls on the Depression Scale of MMPI.

Statistical significant differences were found between non-stuttering controls and stutterers beyond 0,001 level on Emotional Instability Trait of S,T,I, When stutterers score of 24,08 (M + S.D,) is compared with 20,69 (M + S.D,) , the score of standardization group, stutterers score about 4 points higher than the norms. From this, it follows that stutterers have a higher degree of emotional instability, which should also be the focus of treatment.

Sergeant (1962) stated that stutterers had poorer social adjustment, less self-confidence and greater

emotional instability than the normals on the Bell and Bemreuber Inventories. Wingate (1962) tested stutterers on Edward Personal Preference Schedule and noted mild to moderate maladjustment in the area of social relationship.

There are other studies, which do not support the above point of view . Anderson (1967) using Guilford-Zimmerman Temperament Survey and Gordon Personal Profile, reported that stutterers did not differ from controls in general emotional instability. Prins (1972) said that stutterers appeared to have better adjustment on the whole, than the control group which consisted of subjects with other disorders of speech, on California Test of Personality.

Stutterers' mean score differed significantly from that of control group beyond 0.01 level on Introversion Trait of S.T.I. Stutterers scored 4 points higher than the test norms and their scores were not within normal limits.

These findings are at variance with those obtained from the Extroversion Scale of Eysenck Personality Inventory. Normally both results should have been identical. The apparent contradiction could be due to:

1. In the Extroversion Scale of E.P.I. , individuals inclination or tendency towards a particular behaviour is measured whereas in the Introversion Scale of S.T.I. actual behaviour patterns that are manifested, are measured.
2. The items of Extroversion Scale of E.P.I, have opposite directionality in order to avoid desirability response set, whereas, the items of Introversion Scale of S.T.I, are straight forward.
3. In the Eysenck Personality Inventory, the individual is forced to choose 'Yes' or 'No' response; in the S.T.I., three choices 'Yes', 'No' or '?' are provided.
4. The understanding of the items of E.P.I, to the Indian population may be another factor.
5. The cultural differences may be in operation, as few of the items of E.P.I. are not relevant to the Indian culture.

To find out the nature of the differences, the scores of the stutterers and non-stutterers on Extroversion Scale of E.P.I. and Introversion scale of S.T.I, were converted to percentages to facilitate easy comparison between scales and groups. These percentages were added to obtain means and standard deviations. There were no significant differences between stutterers

and non-stutterers on Extroversion Scale of E.P.I, but significant differences were found on Introversion Scale of S.T.I, , as expected. When normals were compared on the Extroversion and Introversion Scales, there were no significant differences, however, stutterers did differ significantly. From this it can be said that stutterers and non-stutterers responded to the items of these two tests in a different fashion.

Stutterers scored significantly higher than the non-stutterers on Feelings of Inferiority Trait of S.T.I. They were found to be in the undesirable zone on the Person-Scan Interpretation Profile. This clearly suggests that stutterers have feelings of inferiority. Sermas and Cox (1982) reported similar findings using SCL -90 - R (Revised Hopkins Symptom Check List).

On Interpersonal Communication Disorders Trait of S.T.I,, the difference in the mean score of stutterers and non-stutterers was 9.76, while the standard error of difference between the two means was 1.18. The C.R. value of 8.23 indicates that difference is significant beyond 0.001 level. Stutterers' score on Person-Scan Interpretation Profile was observed to lie in the undesirable zone. This suggests that stutterers had more interpersonal communication difficulties in comparison to normals.

Stutterers and non-stutterers were administered Raven's Progressive Matrices Set I and their scores obtained. Mean scores for non-stutterers (Mean = 9.29, S.D. = 1.65) and stutterers (Mean = 9.38, S.D. = 1.56) did not differ significantly as C.R. value (0.424) did not reach any level of significance. When the normals and stutterers' scores were divided into two groups : those scoring in the range of 6-10, and those scoring in the range of 10-12; it was found that more normals scored in the range of 6-10 (54.78% as compared to 50.98% stutterers), but more stutterers scored in the range of 10-12 (49.08% as compared to 46.22% normals). However, again the differences in these proportions were not statistically significant.

Table 6-2. Means, Standard Deviations (SD) and critical ratio for normals and stutterers on the Raven's Progressive Matrices Set I.

Test	Group	N	Mean	SD	CR
Raven's Progressive Matrices Set I	Normals	119	9.29	1.65	0.42
	Stutterers	102	9.38	1.56	

Stutterers were not required to give any oral responses, they could write themselves or just point to the examiner. It is reasonable to assume, no specific speech anxiety was involved in the test situation. Hence, it is apparent why there was no significant difference between stutterers and non-stutterers on R.P.M, Set I.

Fruewald (1936) reported that incoming stutterers at Ohio State University ranked definitely higher than the general freshman college population. Travis (1931) said that, " Stutterers in the University of Iowa have been distinctly superior to average collage student in his intelligence", but attributed this to a selective factor which may keep the less intelligent stutterer from attempting college.

The present investigation is in agreement with Johnson (1946) that there are no demonstrable differences between two groups in terms of intelligence, Although it is often asserted or assumed that stutterers are superior in intelligence, assertions in the opposite directions have not been lacking (e.g., Van Riper, 1963) .

Sheehan (1970) stated :

Thus assertions that stuttering appears more frequently among the retarded , or relates to either and of the distribution of intelligence, appear totally unfounded. Again the results on the intelligence studies is that stutterers are like other people except for the specific problem called stuttering.

The Chi square values for every item of each personality test, between stuttering and non-stuttering subjects have been calculated and results are discussed below.

The Table 6-3 shows Chi square values for the E scale items of the Eysenck Personality Inventory. There are significant differences between stutterers and non-stutterers responses to the Extroversion Scale on 13 items. For the 8 items differences were significant at or beyond 0.001 level of probability, for one at 0.01 level and for the remaining four at 0.05. Despite this fact, when the mean scores of the two groups were subjected to the statistical T-test, they did not differ on this dimension. The highest Chi square value of 138.09 was obtained for the item : Do you like the kind of work that you need to pay close attention to ?

Table 6-3. Chi square values (X) for E scale items
of the Eysenck Personality Inventory

<u>Items</u>	<u>Chi squares</u> <u>values</u>	
Do you often long for excitement?	11.50	***
Are you usually carefree ?	0.028	
Do you stop and think things over before doing anything ?	108.045	***
Do you generally do and say things quickly without stopping to think ?	14.62	***
Would you do almost anything for a dare ?	0.126	
Do you often do things on the spur of the moment ?	1.76	
Generally do you prefer reading to meeting people ?	2.75	
Do you like going out a lot ?	2.70	
Do you prefer to have few but special friends ?	78.20	***
When people shout at you, do you shout back ?	17.15	***
Can you usually let yourself go and enjoy ?	0.084	
Do other people think of you as being very lively ?	0.018	
Are you mostly quiet when you are with other people ?	11.86	***
If there is something you want to know about would you rather look it up in a book, than talk to some one about it ?	22.03	***

Contd.....

Do you like the kind of work that you need to pay close attention to ?	138.09	***
Do you hate being with a crowd who play jokes on one another ?		1.12
Do you like doing things in which you have to act quickly ?	4.26	*
Are you slow and unhurried in the way you move ?		5.91 *
Do you like talking to people so much that you never miss a chance of talking to a stranger ?		0.39
Would you be very unhappy if you could not see lots of people most of the time?		2.284
Would you say that you were fairly self--confident?	6.35	*
Do you find it really hard to enjoy yourself at a lively party ?		5.28 *
Can you easily get some life into a rather dull party ?		9.47 **
Do you like playing pranks on others ?	2.31	

* p > 0.05

** p > 0.01

*** p > 0,001

Both the groups were usually carefree, majority of the stutterers longed for excitement but normals did not. Normals stopped and thought about the things and did not do or say them quickly. Stutterers were exactly the opposite.

Stutterers and non-stutterers did not believe in doing things just for a dare or at the spur of the moment. Normals preferred to have few but special friends, stutterers were not particular about their choice. Both the groups liked reading as well as meeting people and going out a lot. Stutterers reported, their feelings were easily hurt and they will shout back if people shouted them. They found themselves highly tensed, though both the groups had a difficulty in relaxing. This particular difficulty of stutterers should be dealt with by giving relaxation training to them,

stutterers as well as non-stutterers evaluated themselves being very lively, Stutterers said that they were usually quiet when they were with other people. This indicates that stutterers have a difficulty in establishing a meaningful relationship with people due to the fear of speaking. Adequate training in the social skills along with speech therapy is needed to make stutterers communicate effectively.

Stutterers did not like the work that required them to pay close attention to . . . They said they will rather talk to someone than look it up in a book if they wanted to know something. It appears as if stutterers were suffering from the fear of being alone. Both the groups responded in the same fashion when asked if they hate being with the crowd who play jokes on one another. Normal persons liked action oriented activities. Stutterers were slow and unhurried in the way they moved. Non-stutterers and stutterers said that they will not be unhappy if they could not see lot of people or missed an opportunity to talk to them.

Stutterers did not perceive themselves to be self-confident. They did not find it hard to enjoy themselves at a lively party but found it difficult to get some life into a rather dull party. This is probably due to the fact that to " get some life into a rather dull party" involves many communicative acts which a stutterer is not certain he will be capable of doing. Sheehan (1970) has rightly considered stuttering as "a disorder of the social presentation of the self". It may be concluded :

1. Stutterers said and did things in a haste without Stopping and thinking over them before doing.

2. Stutterers have some fear of being alone.
3. Stutterers found themselves highly tensed and unable to relax.
4. Stutterers were quiet when they were with other people.
5. Stutterers lacked in many social skills which normals usually possess.

Statistically significant differences were found on the 18 items of the Neuroticism scale, in the way, stutterers and non-stutterers responded to those items. 16 items were found to be significant beyond 0.001 level of probability while two items were significant at 0.05. Table 6-4 depicts the Chi square values for the N scale items of Eysenck Personality Inventory.

Most of the stutterers and non-stutterers said that they often needed understanding friends to cheer them up. Though the stutterers had more cyclic variations than the normals in the mood, but it were normals who just felt miserable without any reason. The cyclic variations in the mood of the stutterers could possibly be related to similar variations in fluency. Stutterers found it very hard to take 'no' for an answer, they probably perceived it as a threat to their self-image and related it to their self-worth.

Table 6-4. Chi square values (χ^2) for N scale Items
of the Eysenck Personality Inventory

Items	Chi square values
Do you often need understanding friends to cheer you up ?	0.012
Do you find it very hard to take no for an answer ?	25.89 ***
Does your mood often go up and down?	12.05 ***
Do you ever feel "Just miserable" for no good reason ?	21.69 ***
Do you feel suddenly shy when you want to talk to an attractive stranger ?	37.91 ***
Do you often worry about things you should not have done or said ?	12.74 ***
Are your feelings rather easily hurt ?	29.23 ***
Are you sometimes bubbling over with energy and sometimes very sluggish ?	15.26 ***
Do you day dream a lot ?	14.57 ***
Are you often troubled about feelings of guilt ?	33.86 **•
Would you call yourself tense or "highlystrung" ?	19.11 ***
After you have done something important, do you often come away feeling you could have done better ?	2.44
Do ideas run through your head so that you cannot sleep ?	1.93
Do you get palpitations or thumping in your heart ?	42.28 ***

Contd....

Do you get attacks of shaking or trembling ?		19.54	***
Are you an Irritable person ?	6.66		**
Do you worry about awful things that might happen ?		21.39	***
Do you have many nightmares ?		3.65	
Are you troubled by aches and pains ?		0.065	
Would you call yourself a nervous person ?		46.94	***
Are you easily hurt Whan people find fault with you or your work ?		33.25	***
Are you troubled with feelings of inferiority ?		65*46	***
Do you worry about your health?		8.12	**
Do you suffer from sleeplessness ?		0.15	

* P > 0.05

** P > 0.01

*** P > 0.001

Stutterers felt shy when they wanted to talk to an attractive stranger. They were also worried about the things they should not have done or said. This indicates that they are under the control of the past, which can hardly be changed. Their feelings were easily hurt, because they felt that locus of their control is outside them. This needs "Cognitive therapy" to correct their attitudes and the perception of the reality of the world around them. More stutterers than non-stutterers indulged in frequent day-dreaming. Some times they felt very energetic and at other times, sluggish.

Stutterers were often troubled with feelings of guilt, probably as the feelings of guilt must have been used by various 'significant others' in their environment to model their behaviour and to get them to do things which they desist and thus victimizing them. Stutterers were found to be highly tensed, perhaps gearing them to fight something which might not be existing or just fighting straw men and thus wasting a lot of mental energy. Such cases need treatment which include assertive training and relaxation therapy as its components.

Stutterers did not have any sleep disturbances but they reported palpitation and thumping in the heart and few also reported attacks of shaking. Stutterers thought of themselves as irritable persons and worried about the awful things that might happen. They had frequent nightmares. Stutterers evaluated themselves as nervous persons. Their feelings were easily hurt when someone found fault with their work. They were troubled with feelings of inferiority and frequently worried about their health.

The following inferences can be drawn about neurotic tendencies in stutterers :

1. Stutterers generally have cyclic variations in the mood.
2. Stutterers are shy and self-conscious.
3. Stutterers are usually disturbed by feelings of guilt.
4. stutterers report palpitations and thumping in the heart and attacks of shaking.
3. Stutterers were sensitive to criticism and evaluated themselves as nervous or irritable persons.

The Lie Scale scores of E.P.I, were not subjected to Chi square analysis.

Table 6-5 lists the Chi square value for each item on the Self-confidence Inventory. On analysis, it was found that 86 items out of 100 test items have the power to discriminate between the responses of stutterers and non-stutterers, 69 items were significant beyond 0,001 level of probability, while 12 beyond 0.01 level and remaining 5 beyond 0,05 level.

Stutterers find it difficult to make new friends and feel uncomfortable in a party. They do not enjoy mixing with people but are capable of shifting roles between a speaker and a listener as normals do. Normals were usually able to find a ready answer for the remarks made to them by others. Both the groups tended to pity or blame themselves when things went wrong. Stutterers felt insecure within themselves and tended to avoid meeting people. They found it difficult to speak in the public and do their best when others watched them. Normals were quick to recover from social blunders and did not care what others thought of them. Stutterers stayed in the background in the social gatherings and had great difficulty in talking to most people.

Stutterers felt embarrassed to enter into an assembly when most people were seated, fearing the

Table 6-5. Chi square values $\{ X^2 \}$ for items of the
Self-confidence Inventory

Items	Chi square values
1. It is rather difficult for me to make new friends,	13.98***
2. I can be natural while at a party.	24.48***
3. I am never at conflict with myself.	0.19
4. I enjoy mixing with people.	36.46***
5. In social conversation I am usually a listener than a talker.	3.34
6. I can usually find a ready answer for remarks made to me.	25.88***
7. When things go wrong I pity or blame myself.	0.037
8. I have a horror of failing in anything I want to accomplish.	9.09**
9. I often cross the street to avoid meeting some people known to me.	16.81***
10. I find it very difficult to speak in public.	46.40***
11. I feel insecure within myself.	35.02***
12. I find it hard to do my best when people are watching.	15.41***
13. I can recover easily and quickly from social blunders.	30.48***
14. I do not care much for what others think of me.	28.55**-*
15. I have difficulty in talking to most people,	52.76***

Contd., ,

16.	I stay in the background in social gatherings.	5.15*
17.	I feel embarrassed to enter into assembly When all are already seated.	23.04***
18.	I have difficulty in saying the right thing at the right time.	34.06***
19.	I tend to worry over possible troubles.	7.37**
20.	I frequently feel thwarted because I am unable to do as I desire.	8.20**
21.	I think of myself as a successful person.	2.36
22.	I am much affected by the praise or blame of many people.	14.45***
23.	My feeling are rather easily hurt.	29.53***
24.	I can face a difficult situation without worry.	2.40
25.	I am hesitant about forming decisions.	13.25***
26.	I feel bored much of the time.	16.75***
27.	I can tackle new situations with a reasonable degree of assurance.	69.87***
28.	I am often unable to decide until it is too late for action.	9.97**
29.	I tend to be quick and certain in my actions.	79.21***
30.	I always feel that I can achieve the things I wish.	63.70***
31.	I feel no obstacle can stop me from achieving my final goal.	16.19***
32.	I am generally confident of my own ability.	102.90***
33.	I often feel that in life's competition I am generally the loser.	15.64***

Contd....

34.	I frequently feel unworthy.	8.73**
35.	I worry over humiliating situation* more than most persons.	29.23***
36.	I feel physically inferior of my friends.	1.74
37.	I find it hard to continue work when I do not get enough encouragement.	0.81
38.	I am bothered by inferiority feelings.	33,24***
39.	My people believe that I am as much a success as I could be.	19.01***
40.	I can play my best in a game or contest against an opponent who is much superior to me.	48.91***
41.	I am always ready to decide what my next step should be.	69.92***
42.	I can adjust readily to new situations.	69.98***
43.	I often feel rather awkward.	22.96***
44.	I am afraid that other people will dislike me.	22.17***
45.	My friends have made better life adjustment than myself.	3.04
46.	I am happy-go-lucky person.	27.09***
47.	I can relax myself easily.	38.07***
48.	I blush very often.	16.80***
49.	When upset emotionally, I take much time to recover,	32.60***
50.	I day dream very often.	6.49
51.	I am readily moved to tears.	15.62***
52.	When a critical situation is past, I often think what I should have done but didn't.	2.19

Contd....

53.	I often feel that my movements are clumsy.	11,48***
54.	I don't have initiative.	11.49***
55.	I usually work things out for myself rather than get someone to show me.	55.17***
56.	I am a dominant person*	0.09
57.	I am usually discouraged when the opinions of others differ from my own.	20.98***
58.	I am often confused.	16.19***
59.	People frequently blame me for things unjustly.	7.10**
60.	I feel that my parents are disappointed in me.	9.65**
61.	I envy the happiness that others seem to enjoy.	8.32**
62.	Criticism disturbs me greatly.	5.23*
63.	I get discouraged easily.	21.80***
64.	I can get a job any day.	25.09***
65.	I seem to make friends about as quickly as others do.	3.44
66.	I shrink from facing crisis or difficulty.	14.67***
67.	If given a chance I could do something that would be of great benefit to the world.	57.29***
68.	If given a chance I would make a good leader of people.	13.96***
69.	I have several times given up doing a thing because I thought too little of my ability.	21.73***
70.	No one seems to understand me.	1.17
71.	I need someone to push me through the things.	9.61**

Contd....

72.	Life is a strain for me much of the time.	16.98***
73.	I have had blank spells in Which my activities were interrupted and did not know What was going around mm.	8.75**
74.	I am worried about sex matters*	10.11**
75.	I have periods of such great restlessness that I cannot sit long in a chair.	9.97**
76.	I refuse to play some games because I am not good at them.	0.72
77.	I find it hard to keep my mind on a task or job.	14.57***
78.	I seem to be about as smart as most others around mm.	35.37***
79.	I usually feel well and strong.	61.05***
80.	I think too much over everything.	12.52***
81.	My daily life is full of things that keep me interested.	50.95***
82.	I am certainly lacking in self-confidence.	30.04***
83.	Almost always I find myself worrying about something or the other.	15.18***
84.	I have often lost good chances because I would not make up my mind soon enough.	18.70***
85.	I spend much of the time worrying over the future.	20.56***
86.	I do not tire quickly.	26.10***
87.	I think I have an attractive personality.	13.61***
88.	I don't think too long over my problems.	0.876
89.	I have feeling of helplessness.	7.97*
90.	I cannot express my emotions freely.	26.04*

Contd....

91.	When my friends criticise me I take it well.	18.16***
92.	I am a responsible person.	119.99***
93.	Generally I am quite sure of myself.	102.69***
94.	Usually I am dissatisfied with myself.	24.28***
95.	I have the feeling that I am just not facing things.	7.40*
96.	I have enough faith in myself.	87.10***
97.	I am often in low spirits.	17.91***
98.	I often feel helpless.	20.56***
99.	I am often disorganized,	18.16***
100.	I can usually make up my mind and stick to it. 58.88***	

* p > 0.05

** p > 0.01

*** p > 0.001

disapproval of others and said that they have difficulty in saying the right thing at right time. Stutterers tended to worry more over possible misfortunes and frequently felt thwarted. This means that they were not able to utilize their " present moment "creatively and have low level of frustration tolerance. Their feelings were easily hurt and were much affected by the praise or blame of others. Hence stutterers appear to be socially sensitive and give more importance to the evaluation of themselves by others.

Stutterers were hesitant about forming decisions and felt bored most of the time. Majority of the persons in both the groups stated that they can face a difficult situation without worry. Normals were confident of tackling new situations and felt that they can achieve the things they wished. Stutterers were unable to decide till it became too late for an action and they were not quick and certain in their actions. Normals felt that nothing can stop them from achieving their goals* while the stutterers responded in an opposite manner. More stutterers viewed themselves as losers in life's competition and were not confident of their abilities. They worried over humiliating situations and frequently felt unworthy.

Both stutterers and non-stutterers stated that they needed enough encouragement to work hard, none of them thought themselves to be physically inferior. Stutterers complained more about inferiority feelings and thought that people believed that they are not as successful as they could be. Normals believed that they can play their best in a game or contest against an opponent who is much superior to them. They could readily adjust to new situations and decide what their next step should be. Stutterers more often felt awkward and were afraid that people will dislike them. None of the individuals in any group said that their friends have made better life adjustments than them. Stutterers blushed often, found it difficult to relax and did not consider themselves as happy-go-lucky persons. They were readily moved to tears, took more time to recover from emotional upsets and frequently day dreamed.

Stutterers lacked initiative and felt that their movements were clumsy. Normals preferred to work things for themselves and were not discouraged when others differed from them. Stutterers stated that people blamed them unjustly and they were often confused. They felt that their parents were disappointed with them.

Stutterers envied the happiness that others seem to enjoy. They were more sensitive to criticism and got discouraged easily. Stutterers reported shrinking from facing crisis or difficulty, and did not have any confidence in getting a job. More normals believed, given a chance they could become a leader or do something that would be of great benefit to the world, but stutterers responded in negative.

Stutterers on several occasions have given up doing a thing because they did not think much of their ability and needed someone to push them through things. Life is a strain for the stutterers.

Stutterers had concentration difficulties, periods of restlessness and worried about sex matters. They did not feel well and strong or found themselves as smart as others, stutterers reported thinking too much over everything and did not find their daily life interesting. They spent most of their time worrying over something or future and were found to be lacking in self-confidence.

Stutterers thought that they lost good chances because they were not able to make up their mind soon

enough. Stutterers were unable to express their emotions well, had feelings of helplessness and got tired quickly. They were unable to take criticism constructively, did not believe that they were responsible persons or had an attractive personality. They were quite uncertain and dissatisfied with themselves. They did not have enough faith to face things and were often in low spirits. They were unable to make up their mind and often felt helpless and discouraged.

The following conclusions can be drawn on the basis of the analysis of the results of Self-confidence Inventory :

1. Stutterers faced considerable difficulty in the social situations due to their speech problem.
2. Stutterers were more sensitive socially and tended to worry about the future.
3. Stutterers were hesitant in forming decisions and not confident of handling new situations.
4. Stutterers had inferiority feelings, blushed very often and found it difficult to relax.
5. Stutterers were lacking in initiative and often were victimized by others in a number of ways.
6. Stutterers had concentration difficulties and thought of life as a strain,
7. Stutterers had feelings of helplessness, were often in low spirits and got tired quickly.

Table 6-5 shows Chi square values for Revised Willoughby Questionnaire for Self-Administration. Chi square test revealed significant differences in the responses of stutterers and non-stutterers to 19 items of the Revised Willoughby Questionnaire For Self-Administration (WPS-R). Differences were significant beyond 0,001, 0.01 , and 0*05 level of probability for 12 or 63.15%, 5 or 20.8396 and 2 or 8.33% of the items respectively.

The Revised Willoughby Questionnaire For Self-Administration clearly differentiated stutterers as a group from non-stutterers. On the average, stutterers not only obtained higher full scores but also differed significantly from non-stutterers on the 19 test items. Greiner et al.,(1985) reported that stutterers had a higher mean score for each of the 25 items as compared to mean score for the non-stutterers.

Stutterers kept in the background on social occasions and felt uncomfortable meeting new people. They were afraid of falling from a high place (from which there was no real danger of falling) and scared at the sight of blood, injuries and destructions (even though there was no danger to them) .

Table 6-6. Chi square values for Revised Willoughby
Questionnaire for Self-Administration

Item No.	Statement	Chi square values
1.	Do you get anxious if you have to speak or perform in any way in front of a group of strangers ?	69.79***
2.	Do you worry if you make a fool of yourself, or feel you have been made to look foolish ?	5.59
3.	Are you afraid of falling when you are on a high place from which there is no real danger of falling- for example, looking down from a balcony on the tenth floor ?	10.50*
4.	Are you easily hurt by what other people do or may to you ?	31.85***
5.	Do you keep in the background on social occasions ?	6.75
6.	Do you have changes of mood that you cannot explain ?	23.23***
7.	Do you feel uncomfortable when you meet new people ?	46.07***
8.	Do you day-dream frequently, i.e. indulge in fantasies not involving concrete situations ?	15.90**
9.	Do you get discouraged easily, e.g. by failure or criticism ?	30.06***
10.	Do you say things in haste and then regret them ?	26.16***
11.	Are you ever disturbed by the mere presence of other people ?	13.59**
12.	Do you cry easily ?	9.37

Contd....

13.	Does it bother you to have people watch you work even when you do it well ?	15.48**
14.	Does criticism hurt you badly ?	31.35***
15.	At a reception or tea do you go out of your way to avoid meeting the important person present ?	26.61***
16.	Do you cross the street to avoid meeting some one ?	18.07**
17.	Do you often feel just miserable ?	28.98***
18.	Do you hesitate to volunteer in a discussion or debate with a group of people whom you know more or less ?	30.17***
19.	Do you have a sense of isolation, either when alone or among people ?	22.04***
20.	Are you self-conscious before 'superiors' (teachers, employers, authorities) ?	3.84
21.	Do you lack confidence in your general ability to do things and to cope with situations ?	22.97***
22.	Are you self-conscious about your appearance even when you are well-dressed and groomed ?	5.54
23.	Are you scared at the sight of blood, injuries and destruction even though there is no danger to you ?	9.15
24.	Do you feel that other people are better than you ?	14.77**
25.	Is it hard for you to make up your mind?	10.78*

* $p > 0.5$ ** $p > 0.01$ *** $p > 0.001$ $df = 4$

Stutterers were discouraged easily by failure or criticism and said that criticism hurts them badly. They were bothered if people watched them while they were working and disturbed by the mere presence of other people. They went out of their way to avoid meeting the important person present.

Stutterers cried easily, often felt just miserable and had a sense of isolation even among people or otherwise. They hesitated to volunteer in a discussion or in a debate with a group of people whom they knew more or less and lacked confidence in their general ability to do things and to cope with situations.

The responses of stutterers and non-stutterers on each item were compared on the 8 scales of the Surface Trait Inventory. The results are analysed and discussed here.

On 6 items of the Surface Trait A (Activity) (Table 6-7) Chi square values were significant at 0.001 level and 0.01 level for each of the 3 items. Normals and stutterers both were equally active and kept up their appointments with others. Normals reported that they worked faster and did not get behind in their work while this was not true for stutterers. Both the

Table 6-7, Chi square values for Surface Trait A of the Surface Trait Inventory

Item No.	Statement	Chi square values
1.	I am active most of the time.	0.688
2.	I keep up my appointments with others mostly.	3.31
3.	Mostly I do not get behind in my work*	7.18**
4.	I work faster than most people.	8.06**
5.	I try hard to finish a work to my entire satisfaction.	3.56
6.	I do not give up a problem because it is difficult.	1.76
7.	I can work inspite of physical discomfort.	8.23**
8.	When I do some work, I put my heart and soul into it.	0+73
9.	I feel bored when I do not have much work to do.	0.18
10.	I would like to be busy with some work all the time.	10.83***
11.	I generally work with full energy.	2.06
12.	I can concentrate on a problem for a long time.	17.32**(df=2)
13.	I like work requiring patience and carefulness.	13.75***
14.	I am regular and punctual in my work.	0.064
15.	I can work for long hours without feeling tired or bored.	1.29

* $p > 0,05$ ** $p > 0.01$ *** $p > 0.001$ wherever
not specified $df = 1$

groups said they did not give up a difficult problem and finished the work up to their satisfaction, More stutterers indicated that they could work in spite of physical discomfort*

Normals and stutterers stated that they put their heart and soul in the work and felt bored when there was not much work. More stutterers liked to be busy with some work all the time but both the groups stated that they generally worked with full energy.

Normals reported that they could concentrate on a problem for a longer time and liked work requiring patience but stutterers did not. Normals as well as stutterers said that they were regular and punctual in their work and could work for long hours without feeling tired.

Stutterers differed from non-stutterers in their responses on the 8 items of Surface Trait B (Cyclothymia) (Table 6-8). On 4 items differences were significant beyond 0.05 level, 2 beyond 0.01 level and other 2 beyond 0.001 level.

Table 6-8. Chi square values for Surface Trait B of the Surface Trait Inventory

Item No,	Statement	Chi square value
1.	My interests change rapidly.	19.28***
2.	I let myself go and enjoy fully at a party.	0.018
3.	I am happy most of the time.	5.58*
4.	I often make people laugh.	1*95
5.	At times t become so enthusiastic as to arouse enthusiasm in others.	10.33**
6.	I like work that has lot of excitement.	6.81(c) **
7.	I am often in a hurry,	6.14*
8.	I speak loudly and often gesture with hands.	13.81***
9.	I am quick to say what I feel like saying.	3.01
10.	I am usually carefree and easy going.	0.19
11.	I take an active part in conversations going around me.	2.46
12.	I want to be well dressed and popular.	4.36*
13.	I do not stop to consider the full consequences of my action and remarks on others.	6.22* (df=2)
14.	At times I feel very happy without any reason.	7.57*(df=2)
15.	I can easily make friendship with strangers.	1.05

* $p > 0,05$ ** $p > 0.01$ *** $p > 0.001$ Wherever not specified df =1.C indicates that Yate's correction was applied.

Normals were happy most of the time and their interest did not change rapidly, this was not true for the stutterers. Normals were often not in a hurry. They said they could become so enthusiastic at times as to arouse enthusiasm in others. More stutterers than non-stutterers wanted to be well dressed and popular, and said that they did not stop to consider the full consequences of their actions and remarks on others. Stutterers could be happy without any reason, but normals were unable to do so, stutterers usually spoke loudly and gestured with hands,

Chi square analysis of the items of Surface Trait E { Depression Tendencies } (Table 6-9) yielded a value greater than 0.001, 0.01 and 0.05 confidence level for 5 items, 4 items and one item respectively . There were no significant differences for stutterers and non-stutterers on other items. Stutterers lacked enthusiasm in their work, had inferiority feelings and often thought that they may not be successful in life. They were not confident of their abilities, felt unhappy most of the time and were easily upset by small disappointments.

Stutterers had fears that others may dislike them. This implies the external locus of control in stutterers.

Table 6-9, Chi square values for Surface Trait E of the
Surface Trait Inventory

Item No.	Statement	Chi square values
1.	I feel that I am inferior to others,	42.64***(df=2)
2.	I often think that I may not be successful in life.	18.60***
3.	I do not have much enthusiasm in my work,	8.45**
4.	Sometimes I feel that life is not worth living.	3.23
5.	I do not feel confident of my ability.	14.75***
6.	I worry too much when someone in the family becomes ill.	0.98
7.	I feel unhappy most of the time,	19.33***
8.	I am easily upset by small disappointments.	11.43***
9.	When I see someone sad I also feel sad.	1.32 (df=2)
10.	I feel very unhappy about the mistakes I made in the past.	0.47
11.	I often fear that others may dislike me.	9.21**
12.	I work slowly and leisurely.	0.56
13.	I talk more slowly than most people.	5.10* (df=2)
14.	I am easily moved to tears.	8.96**
15.	I do not get pleasure in things which make others happy.	7.16 **

* $p > 0.05$ ** $p > 0.001$ *** $p > 0.001$ Wherever not specified $df = 1$.

They were easily moved to tears and did not get pleasure in things which make others happy. Most of the stutterers felt that they did not work more slowly and leisurely than other people but reported talking more slowly.

I On the Surface Trait F (Emotional Instability) (Table 6-10) , there were 2.6 and 2 items which were statistically significant beyond 0.001, 0.01 and 0.05 levels of confidence. Stutterers mood often changed without apparent cause and they were quick to lose temper. They took much time to recover from a strong emotion or feeling. Both the groups did not show any disturbed sleep.

Stutterers reported that their feelings were easily hurt by the remarks and action of others. Normals and stutterers both appeared to worry about possible misfortune. More stutterers were afraid to live alone and unable to say anything after they became angry. Stutterers usually gave up their plans once they become discouraged and said that their likes and dislikes changed quickly. Stutterers also thought of themselves as nervous persons.

Table 6-10. Chi' square values for Surface Trait F of the Surface Trait Inventory.

Item No.	Statement	Chi square values
1.	My mood often changes without apparent cause.	5.46*
2.	I am a quick tempered person (i.e. loose temper easily) .	8.65**
3.	I usually take much time to recover from a strong emotion or feeling(like anger, sadness, etc.)•	9.85**
4.	I usually have disturbed sleep.	0.92
5.	I cannot tolerate people who are unreasonable.	0.92
6.	I often wanted to run away from home or from my present circumstances.	19.29***
7.	My feelings are easily hurt by the remarks and action of others.	7.22**
8.	I frequently worry about possible misfortunes.	3.02
9.	I often feel impatient if someone makes me wait.	0
10.	I am afraid to live alone.	9.16**
11.	Sometimes I get so angry that I cannot say anything.	4.66*
12.	I easily become discouraged and give up plans.	6.99**
13.	I feel just miserable and helpless at times.	0.0158
14.	My likes and dislikes change quickly,	7.49**
15.	I am a nervous person.	41.55***

* p > 0.05 ** p > 0.01 *** p > 0.001 df = 1

Responses of the stutterers and non-stutterers to the 8 of the 15 Items of Surface Trait G (Introversion) (Table 6-11) were significantly different from each other. 5 items were significant beyond 0.001 confidence level, 2 beyond 0.01 level and one beyond 0.05 level. Stutterers were hesitant to meet important persons and it was hard for them to make new friends. They were troubled by shyness and frequently enjoyed the evenings alone.

Stutterers found it difficult to speak before an audience and stated that they can usually express themselves better in writing than in speech. They had feelings of loneliness even amidst a group of people. This probably is related to their feelings of inadequacy as a speaker. Stutterers also had concentration difficulties.

Stutterers and non-stutterers differed in a statistically significant way in their responses to the 12 items of Surface Trait H (Feelings of Inferiority) (Table 6-12). Chi square values were significant beyond 0.001; 0.01 and 0.05 levels of confidence for 6, 3 and 3 items.

Table 6-4.1. Chi square values for Surface Trait G of the Surface Trait Inventory

Item No.	Statement	Chi square values
1.	I can live alone far from any one else.	0.21
2.	I hesitate to meet Important persons.	16.32***
3.	It is hard for me to make new friends.	13.08***
4.	I do not tell ray troubles to others.	0.16
5.	I frequently feel self-conscious about my appearance and manner of talking.	0.03
6.	I frequently enjoy the evenings alone.	4.57*
7.	I am troubled by shyness.	7.98**
8.	I can usually express myself better in writing than in speech.	52.47***
9.	I avoid trouble rather than face it.	0.11
10.	I keep myself in the background on social occasions.	0.31
11.	I can concentrate on any problem for a long time.	9.42**
12.	I am often bored with people,	0.66
13.	I like to work alone.	0.90
14.	It is difficult for me to speak before an audience.	22.69***
15.	I feel alone when I am in a group of people.	17.35***

* $p > 0.05$ ** $p > 0.01$ *** $p > 0.001$ $df=1$

Table 6-12. Chi square values for Surface Trait H of the Surface Trait Inventory.

Item No.	Statement	Chi square values
1.	I feel that I have little to be proud of.	1.29
2.	I often think of myself as a failure.	44.54***
3.	I often feel that I am inadequate to meet life situations.	5.22*
4.	I have a lot of things about myself to be changed for better.	0.10
5.	I think I am not quite popular with people in general.	5.37*
6.	As I lack in confidence, I cannot decide things easily,	11.22***
7.	Some members of my family make me feel I am not good enough.	7.05**
8.	I get very upset if someone criticises me.	12.93***
9.	People do not regard me as useful to have around.	14.24***(df
10.	I am often inclined to question my worth as a person.	2.41(df=2)
11.	When people pay compliments to me, I feel it difficult to believe.	6.90**
12.	I sometimes withhold my opinions for the fear that people may laugh and criticise me.	11.93***
13.	I am shy and self-conscious in social situations.	10.38**
14.	I often catch myself pretending to be a better person than I am.	4.34*
15.	I find it difficult to do things to win the attention and approval of others.	17.46***

* $p > 0.05$ ** $p > 0.01$ *** $p > 0.001$ Wherever not specified $df=1$.

Stutterers often thought of themselves as failure and felt that they were Inadequate to meet life's situations. Stutterers In general lacked confidence in deciding things easily and thought that they were not quite popular with people. Stutterers stated that some members of their family made them feel that they are not good enough.

Stutterers became easily upset when some one criticized them and were often inclined to question their worth as a person. They thought people did not regard them useful to have around. Stutterers found it difficult to believe when people paid them compliments and withheld their opinions because they feared that people may laugh and criticize them. They were shy and self-conscious in social situations and found it difficult to do things just to win the approval of the others. Stutterers said that they pretended to be better than what they are and were aware of this fact.

Out of the total 15 items of Surface Trait I (Psychosomatic Disorders) (Table 6-13) stutterers differed in their responses from the non-stutterers for 4 items only. The level of significance varied from 0.05 to 0.001 •

Table 6-13. Chi square values for Surface Trait I of the Surface Trait Inventory

Item No.	Statement	Chi square values
1.	I often suffer from poor appetite.	0.51 (c)
2.	I often have fainting spells.	0.05
3.	I have more headaches than most people.	2.05
4.	I sometimes feel a twitching of the face. head or shoulders.	2.60
5.	I worry a lot about catching disease.	5.58*
6.	I suffer a great deal from nervous exhaustion.	35.91***
7.	I am generally a sickly person.	0.20
8.	I worry a great deal about my health.	3.32
9.	Severe aches and pains make it impossible for me to concentrate on work.	5.37*
10.	I often have stomach troubles.	0.002
11.	I constantly suffer from constipation.	0.90
12.	I am often bothered by palpitation of the heart.	9.14**
13.	I am troubled by cold hands and feet even in warm weather.	3.29(c)
14.	I often have difficulty in breathing.	0.07
15.	I have hot or cold spells.	0.25

C indicates that Tate's correction was applied.

df = 1

* $p > 0.05$ ** $p > 0.01$ *** $p > 0.001$

Stutterers said that they suffered a great deal from nervous exhaustion and were often bothered by the palpitation of the heart. More normals reported that severe aches and pains make it impossible for them to concentrate on work.

Stutterers and non-stutterers differed significantly in their responses to 14 items of Surface Trait L (Interpersonal Communication Disorders) (Table 6-14). 12 items resulted in Chi square values significant beyond 0.001 level of confidence, while the remaining each item was significant beyond 0.01 and 0.05 level of confidence respectively.

Both stutterers and normals were not distrustful and suspicious of others. Stutterers stated that they had a poor self-image, hold negative attitude towards other persons, felt uneasy to be amidst a group of people and uncomfortable to enter a room when all were seated. They generally kept away from people. Normals did not feel that they were superior to other persons they were speaking to, while this was not true for stutterers.

Other questions were related to the speech of the stutterers. Stutterers said that some time while speaking they assumed awkward and clumsy postures,

Table 6-14. Chi square values for Surface Trait L of the Surface Trait Inventory

Item No,	statement	Chi square values
1.	I am generally distrustful or auspicious of others.	3.61
2.	I have a poor self-image of myself.	14.92***
3.	I sometimes assume awkward and clumsy postures While I speak.	22.66***
4.	I have a hesitation to start to speak to others.	33.46***
5.	I avoid direct looks at people I am speaking to.	12.64***
6.	I feel tense and uneasy While speaking to others.	47.78***
7.	I generally feel I am superior to the other person I am speaking to.	5.64*
8.	I feel artificial While talking to others.	34.82***
9.	I have difficulty In keeping a conversation sustained.	14.03***
10.	I am generally ineffective in presenting ideas and my views to others.	26.78***
11.	I generally hold negative attitudes towards other persons.	40.68***
12.	I generally keep away from people.	28.55***
13.	I feel uneasy to be amidst a group of people.	13.75***
14.	I do experience fear in speaking situations.	27.59***
15.	I feel uncomfortable to enter a room after all are seated. 8.23**	

* $p > 0.05$ ** $p > 0.01$ *** $p > 0.001$

had hesitation to start to speak to others, avoided direct looks at people, felt tense and uneasy and were generally ineffective in presenting their ideas and views to others. They had difficulty in keeping the conversation sustained and felt artificial while talking to others. Behaviours like this are quite common among stutterers and need proper attention in the treatment.

Normals were compared with stutterers on 12 variables, Extroversion, Neuroticism, Self-confidence, Social Anxiety, Activity, Cyclothymia, Depression Tendencies, Emotional Instability, Introversion, Feelings of Inferiority, Psychosomatic Disorders and Interpersonal Communication Disorders to find out if the two groups differed from each other as a whole. As already noted, when T-test was administered individually and two groups were compared, taking only one variable at a time, it was found that both the groups differed significantly on all the variables except three variables namely Extroversion (E.P.I,), Activity and Psychosomatic Disorders Traits. On Hotelling's T^2 statistic, the obtained P value of 13.99 ($F (12,156) = 3.31, p > 0.001$) pointed that there were significant differences between normal and stutterers on 12 personality dimensions.

The linear discriminant function scores for 12 variables are as under :

Extroversion	-0.0282
Neuroticism	0.3104
Self-confidence	0.0168
Social Anxiety	0.0643
Activity	- 0.0120
Cyclothymia	0.1608
Depressive Tendencies	0.0358
Emotional Instability	- 0.0544
Introversion	- 0.0702
Feelings of Inferiority	- 0.0832
Psychosomatic Disorders	- 0.1465
Interpersonal Communication Disorders	0.2817

The discriminant function in the units of original sub-test scores is

$$y = -0.028X_1 + 0.310 X_2 + 0.016 X_3 + 0.064 X_4 \\ - 0.012X_5 + 0.160 X_6 + 0.035 X_7 - 0.054 X_8 \\ - 0.070X_9 - 0.083 X_{10} - 0.146 X_{11} + 0.281 X_{12}$$

We see that second test, Neuroticism , the sixth Cyclothymia, the eleventh , Psychosomatic Disorders and the twelfth, Interpersonal Communication Disorders dominate the function, while other tests make only

negligible contributions to it. In subsequent investigations attention might be concentrated on Neuroticism, Cyclothymia, Psychosomatic Disorders and Interpersonal Communication Disorders tests as indicators of the personality differences quality,

The mean value of the scores for the stuttering and the normal group is 11,363 and 6,254, The classification criteria is:

Assign the individual to stuttering group if

$$(X_1 - X_2) S^{-1} X > 8.80$$

Assign the individual to normal group if

$$(X_1 - X_2) S^{-1} X < 8.80$$

where $(X_1 - X_2) S^{-1} X$ is linear discriminant function and X represents the scores of an individual on 12 variables.

Mahalanobis generalized distance D_{12}^2 is 5.109 and it can also be used for classifying the subjects. When with the help of linear discriminant function, the subjects have been classified to population 1 (normal) or 2 (stutterers), their probabilities of misclassification can be obtained from D_{12}^2 .

The probability of misclassifying a subject who belongs to population 1 (P_{21}) is 0.41, It indicates

rather high unconditional risk of misclassification. The probability of converse misclassification (P12) is 0.02. The conditional risk of misclassifying a subject is very little.

Normals were compared with stutterers on 5 variables separately as in this group number of stutterers was 102, though number of normal persons were same as for other 7 variables i.e., 119. These five variables were t Extroversion, Neuroticism, Self-confidence, Social Anxiety and Depressive Tendencies. There were significant differences in the responses of two groups on individual T-tests except on Extroversion Scale.

The two sample T2 statistic had the value of 132,52 , the associated F is 26.142 with degrees of freedom 5, 215. tinder the hypothesis of equal mean vectors the probability of exceeding such an P value would be <0.1 level and hence null hypothesis is rejected.

The linear discriminant function scores for 5 variables are:

Extroversion=0.0598 Neurotlcism =0.2139
 Self-Confidence=- 0.0127 Social Anxiety=0.0394
 Depressive Tendencies = 0.0285

The discriminant function in the units of original sub-test scores is:

$$Y = 0.059 X_1 + 0.213 X_2 - 0.012 X_3 + 0.039 X_4 + 0.0285 X_5$$

It can be noted that the contribution of Neuroticism scale is significant while it is only minimal in case of other four scales. Neuroticism seems to emerge as a significant dimension upon which more research efforts should be concentrated. The mean value of the scores for the stuttering and the normal groups is 5.421 and 3.008. The rule for classification is :

Assign the individual to stuttering group if

$$(X_1 - X_2) S^{-1} X > 4.215$$

Assign the individual to normal group if

$$(X_1 - X_2) S^{-1} X < 4.215$$

Where $(X_1 - X_2) S^{-1} X$ is linear discriminant function and X represents the scores of an individual on 5 variables.

Mahalanobis generalised distance D_{12}^2 is 2.413 and it can also be used for classifying the subjects. When the subjects have been classified to population 1 (normal) or 2 (stutterers), their probabilities of misclassification were 0.12 for P_{21} and 0.06 for P_{12} .

This Indicates a very little risk of misclassifying a subject who belongs to population 2 but risk of converse misclassification is slightly high.

Stutterers were classified into, Mild, Moderate and Severe depending upon their degree of severity of the stuttering (Table 6-14A), Based on this, the scores of 102 stutterers on 5 personality traits and 50 stutterers on 12 personality traits were divided into three categories, separately • Hotelling T-test did not reveal significant differences among three categories for both the groups. From this, it becomes evident that both the group of stutterers were homogenous.

Table 6-14A. Rating of Severity Among Stuttering* study subjects.

Age	Mild	Moderate	Severe
40 - 42	2		
37 - 39			
34 - 36	1	1	
31 - 35	4	1	
28 - 30	3	2	2
25 - 27	1	5	4
22 - 26	10	12	3
19 - 21	10	13	6
16 - 18	2	13	2
Total	33	47	22

* Definition and rating of severity of stuttering was left to the individual observer/clinician.

** This includes subjects who were tested on 12 variables.

factor analysis of 5 personality traits for 102 stutterers yielded 2 factors. The table 6-15 shows the variables which have significant loadings on these 2 factors. The two factors had eigen values of 2.255 and 1.004 respectively. The percentage of variance extracted by them was 43.115 and 20.083.

Table 6-15, Variables, factors and loadings for 102 stutterers on five personality traits (Rotated Factor Matrix).

Variables	Factor 1 Loading**	Factor 2 Loadings*
EXTROVERSION	0.04	0.98
NEUROTICISM	-0.61	0.00
SELF-CONFIDENCE	0.80	0.35
SOCIAL ANXIETY	-0.72	-0.07
DEPRESSION TENDENCIES	-0.78	0.06

* Only the factor loadings which have a value equal or greater than +.35 or -.35 have been considered for interpretation.

Factor I subsumes 4 tests and represents an important dimension in the personality of the stutterers. Neuroticism, Social-Anxiety and Depression Tendencies are negatively correlated with Self-confidence. This forms a correlation cluster which has been clearly brought out by the factor analysis.

Neuroticism is positively correlated with Social Anxiety and Depressive Tendencies in stutterers. Social Anxiety and Depression Tendencies have a significant positive correlation with each other.

Factor I measures the Lack of Confidence or Emotional Instability which is represented by Depression Tendencies, Social Anxiety and Neuroticism. Individuals who are high on the factor are neurotic, lack self-confidence, have social anxiety and depressive tendencies.

The orthogonal loadings should be reversed in the sign to make them consistent with the directional orientation of the factor named.

Factor II has significant loadings only on two traits Extroversion and Self-confidence. Self-confidence variable has a factor complexity of 2. It has a loading on both the factors and measures more than one dimension. As Self-confidence has been considered for interpretation earlier, it will not be discussed here. The most important determinant of Extroversion is Factor II, as it accounts for 96% of the total variance.

It looks, both these factors are clinically meaningful dimensions of stutterers' personality.

Factor II appears to measure Extroversion. Individuals who are high on this factor are friendly, social, talkative and enjoy excitement.

The Table 6-16 shows rotated factor matrix along with significant factor loadings on 12 personality variables. Factor analysis yielded four factors. The four factors have eigen values of 4.40, 1.82, 1.38 and 1.19, Factor I, Factor II, Factor III and Factor IV have significant loadings on 7, 2, 3 and 4 variables respectively. The percentage of variance extracted by four factors was 37, 15, 12 and 10.

Factor I subsumes 7 out of the 12 tests and represents an important dimension in the personality of the stutterers. The Extroversion trait of the Eysenck Personality Inventory has a factor complexity of 3» Factor I has high loadings on the 7 tests • These group of traits may be labelled under the common term Emotional Instability.

When the correlation among variables was examined it became evident that Depression Tendencies correlated positively with Emotional Instability, Introversion, Feelings of Inferiority, Psychosomatic Disorders and Interpersonal Communication Disorders. Individuals who are high on this factor have depression tendencies, emotional instability, feelings of inferiority, psychosomatic

table 6-16. Variables, factors and loading!* for 50 stutterers
on 12 personality traits (Rotated Factor Matrix)

Variable*	Factor I loading*	Factor I II Loading*	Factor I III Loading*	Factor IV Loading*
EXTROVERSION	-0.40	-0,04	0,58	_0.48
NEOROTICISM	-0.12	-0.01	0.10	0.83
SELF-CONFIDENC*	0.30	0,01	0.83	-0.02
SOCIAL ANXIETY	-0,31	.0.13	-0.77	-0.35
ACTIVITY	-0.11	0.84	-0.01	-0.06
CYCLOTHYMIA	-0.06	0,83	0.10	0.09
DEPRESSION TENDENCIES	-0.86	0.07	-0.18	-0.10
EMOTIONAL INSTABILITY	-0.84	0.01	-0.17	-0.13
INTROVERSION	-0.70	0.30	-0.04	0.41
FEELINGS OF INFERIORITY	-0,88	0.15	-0.14	0.01
PSYCHOSOMATIC DISORDERS	-0.56	-0.29	0.10	0.07
INTERPERSONAL COMMUNICATION DISORDERS	-0.80	0.15	-0*23	0.20

* Only the factor loadings which have a value equal or greater than +.35 or -.35 have been considered for interpretation.

disorders and interpersonal communication difficulties. All the orthogonal loadings should be reversed in sign to make them consistent with the directional orientation of the factor as named.

Factor II has a high loading on two variables namely Activity and Cyclothymia. Individuals who are high on this factor are active most of the time, work with full energy usually carefree, easy going and happy most of the time. The Activity and Cyclothymia has a positive correlation.

Factor III has significant loadings on three traits. The factor can be termed as lack of Self-confidence vs. Social Anxiety. When we examine the correlation between variables it becomes evident that there is no correlation either between Self-confidence and Extroversion or Social Anxiety and Extroversion, however. Self-confidence and Social Anxiety are related but in a negative way. This is expected in a stuttering group as the stutterers with low self-confidence will have a high degree of anxiety. Therefore, in the treatment of stuttering our efforts should be directed towards making the stutterer more self-confident in speaking situations. When an individual is

treated for social anxiety, it should increase his self-confidence and decrease the stuttering.

As with the previous factors all the orthogonal loadings should be reversed in sign to make them consistent with the directional orientation of the factor as named*

Factor IV has high loadings on Extroversion, Neuroticism Social Anxiety and Introversion, Extroversion Social Anxiety and Introversion variables have a factor complexity of 3, 2 and 2 and as these have been considered for interpretation with other factors they will not be discussed here, Factor IV clearly measures Neuroticism, Individuals with high loading on this factor will have more neurotic tendencies.

In the table 6-17 rotated factor matrix for 119 normals on 12 personality traits is shown. Factor analysis yielded two factors having eigen values of 4.79 and 1.81. The percentage of variance extracted by these two factors is 39.97 and 15.16, Factor I and Factor II have significant loadings on 9 and 3 traits respectively.

Factor I subsumes 9 out of the 12 personality variables and measures an Important dimension in the personality of the normals None of the variables have

Table 6-17. Variable*, factor* and loadings* for 119 normal* on 12 per*onality trait* (Rotated Factor matrix).

Variable	Factor I Loading*	Factor II Loading*
EXTROVERSION	-0.07	0.79
NEUROTICISM	0.76	0.09
SELF -CONFIDENCE	-0.82	0.23
SOCIAL ANXIETY	0.64	-0.21
ACTIVITY	-0.20	0.51
CYCLOTHYMIA	0.04	0*84
DEPRESSION TENDENCIES	0.74	-0.04
EMOTIONAL INSTABILITY	0.74	0.19
INTROVERSION	0.43	-0.33
FEELINGS OF INFERIORITY	0.80	-0.15
PSYCHOSOMATIC DISORDERS	0.62	0.02
INTERPERSONAL COMMUNICATION DISORDERS	0.82	-0.16

* Only the factor Which have a value equal or greater than +.35 or -.35 have been considered for interpretation.

a factor complexity greater than one. Factor I measures Emotional Stability among normals. Individuals who are high on this factor report being happy, calm, optimistic, stable in mood and having confidence in themselves. Individuals who are low in this factor have inferiority feelings, depressive tendencies, psychosomatic disorders, interpersonal disorders, social anxiety, neurotic tendencies and lack self-confidence. This factor is similar to the factor of Emotional Stability vs. Neuroticism as identified by Comrey (1973). The orthogonal loadings should be reversed in sign to make them consistent with the directional orientation of the factor as named.

Factor II has a high loading on three variables. It is an index of Extroversion, Activity and Cyclothymia. Therefore, it measures the Extroversion or Cyclothymia. The individuals with high loadings on this factor are good natured, easy going, co-operative, trustful and easily adaptable. Cattell (1965) summarises the trait in the following words:

The extreme cyclothyme (roughly, extrovert) temperament is apt to develop into the superbly sociable, emotionally lively, plausible but quite undependable individual, who, with slight deficiencies in character trait added, becomes the psychopathic swindler and 'con' man. The sizothyme temperament at the opposite extreme is apt to become so shut and rigid that he fits nowhere.

He has also proposed a new title for Cyclothymia and Schlaothymia as Affectothyme (to refer to cyclothyme when normal) and Sizothyrae (refers to what psychiatrist call the "flatness of affect ", i.e., absence of lively and vibrant emotion). This factor is similar to that of Extroversion vs- Introversion as reported by Comrey (1973) .

From the correlation among variables it can be noted that Extroversion is related to Activity and Cyclothymia in a significant fashion in normals. Moreover, Activity and cyclothymia are themselves correlated with each other. All these correlations are significant beyond .01 level. The cluster and grouping of these variables has been very clearly brought out by Factor II. However, it may be noted that Extroversion is not at all correlated with Activity and Cyclothymia in stutterers, though both these variables are correlated with each other.

Eysenck and Eysenck (1985) believe that Extroversion and Neuroticism are uncorrelated with each other. This has been clearly demonstrated in the three groups studied. This further justifies the use of orthogonal rotation for the data

Some critics, Carrigan (1960), for example have doubted whether E and N are truly orthogonal, that is, whether the correlation between them is nearly zero, so that they can be considered as independent. Carrigan demonstrated that in many studies slight negative correlations have been found (in the present study correlations are -0.07, -0.08 and 0.12, for stuttering groups* N = 102, 5 variables, N = 50, 12 and normal group N = 119, 12 variables respectively.), in other studies (e.g., Parley, 1967), correlations have been mostly insignificant and close to zero.

Eysenck and Eysenck further state that, " ... orthogonality is partly observed in nature, partly introduced into the data by selection of items: there is the usual combination of theory, subjectivity and objective fact* This may seem high handed, but it is exactly what the physicist does in his realm."

Statistical data reduction is usually considered adequate and effective when the number of factors is approximately one-fourth the number of original variables and variance accounted for is 50 to 75 per cent of the total variance. Factors obtained from three groups, stutterers (N = 102, 5 variables), stutterers (N = 50, 12 variables) and normals (N = 119, 12 variables) are: 2, 4 and 2 respectively. The total percentage of variance

accounted for by these factors is : 65, 73.37, 60 respectively. From this, it can be said that data reduction by factor analysis for these groups have been adequate.

A diagnostic model is proposed that includes the areas of emotional instability cyclothymia, lack of self-confidence and neuroticism (Table 6-17 A). This model draws variables from the factor study and assigns them to categories useful in describing the underlying condition and may be used in planning treatment for stutterers.

Table 6-17A, Relation of factor variables to diagnostic areas

DIAGNOSTIC AREA	FACTOR VARIABLES
Emotional Instability	7. Depression Tendencies
	8. Emotional Instability
	9. Introversion
	10. Feelings of Inferiority
	11. Psychosomatic Disorders
	12. Interpersonal Communication Disorders
Cyclothymia	5. Activity
	6. Cyclothymia
Lack of Self-Confidence	1. Extroversion
	3. self-confidence
Neuroticism	4. Social Anxiety
	2. Neuroticism

The emergence of four strong factors in the study is important for the following reasons:

1. These factors are not the product of theoretical bias except as influenced by the choice of instruments. Some empirical components of stutterers' personality have been clearly brought within the limits of the sample and the test instruments.
2. A diagnostic system used with the adult stutterers may, in the light of study, include careful observation and testing of such personality areas as emotional instability, cyclothymia, lack of self-confidence, and neuroticism.
3. Personality dimensions such as the ones that make up the factors in this study need to be included in treatment models. These factors represent the psychological state in which the stutterer is when he comes for treatment, and they may impede symptomatic treatment or interfere with carry over and generalization and maintenance of treatment results.

This diagnostic model has not been tested as it needed a large number of stutterers and was beyond the scope of present investigation. Therefore, it has not been used in the second part of the study.

From the study, it becomes evident that stutterers have personality problems, therefore, it was decided to use Progressive Muscular Relaxation in the second part of the study as it was felt that it will have a beneficial effect on the stutterers in all the categories. Therefore, a single two-hour session of P.M.R. was given by the therapist after the end of the baseline. Further, to reduce the treatment time and dependence on the therapist, the subject was asked to perform P.M.R. himself before coming to therapy. Hence the results reported in the part II of the study are that of a particular treatment method and P.M.R. self-administered by the subject outside the clinic • Personality questionnaires have been used to assess the personality of the stutterers before and after therapy.

This study has clearly shown that stutterers differ significantly from non-stutterers on 9 important personality traits. These are: Neuroticism (E.P.I.), Self-confidence (S.C.I.), Social Anxiety (WPS-R), Cyclothymia ., Depression Tendencies, Emotional Instability, Introversion, Feelings of Inferiority and Interpersonal Communication Disorders (S.T.I.). There were no differences between stutterers and non-stutterers in intelligence

as measured on Raven's Progressive Matrices Set I.

Chi square analysis of the each item of every test has established that number of items for studying the personality of the stutterers can be considerably reduced. Further, from factor analysis, it becomes evident that even the number of tests to study the personality of stutterers can be reduced to 4. This information can be used for construction of a test to study the personality of the stutterers.

On the basis of the factor analysis, stutterers can be classified into four groups having different personality constellations. In general, these factors seem to be components that can occur singly or in various combination in a given stutterer.

RESULTS AND DISCUSSION (PART II)?

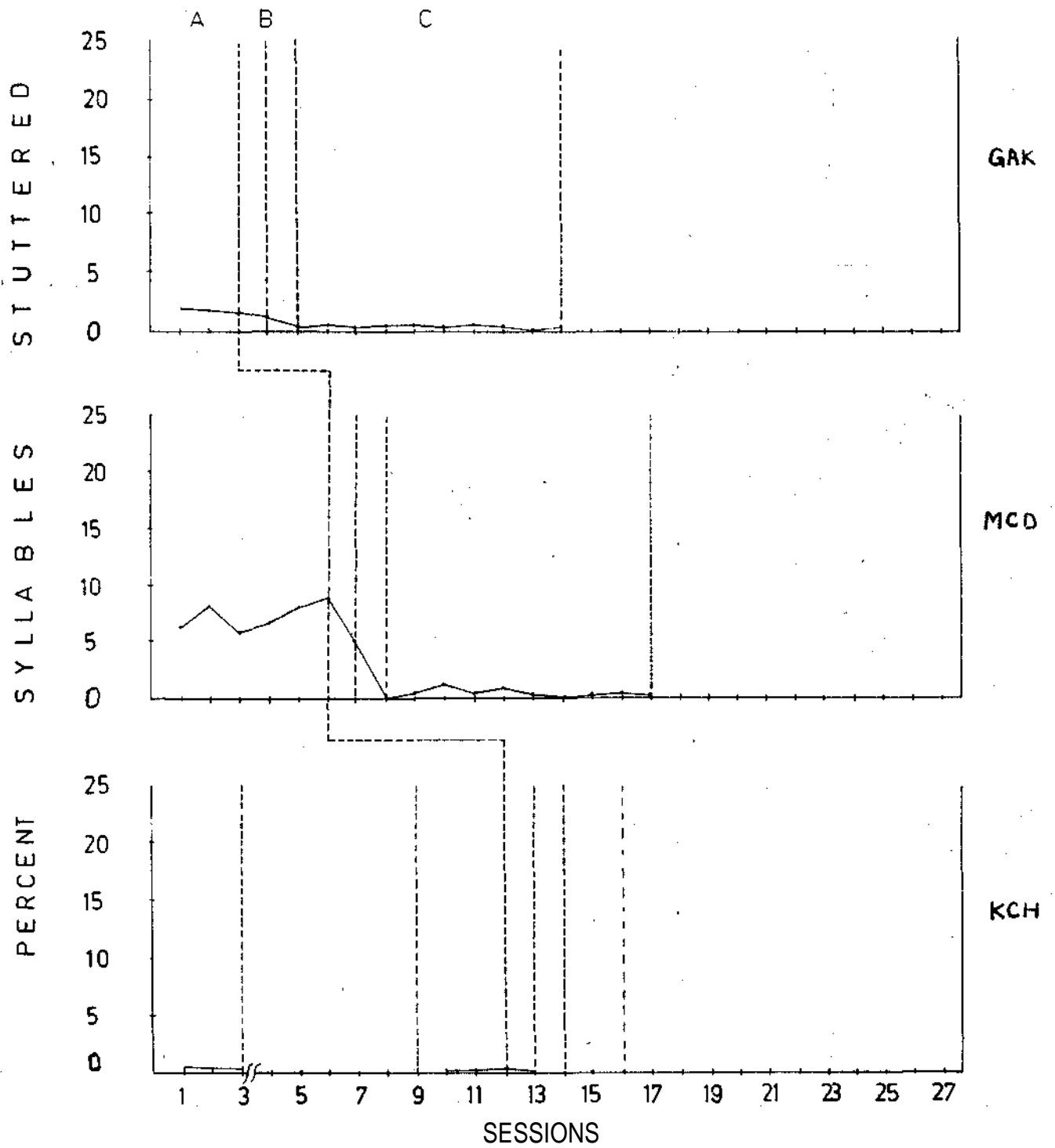
In this section the results of 16 stutterers, who were divided into four groups, based on the treatment procedures, namely. Prolonged Speech, Rhythmic Syllable Timed Speech, Regulated Breathing Procedure and Systematic Desensitization, are presented.

GROUP 1 : PROLONGED SPEECH TREATMENT

The critical dependent variable analysed in this study was percentage of syllables stuttered on reading and on spontaneous speaking tasks. Figure 6-1 and Table 6-18 display the percentage of syllables stuttered for Subject 1 (GAK), 2 (MCD) , and 3 (KCH) while reading during baseline, Progressive Muscular Relaxation and Progressive Muscular Relaxation and Prolongation combined.

Subject 1 : Inspection of baseline for Subject 1 reveals a mean baseline stuttering rate of 1.74 with only a slight downward trend.% of SS were within normal limits for reading before therapy, but they showed a further decrease after treatment ($X = -0.30$) and it was maintained till the termination of therapy. Slight decrease in stuttering was noted after a session of P.M.R.

Subject 2 : A review of Figure 6-1 for Subject 2 reveals a mean baseline disfluency rate of 7.38% with a slight



A- BASE RATE
B- P.M.R
C- PROLONGED SPEECH

FIGURE- 6-1 PERCENTAGE OF SYLLABLES STUTTERED ON A READING TASK.

Table G-19 Pre and post-therapy means (M) and standard deviations (S.D.) of S.P.M., %SS and A.R. for reading and spontaneous speaking tasks of Prolonged Speech Group.

SUBJECT	CONDITION	PRE-THERAPY				POST-THERAPY							
		S.P.M. M	S.D.	%SS M	A.R. M	S.P.M. M	S.D.	%SS M	A.R. M				
GAK	READING	170.13	12.59	1.74	0.19	167.10	12.05	156.40	23.82	0.30	0.15	155.91	23.70
	SPEAKING	146.67	51.14	7.94	3.28	144.60	36.69	138.87	11.77	1.49	0.57	136.71	11.59
MCD	READING	195.33	6.09	7.38	1.11	180.94	7.17	148.41	15.59	0.40	0.39	147.81	15.66
	SPEAKING	174.47	7.71	8.79	1.21	159.03	6.75	136.18	7.56	1.21	0.82	134.53	7.19
KCH	READING	211.02	8.62	0.23	0.09	210.52	8.72	126.45	17.86	0.00	0.00	126.45	17.86
	SPEAKING	169.55	27.71	5.07	1.02	161.16	27.83	98.39	8.54	0.24	0.41	98.16	8.66

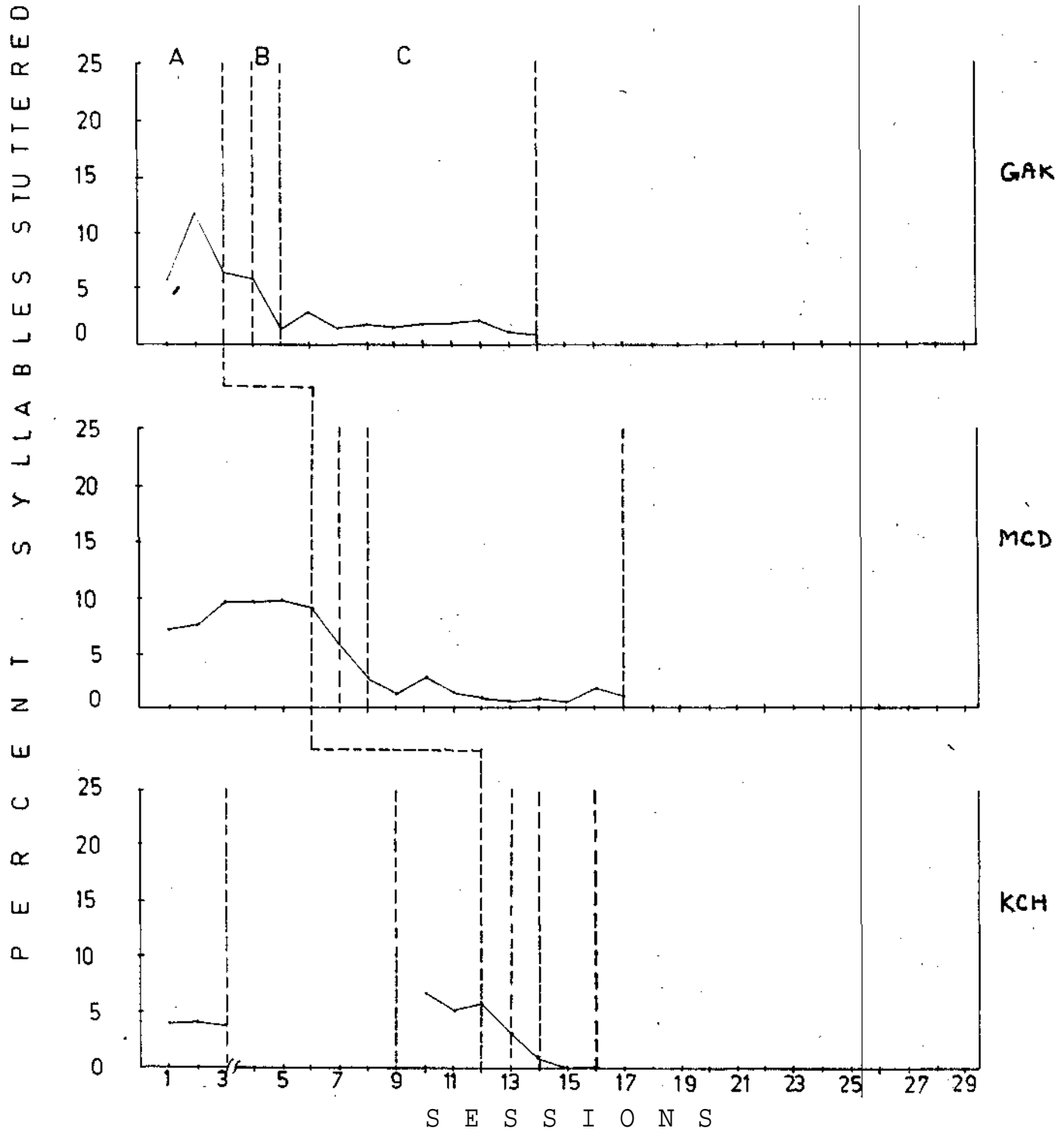
upward trend. This upward trend sharply reversed after a session of P.M.R. and was maintained till the end of the treatment phase ($X = 0.40$). Stuttering frequency was reduced to zero in the first and seventh treatment session. In other sessions, the frequency of stuttering was below 0.5% SS except for third and fifth session when it was 1.06 and 0.90 % SS, respectively.

Subject 3: Examination of the data for Subject 3 showed a mean rate of disfluencies of 0.23% during baseline with a slight decreasing trend. This disfluency rate was within normal limits. KCH was completely free from stuttering during P.M.R. and treatment phase.

The data for percentage of syllables stuttered for all the three subjects while speaking are displayed in Figure 6-2 and Table 6-18.

Subject 1 : For Subject 1 , Figure 6-2 reveals a mean baseline rate of 7.94 syllables stuttered . Stuttering showed a slight decrease after a session of P.M.R. Upon introduction of treatment phase along with P.M.R., stuttering showed considerable decrease after the first treatment session and it was maintained till the end of the therapy. The mean rate of stuttering at the end of treatment was 1.49 , it represented a decrease of 81.23%* from the baseline.

* The measure of change in % SS used was a percentage derived by subtracting the post-treatment % SS from the pre-treatment % SS and dividing the result by the pre-treatment % SS.



A. BASE RATE

B- P.M. R.

C- PROLONGED SPEECH

FIGURE-6-2 PERCENTAGE OF SYLLABLES STUTTERED ON A SPONTANEOUS SPEAKING TASK

Subject 2 : For subject 2 the mean rate of syllables stuttered during baseline was 8.79 and it had a slightly increasing trend. There was considerable decrease (36.86%) in stuttering after a session of P.M.R. Further, downward trend in stuttering was noted immediately after the first treatment session and was maintained till the last session of therapy (\bar{x} - 1.21).

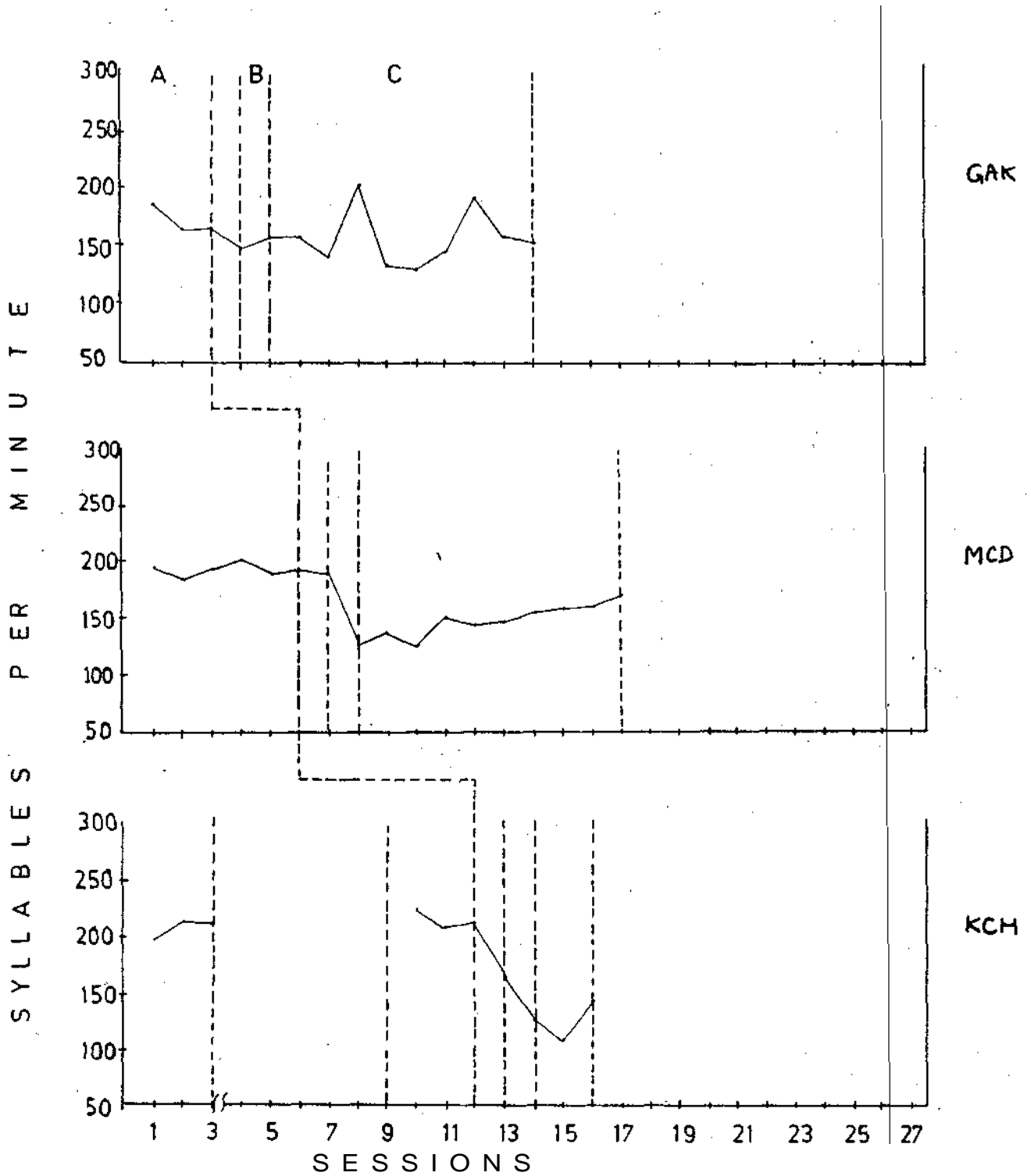
Subject 3 : The rate of syllables stuttered in % for subject 3 during baseline averaged 5.07, with slight increasing trend. Stuttering showed decrease after a session of P.M.R. % ss were below 1 after the first treatment session and further decreased to 0 In all the remaining treatment sessions. KCH left after attending three therapy sessions, without assigning any reasons. It could be that as after three treatment sessions his stuttering decreases to zero and he used to come for treatment from a long distance, he might not have felt any necessity for further treatment.

The data for rate of speech for the three subjects while reading are depicted in figure 6-3 and Table 6-18.

Subject 1 : for Subject 1, Figure 6-3 reveals a mean baseline rate of 170.13 S.P.M. with a slightly decreasing trend, A session of P.M.R. reduced the rate to 149.10 S.P.M. After the treatment phase, subject 1 achieved a mean rate of 156.40. Maximum number of syllables spoken by GAK was 202.94 In the fourth treatment session.

Subject 2 : The mean baseline rate of speech was 195.33 S.P.M for MCD. It showed only a slight decrease after a session of P.M.R. After a 'drop, in the rate of speech during the

PROLONGED SPEECH GROUP



A- BASE RATE
 B- P.M. R.
 C- PROLONGED SPEECH

FIGURE-6-3 SYLLABLES PER MINUTE ON A READING TASK.

third treatment session, there was an increase in rate during subsequent phases to that of 173.33 S.P.M. in the final session. At the end of treatment the mean rate of speech was 143.41 S.P.M., a decrease of 24.02 S,P.M.

Subject 3 : Inspection of the data for Subject 3 shows a mean rate of 211.02 S.P.M. during baseline and. was stable. It decreased to 167.02 after a session of P.M.R. After the treatment, the mean rate of speech was 126.45 S,P.M.

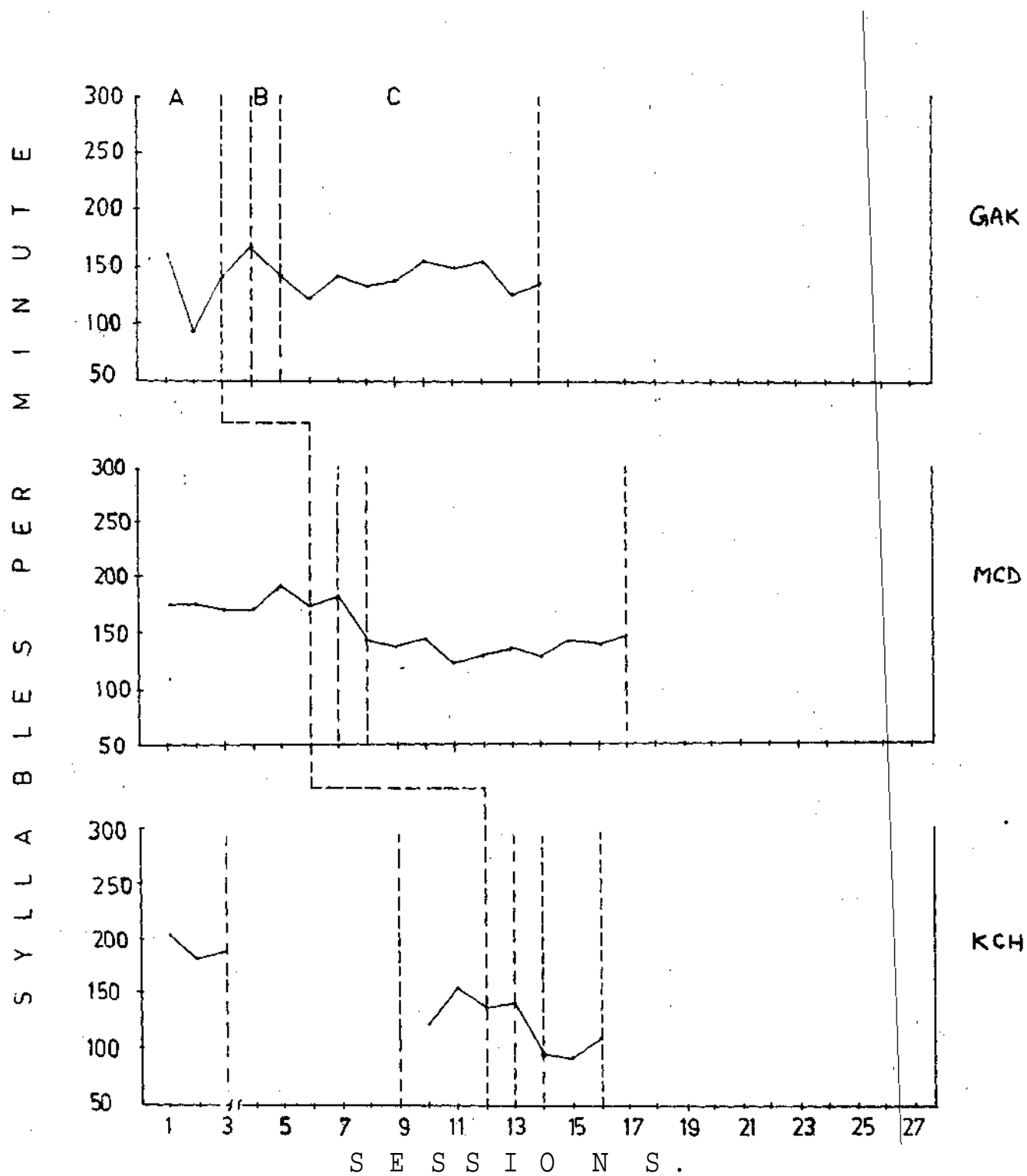
Figure 6-4 and Table 6-18 present the rates of speech for all the three subjects while speaking •

Subject 1: Rate of Speech in S.P.M. for Subject 1 during baseline averaged 146.67 ± 51.14 S.P.M. ($X \pm S.D.$). After a session of P.M.R., there was considerable Increase In speech rate. During the treatment phase, the maximum rate of speech was 154.33 in the 6th session. At the end of the treatment, the average rate of speech was 138.87 ± 11.77 S.P.M.

Subject 2: Subject 2 had a mean baseline disfluency rate of 174.47 S.P.M. with a slight upward trend, Which continued even after a session of P.M.R. There was a decrease in the

* The measure of change in S.P.M. used was a percentage derived by subtracting the post-treatment S.P.M. from the pre-treatment S.P.M. and dividing the result by the pre-treatment S.P.M.

PROLONGED SPEECH GROUP



A-BASE RATE
 B-P.M. R.
 C- PROLONGED SPEECH

FIGURE-6-4 SYLLABLES PER MINUTE ON A SPONTANEOUS SPEAKING TASK.

rate during the treatment phase to a mean of 136.18 S.P.M. The rate during the treatment did not vary much.

Subject 3: The rate of speech for Subject 3 during baseline averaged 169.55 S.P.M. There was a decrease in the rate after a session of P.M.R. After the treatment the mean rate of speech was further reduced to 98.39 ± 8.54 S.P.M.

The data for articulatory rate for all the subjects while reading are displayed in Figure 6-5 and Table 6-18.

Subject 1 : Inspection of the data for Subject 1 shows a mean articulatory rate of 167.10 S.P.M. during baseline. The articulatory rate decreased after a session of P.M.R. GAK achieved the maximum articulatory rate of 192 S.P.M. in the 8th treatment session and the mean articulatory rate after treatment was 155.91 ± 23.70 S.P.M.

Subject 2 : For Subject 2 the mean articulatory rate was 180.94 during baseline and was stable. A session of P.M.R. slightly increased the articulatory rate. After the treatment intervention the articulatory rate increased gradually and achieved a mean of 147.81 S.P.M. Overall, there was a marked reduction in the articulatory rate from pre-treatment levels.

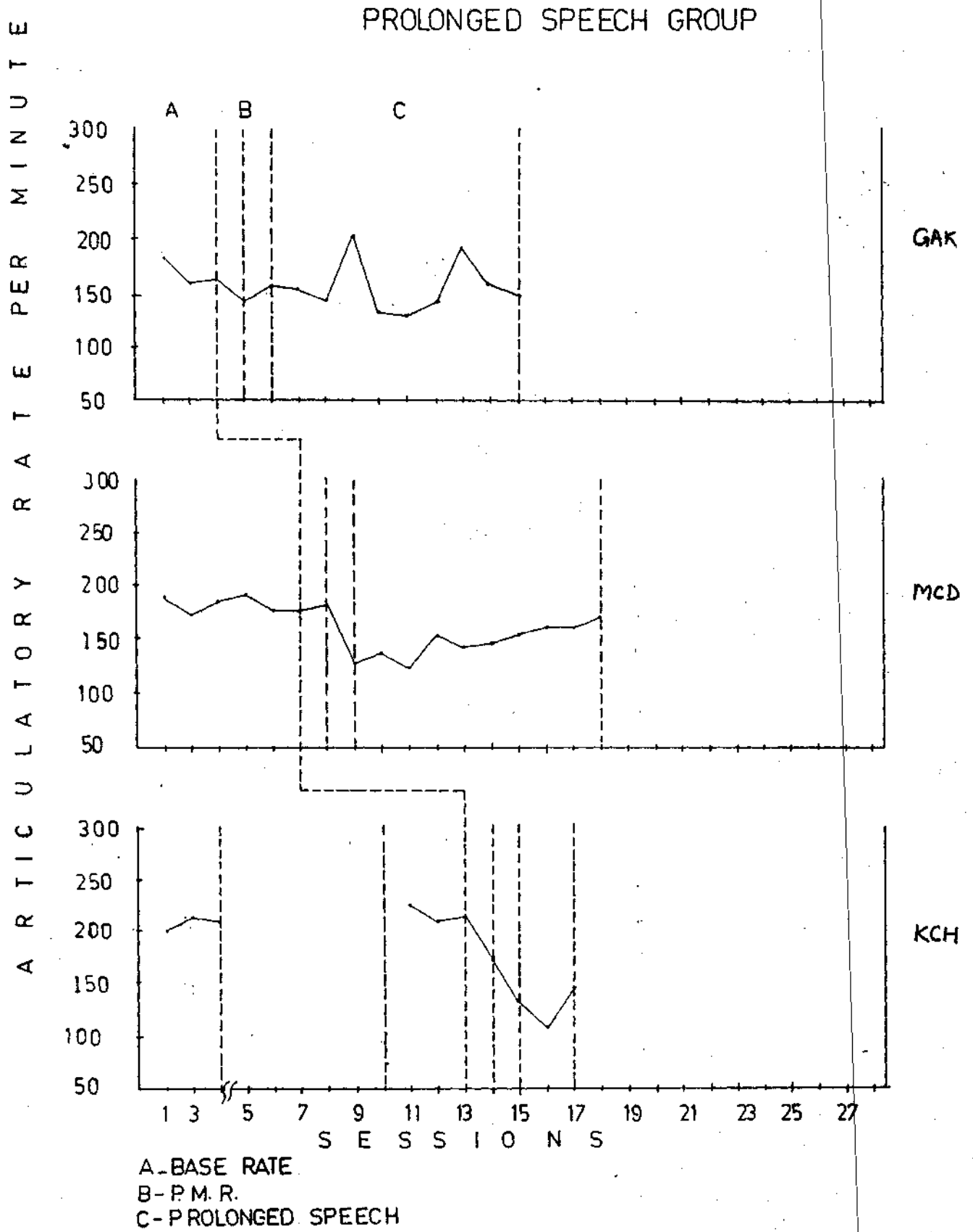


FIGURE-6-5 ARTICULATORY RATE PER MINUTE ON A READING TASK

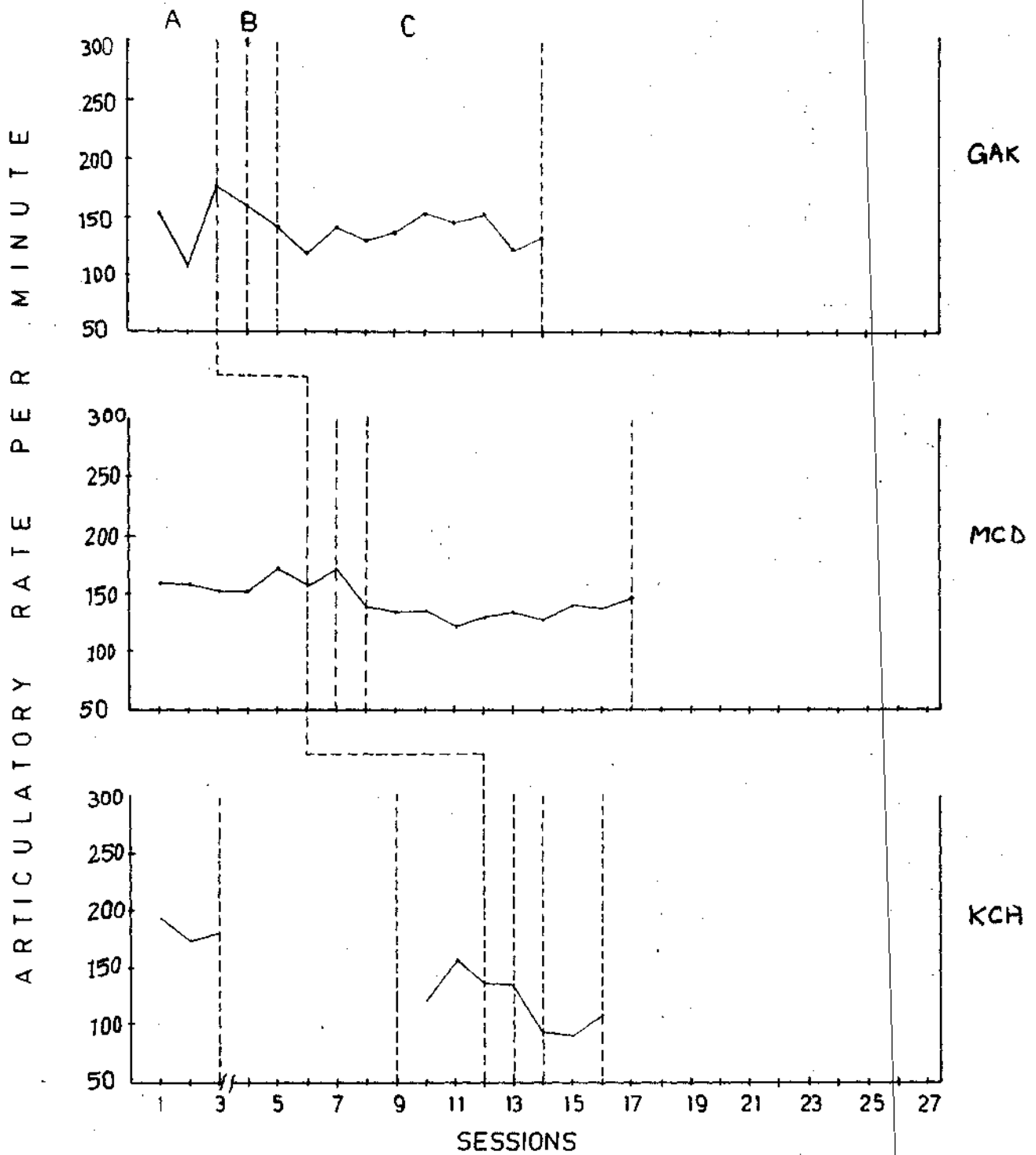
Subject 3 : Examination of the data for Subject 3 revealed a stable articulatory rate { $\bar{X} = 210.525$ during baseline. The articulatory rate showed a decline after the P.M.R. session and there was further decrease during the treatment phase. The maximum articulatory rate in the last treatment session was 142.50 S.P.M.

Figure 6-6 and Table 6-13 shows the articulatory rate for all the three subjects while speaking.

Subject 1 : The articulatory rate during baseline shows decreasing -increasing trend with a mean of 144.60 S.P.M. It increased to 147.02 S.P.M* after a session of P.M.R. During the treatment phase the articulatory rate was variable. The mean articulatory rate at the end of treatment was 136.71 S.P.M.

Subject 2 : Subject 2 had a stable articulatory rate during baseline ($\bar{X} = 159.03$) which increased after P.M.R. session. The articulatory rate showed a decrease during the treatment phase with a mean of 134.53 ± 7.19 S.P.M.

Subject 3 : *Inspection* of the data for Subject 3 revealed a mean articulatory rate of 161.16 ± 27.83 S.P.M. during baseline. There was a decrease in the articulatory rate after a session of P.M.R. KCH had a mean articulatory rate of 98.16 ± 8.66 S.P.M. after the treatment, a considerable decrease from the pre-therapy level.



A-BASE RATE
B-P.M.R.
C-PROLONGED SPEECH

FIGURE- 6-6 ARTICULATORY RATE PER MINUTE ON A SPONTANEOUS SPEAKING TASK

RESULTS OF THE PERSONALITY TESTS

Appendices IX, X and XI show the results of the Personality Tests administered before and after therapy to Subject 1,2 and 3 respectively.

Subject 1 t For Subject 1, personality tests administered after therapy showed an increase in the scores of Extroversion and Self-confidence traits, but these scores did not reach normal value. There was a decrease in the score of Neuroticism, Social Anxiety, Activity, Emotional Instability, feelings of Inferiority, Psychosomatic Disorders and Interpersonal Communication Disorders traits towards normalcy. The scores of other traits showed slight increase, but they were still within normal limits. The Depression Tendencies trait score did not change at become normal (fig 6-6)

Subject 2 : For Subject 2, post-therapy personality assessment showed a decrease in the scores of Neuroticism, Social -Anxiety , Activity, Depression Tendencies, Emotional Instability, and Interpersonal Communication Disorders traits. Self-confidence trait score showed an Increase of 13 points i.e. from 25 to 48. There was negligible change in the scores of other traits. The scores of Activity, Depression Tendencies, and Emotional Instability reached normal values.(Fig 6-6B)

MCD

Personality Traits Pre vs Post Therapy

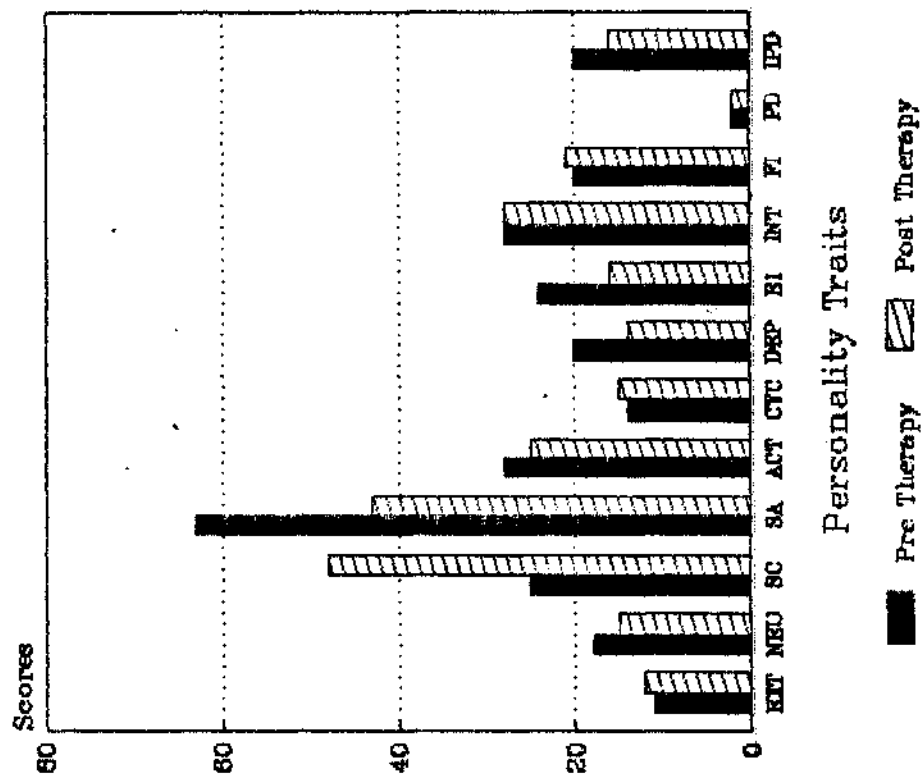


FIGURE 6-6B

GAK

Personality Traits Pre vs Post Therapy

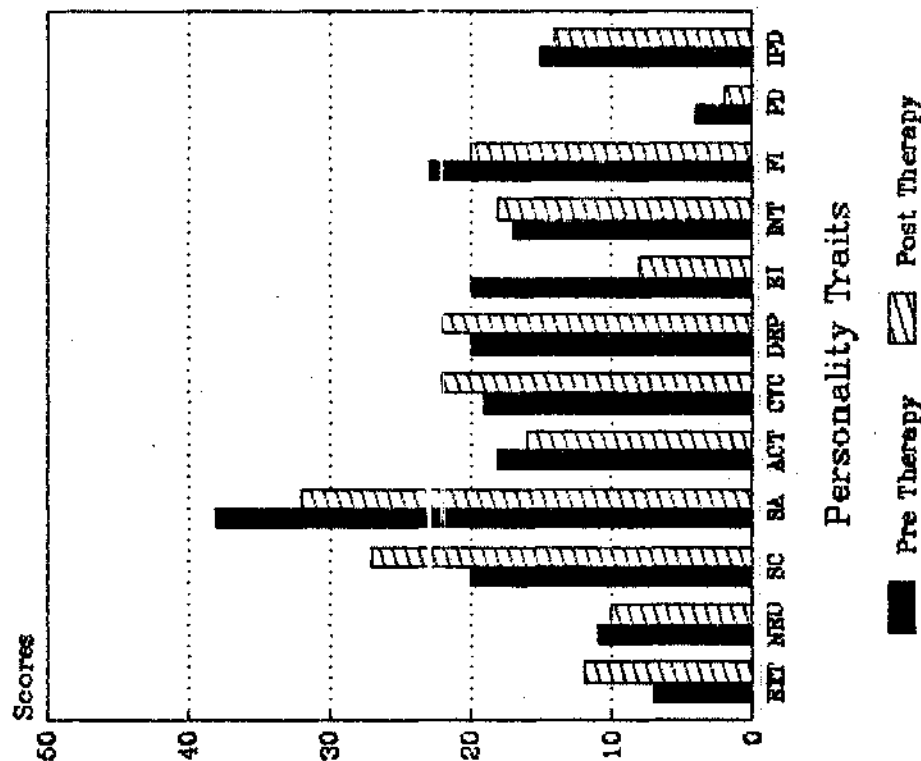


FIGURE 6-6A

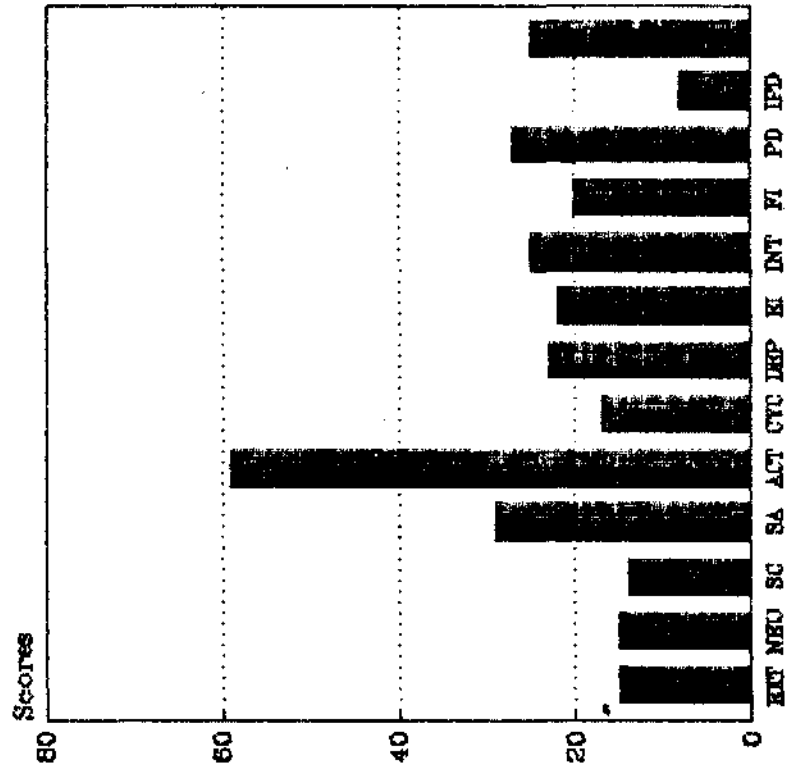
Subject 3 : Post-therapy personality assessment are not available for Subject 3. He left after attending three therapy sessions, without giving any reasons. (Fig 6-6c)

GENERAL TREND OF RESULTS WITH THE USE OF PROLONGED SPEECH
IN COMBINATION WITH PROGRESSIVE MUSCULAR RELAXATION :

Prolonged Speech Treatment along with P.M.R, appears to be an effective method in reducing stuttering. The post-therapy mean % SS was less than 0.5% In two cases and zero percentage in the third, in reading; while it was less than 1.5 % for all the stutterers during the spontaneous speech condition. There was no change in the rate of speech for GAK, but significant reduction was noticed for other two cases both in reading and speaking after therapy, Howie, Tanner and Andrews (1981) after some 30 hours of clinician time per client reported a mean increase in S.P.M. from 109.8 ± 50.7 to $191.0 \pm 20,8$ for monologue and from 126.5 ± 61.7 to 200.3 ± 25.0 for conversational speech. Mean frequency of stuttering decreased below 1% SS for both the conditions. There was no Increase in S.P.M. for one client, but a significant decrease followed in the other two clients. Rustin, Ryan and Ryan (1987) reported a mean of 87.8 WS/M and S.D, of 35,2 after criterion Test No. 2 for DAF group where clients were taught to speak in a slow prolonged manner. At criterion test No.1 ,

KCH

Personality Traits Pre Therapy



Personality Traits

■ Pre Therapy

FIGURE 6-6C

mean WS/M with S.D. were 86.1 ± 27.0 . The total therapy time was 6.2 ± 6.2 hrs. Curlee and Perkins (1973) showed dramatic reduction in stuttering frequency after a 90 hour treatment programme with 27 adolescent and adult stutterers. The treatment, conversational rate control therapy, consisted of a conditioning programme that employed DAF to establish slow stutter-free speech. Percentage of words stuttered was reduced in the clinic from a mean of 17.0 to 0.2 per cent and in outside situations from 16.0 to 1.3 per cent.

Resick et al., (1978) studied the effectiveness of a treatment for stuttering based on systematic slowing of speech (without DAF or rhythm) and anxiety management (P.M.R. plus Suinn and Richardson's {1971} technique). Subjects were six stutterers between the age of 21 and 36. Each participant was seen individually one hour per day for two weeks (ten sessions). Participants were taught to read and speak progressively at 50, 70 and 90 words a minute and received anxiety management training. Participants were discouraged from developing a rhythmic pattern or relying on long pauses. They were encouraged to prolong the words instead. Percentage words stuttered decreased in conversation with a stranger from 23 to 6.3 per cent, in reading, from 12 to 0.7 per cent and while speaking over telephone from 23.8 to 7 per cent. There were no significant changes in the rate of speech in all

the three conditions. The results of this study are less satisfactory in two conditions i.e., while conversing with a stranger and speaking over telephone. This may be due to the short duration of the treatment.

James et al., (1989) assessed the relative efficacy of fluency training C Consisting of a systematic programme of directed speech practice that combined slowed and "prolonged" speech) when administered to twenty Stutterers according to alternate format of intensive and spaced treatment. Fluency training produced significant improvement in speaking rate for both treatment formats. Both formats were found .equivalent on all measure.

In conclusion, the present results suggest that an external mechanism like D.A.F. may not be necessary to Induce a slow fluent speech and that stutterers can learn to control and monitor their own rates of speech. The Prolonged Speech technique is a simple, easily learned method that can be practiced throughout the day without great effort and with minimal expense. Clients reported having no difficulty practicing prolonged speech, although occasionally they did mention specific situations in which it was difficult for them to maintain a prolonged speech. Post-therapy personality assessment showed a Change for the better for the two subjects.

GROUP II : RHYTHMIC SYLLABLE TIMED SPEECH

Figure 6-7 and Table 6-19 depict the percentage of syllables stuttered for Subject 1 (JAY), 2 (VPD), 3 (SCS), 4 (DSR) and 5 (IND) while reading during baseline. Progressive Muscular Relaxation and Progressive Muscular Relaxation and Syllable Timed Speech combined.

Subject 1 : Examination of the baseline for Subject 1 shows increasing -decreasing trend with a mean rate of 2.76 % ss, which is within normal limits. This rate was markedly reduced after a session of Progressive Muscular Relaxation and continued to be so in the treatment phase. The mean percentage of syllables stuttered showed a decrease from pre-treatment baseline level of 2.76 to 0.17 after the treatment.

Subject 2 : Inspection of the baseline for Subject 2 reveals a mean baseline stuttering rate of 0.98 with a slight downward trend. This disfluency rate is within the normal range and it showed slight increase after a session of P.M.R, After treatment intervention, stuttering rate decreased to a mean of 0.61. Post-therapy mean percentage of syllables stuttered was below 1.5 percent in reading condition.

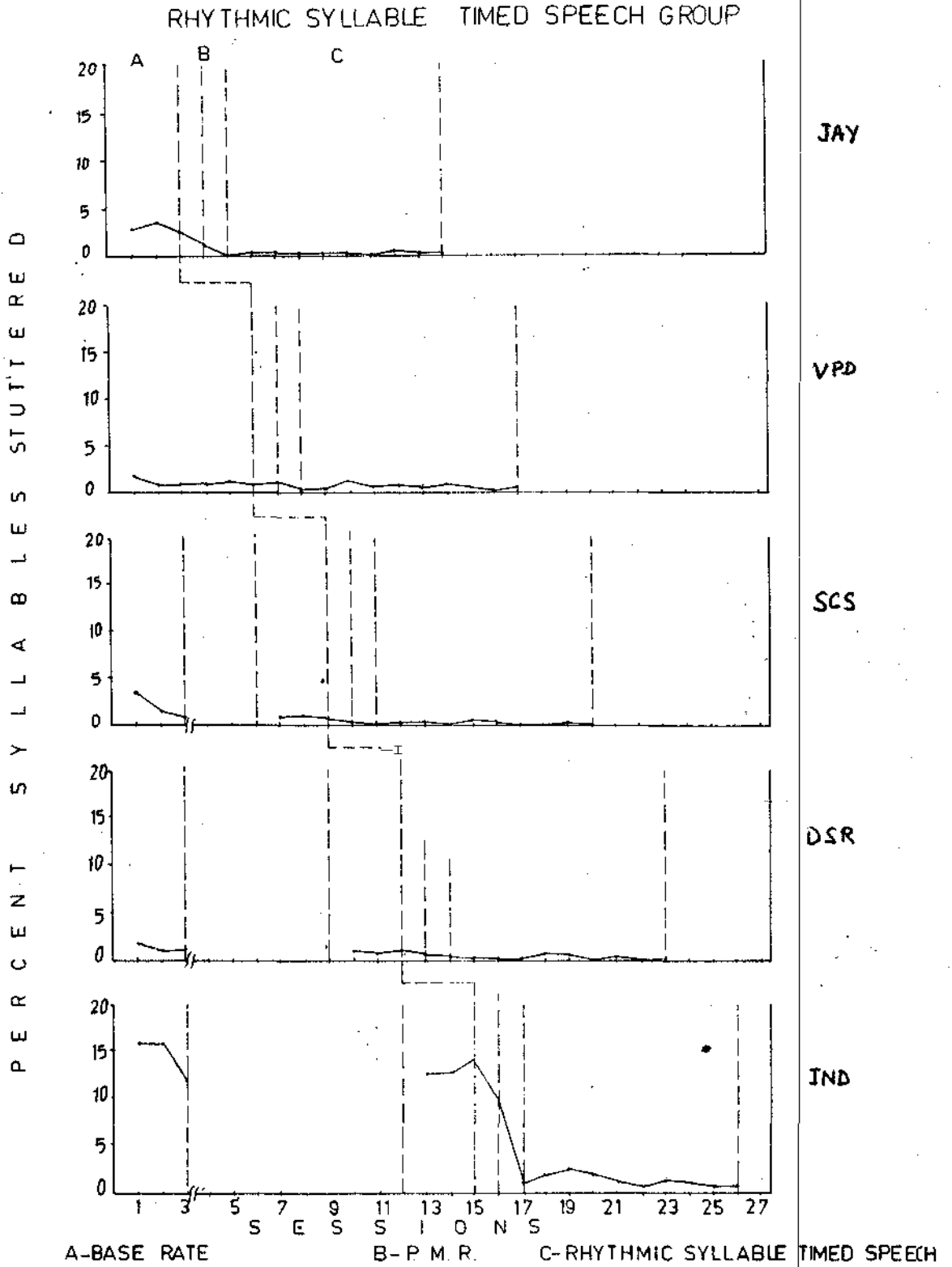


FIGURE-6-7 PERCENTAGE OF SYLLABLES STUTTERED ON A READING TASK

Table 6-19 Pre and post-therapy means (M) and standard deviations (S.D.) of S.P.M., %SS and A.R. for reading and spontaneous speaking tasks of Rhythmic Syllable Timed Speech Group.

SUBJECT	CONDITION	PRE - THERAPY						POST-THERAPY					
		S.P.M.		%SS		A.R.		S.P.M.		%SS		A.R.	
		M	S.D.	M	S.D.	M	S.D.	M	S.D.	M	S.D.	M	S.D.
JAY	READING	153.38	11.32	2.76	0.68	144.98	8.19	160.45	35.91	0.17	0.10	160.19	35.84
	SPEAKING	136.12	14.47	12.17	1.58	123.57	21.24	146.89	21.27	1.20	0.71	143.49	23.70
VPD	READING	175.93	12.10	0.98	0.43	174.21	12.30	192.66	26.38	0.61	0.35	191.49	26.40
	SPEAKING	135.25	14.84	5.86	0.37	127.44	13.38	143.29	21.69	2.46	0.79	140.02	21.26
SCS	READING	196.37	12.67	1.30	1.05	193.91	14.35	171.50	27.24	0.17	0.20	171.17	27.15
	SPEAKING	123.23	16.05	8.33	1.33	113.43	16.26	128.23	21.60	0.81	0.61	127.25	21.81
DBR	READING	244.44	20.86	1.10	0.40	241.77	21.26	225.11	27.20	0.27	0.24	224.48	27.15
	SPEAKING	118.89	14.32	10.48	2.37	106.70	15.42	146.81	19.44	2.41	1.61	139.45	20.40
IND	READING	103.47	9.08	13.81	1.74	89.30	9.43	135.52	13.23	1.37	0.71	133.61	12.98
	SPEAKING	125.51	12.14	11.24	0.67	111.43	11.42	162.32	11.99	2.04	1.16	159.02	12.38

Subject 3 : From the Figure 6-7, it becomes evident that SCS had a mean baseline disfluency rate of 1.30 % SS, with a downward trend. A session of P.M.R. further reduced the stuttering to 0.35 % SS. The mean frequency of stuttering remained well below 1% SS after first session of therapy and was maintained till the end of the therapy. SCS was free from stuttering in at least five treatment sessions.

Subject 4: The rate of syllables stuttered in % for Subject 4 , averaged 1.10 during baseline with decreasing-increasing trend. The mean frequency of stuttering was below 0.5 % SS after a session of P.M.R. and continued to be so during the treatment phase except for two sessions when it rose to 0.64 and 0.62 % SS.

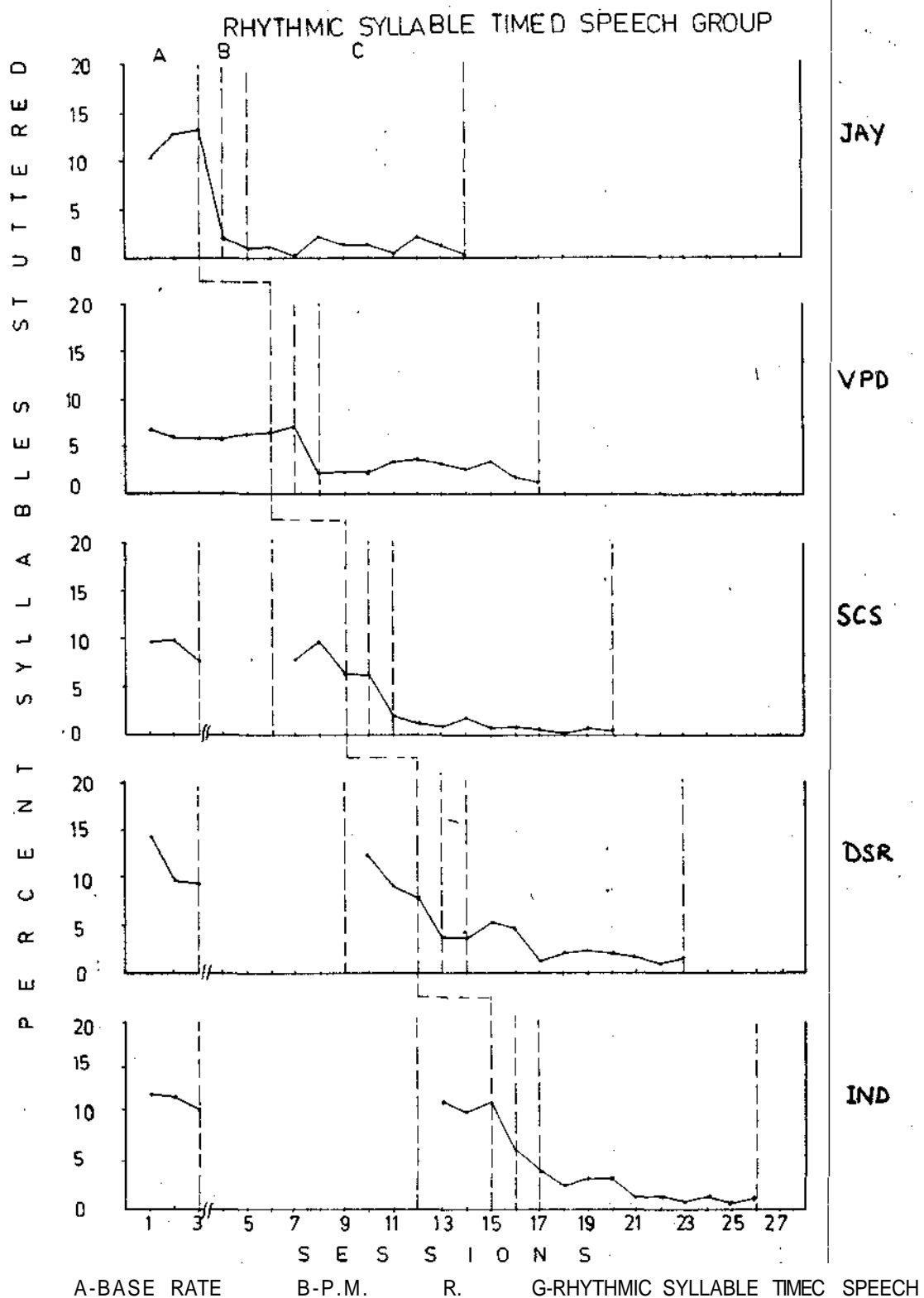
Subject 5 : A review of Figure 6-7 for Subject 5 reveals a mean baseline disfluency rate of 13.81 % with decreasing and increasing trend. The stuttering decreased from pre-therapy level of 13.81 to 9.88 % SS after a session of P.M.R. Further, stuttering reduced considerably after therapy (\bar{X} - 1.37). After Introduction of treatment, secondaries showed an immediate reduction during first session and disappeared completely at the end of the therapy.

The data for percentage of syllables stuttered for all the five subjects while speaking are shown in Figure 6-8 and Table 6-19 .

Subject 1 : Examination of the data for Subject 1 revealed a moderately high baseline { $X = 12.17$) with an increasing trend . Overall, there was clinically significant reduction in disfluencies from baseline to treatment condition. The mean percentage of syllables stuttered showed a decrease from pre-treatment level of 12.17 to 1.20 , after the treatment. Stuttering also showed a decrease after a session of P.M.R.

Subject 2 : for Subject 2, the mean rate of syllables stuttered during baseline was 5.86 and was stable. There was a slight increase in stuttering after a session of P.M.R. Stuttering showed decrease after the introduction of treatment. After three treatment session, there was a slight increase in stuttering. There was again decrease (2.28) and increase (3.43), in seventh and eighth session. There was considerable decrease in stuttering from the pre-treatment level during the last two treatment sessions. After the treatment phase a mean rate of 2.46 % SS was observed, a 58% improvement over the baseline.

Subject 3 : Baseline data are stable for Subject 3 and range from 6.25 to 9.79 % SS. Institution of P.M.R.



A-BASE RATE B-P.M. R. G-RHYTHMIC SYLLABLE TIMEC SPEECH
 FIGURE- 6-8 PERCENTAGE OF SYLLABLES STUTTERED ON A SPONTANEOUS SPEAKING TASK

resulted in decreased stuttering (6.19 % SS). Introduction of Rhythmic Syllable Timed Speech alongwith P.M.R. resulted in a further decline In stuttering that was generally maintained at low levels (X = 0.81) and achieved a zero level in Session 8.

Subject 4 : Examination of Figure 6-8 for Subject 4 indicates that baseline frequency of stuttering ranged between 8 and 14.42 % SS (X = 10.48). Stuttering decreased to 3.53 % SS after a session of P.M.R. and was maintained at this level after the first treatment session. Stuttering remained at a slightly high level in second and third treatment session. During the next seven sessions, stuttering frequency stabilized to some extent and had a mean of 2.41% at the end of the treatment.

Subject 5: Baseline data for Subject 5 ranged from 10.31 to 12.24 % SS and was stable, A session of P.M.R. markedly reduced the stuttering. Inspection of data in Figure 6-8 indicates that there was substantial improvement in the rate of stuttering during the course of therapy. At the end of therapy a mean rate of 2.04 % SS was noted. a 31.85 % improvement over the pre-treatment rate.

The rates of speech of all the five subjects in reading are plotted in Figure 6-9 and Table 6-19.

Subject 1 : Subject t had a mean rate of 153.38 S.P.M. with only a slight downward trend • The rate of speech after a session of P.M.R. was 138.17 S.P.M. There was a gradual increase in the rate of speech to a mean of 160.48 S.P.M. after an Initial drop in the first and second session during treatment phase.

Subject 2 : For Subject 2 , Figure 6-9 reveals a mean baseline rate of 175.93 S.P.M. with a slightly increasing trend. This rate did not change much after a session of P.M.R. After two treatment sessions, there was a slight increase in the rate of speech, which showed a decrease in the third session. After Session 3, the rate of speech increased gradually to a mean of 192.66 S.P.M.

Subject 3 : For Subject 3, the mean rate of speech during baseline was 196.37 S.P.M. with an increasing trend. This trend was maintained even after a session of P.M.R. There was a conspicuous decrease in the rate during the first treatment session followed by a gradual increase in rate during the rest of the treatment sessions. The mean rate of speech at the end of treatment was 171.50 S.P.M.

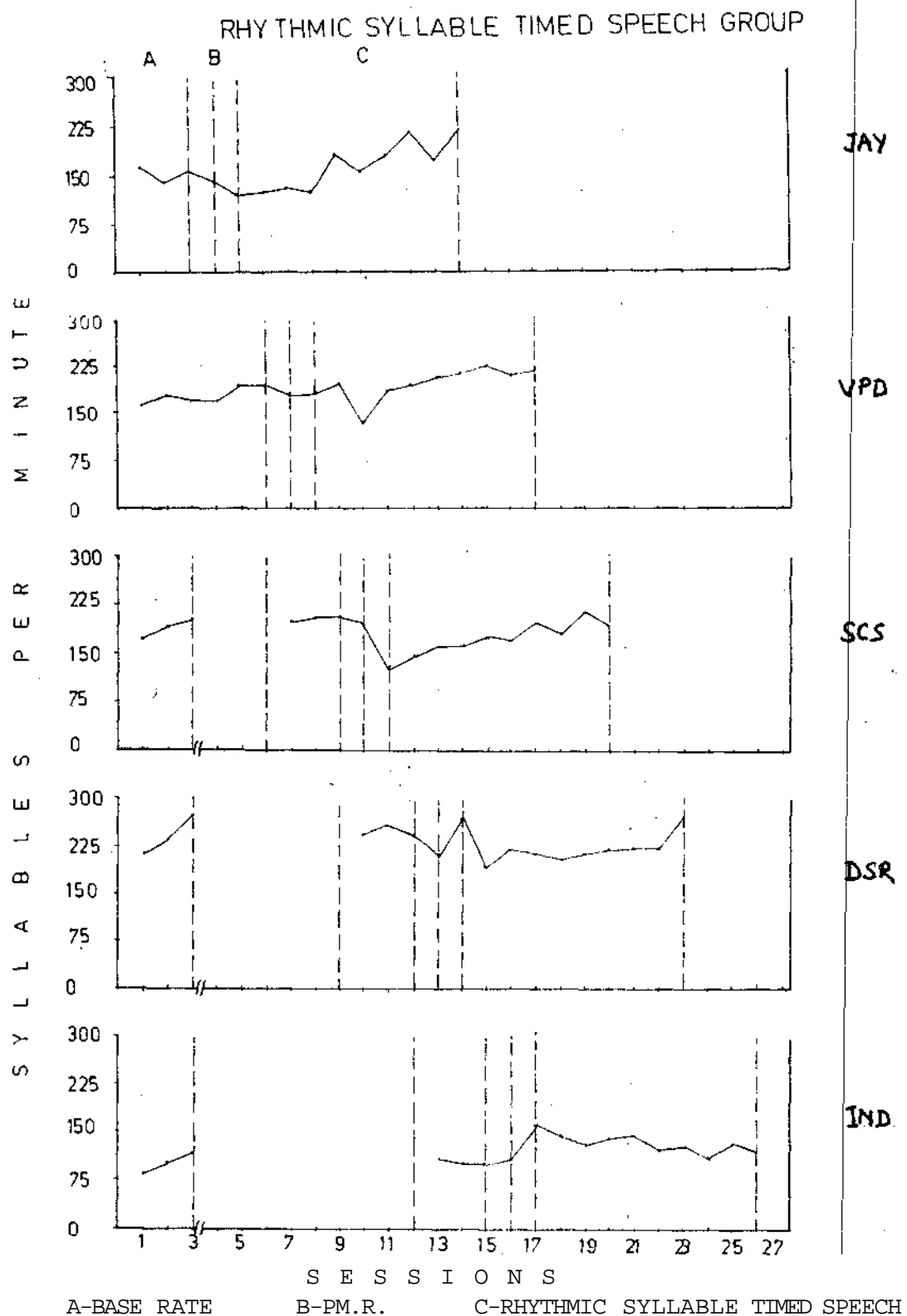


FIGURE-6-9 SYLLABLES PER MINUTE ON A READING TASK

Subject 4 : Baseline data for Subject 4 showed an increasing trend in the rate of speech during the first three sessions which stabilized in the last three sessions { 3C . 244.44). The rate of speech in reading decreased after a session of P.M.R. On introducing treatment, the rate showed an increase but a further decrease was observed from 2nd to 9th session. In the last treatment session, there was an increase in the rate of speech. There was slight decrease in the rate of speech after therapy from the pre-treatment level.

Subject 5 : Examination of baseline data for Subject 5 shows a slightly increasing trend followed by a slight decreasing trend* but within stable limits (X = 103.47). There was an Increase in the rate of speech after institution of P.M.R. After an initial Increase in the rate of speech during the first treatment session, there was a slight decrease which stabilized later (X = 135.52). Overall, there was an Increase of 21.47% in the rate of speech from the pre-to post-treatment level.

The rates of speech for all the five subjects in speaking are shown in Figure 6-10 and Table 6-19,

Subject 1: Subject 1 had a baseline rate which ranged from **122.51** to 151.33 S.P.M. with a slightly decreasing trend { X = 136.12) . This trend reversed after a session

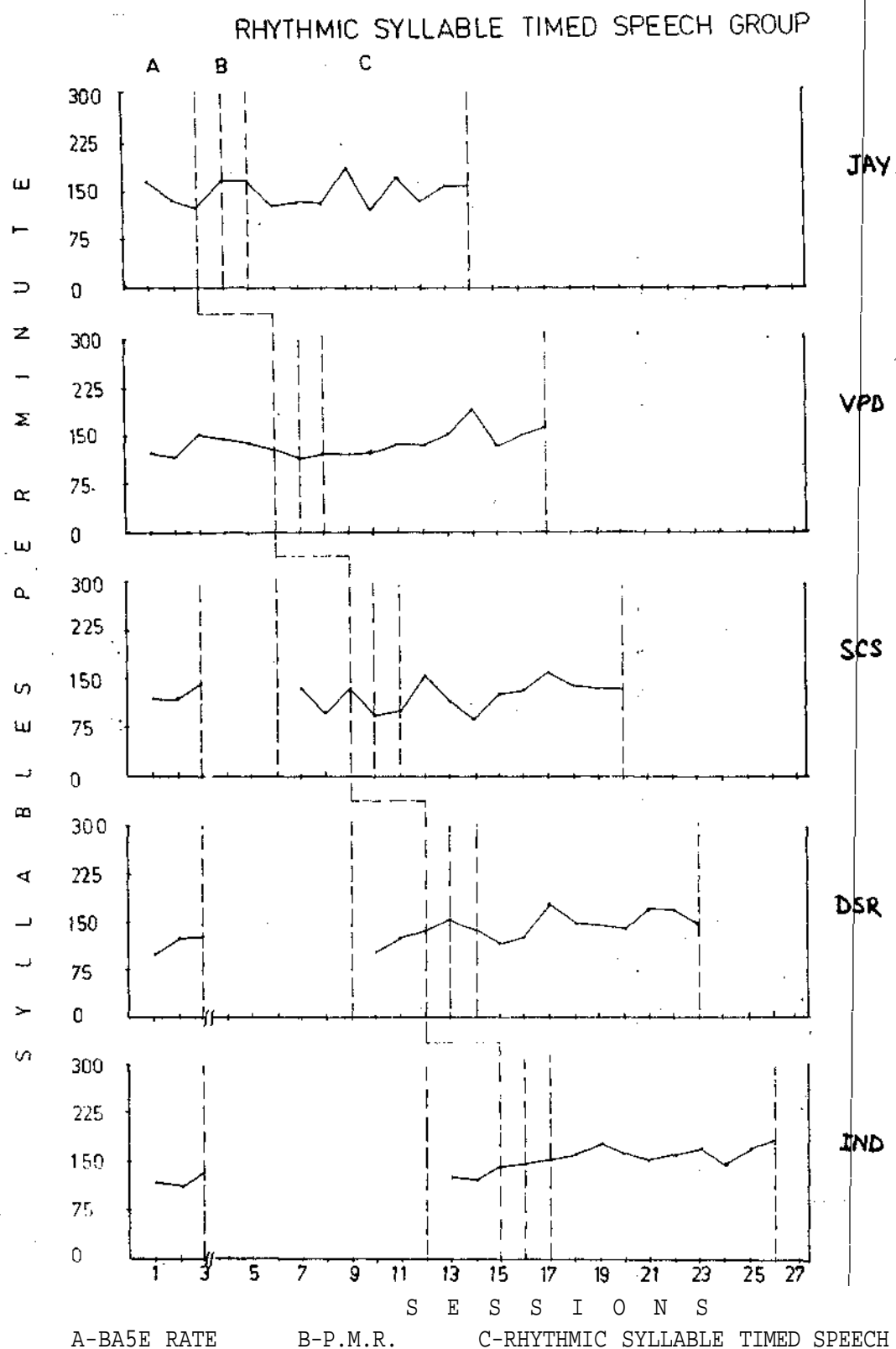


FIGURE-6-10 SYLLABLES PER MINUTE ON A SPONTANEOUS SPEAKING TASK

of P.M.R. and remained almost same after the first treatment session. There was a slight decrease in the rate of speech in the second session, and this level was maintained during the next two sessions. The rate showed again an increase in the fifth session which almost stabilized in the next five sessions. The mean rate of speech at the end of therapy was 146.89 S.P.M.

Subject 2 : The baseline data for Subject 2 shows an increasing trend which stabilized during the last 3 sessions. The mean rate of speech during the pre-therapy evaluation was 135.25 S.P.M. Slight reduction in the rate was observed after a session of P.M.R. Upon treatment intervention the rate of speech increased gradually till the seventh session. In the eighth session, the rate of speech decreased to 132.20 S.P.M. and showed an increase in the last two sessions. The mean rate of speech at the end of treatment was 143.29 S.P.M.

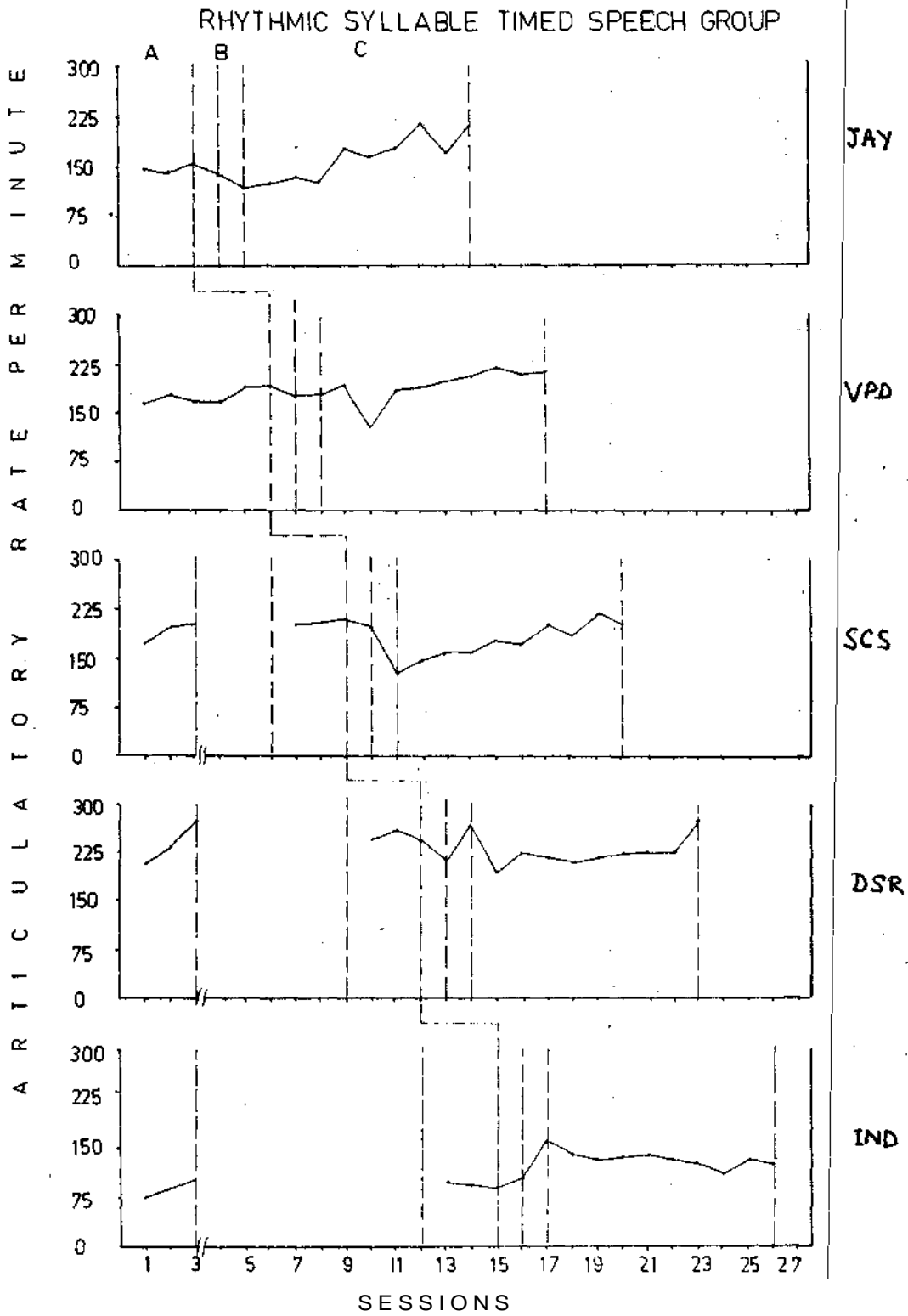
Subject 3 : A review of the figure 6-10 for Subject 3 reveals a mean baseline rate of 123.23 S.P.M. with only a slight downward trend. This trend continued even after a session of P.M.R. Upon introduction of treatment the rate of speech increased in the first two sessions, but decreased in the next two sessions. The rate showed a steady increase during the subsequent sessions ($\bar{X} = 128.23$).

Subject 4 : Inspection of the Figure 6-10 shows an increasing trend during baseline in the rate of speech for Subject 4 , which continued during the P.M.R. phase. During treatment phase the maximum rate of speech was 173.66 S.P.M. in the 4th session. DSR achieved a mean rate of 146.81 S.P.M. at the end of therapy. which was 23.43 % higher than the baseline rate.

Subject 5 : The baseline rate for Subject 5 ranged from 111.88 to 144.13 S.P.M, with a mean of 125.51 S.P.M There was an increase in the rate of speech after a session of P.M.R. This increase continued till the end of therapy. The mean rate of speech after the treatment intervention was 162.32 S.P.M, This amounted to an Increase of 29.32% from pre-treatment level.

Figure 6-11 and Table 6-19 depict the articulatory rate in reading for all the five subjects.

Subject 1 : Subject 1 had a mean pre-therapy articulatory rate of 144.93 S.P.M. There was a slight decrease in the rate after a session of P.M.R. After the introduction of treatment, the rate of speech showed a gradual increase from second session onwards. The mean articulatory rate at the end of the treatment was 160.19 S.P.M.



A-BASE RATE B-P.M.R. C-RHYTHMIC SYLLABLE TIMED SPEECH
 FIGURE-6-11 ARTICULATORY RATE PER MINUTE ON A READING TASK.

Subject 2 : Pra-therapy articulatory rate of Subject 2 had a slight increasing trend ($X = 174.21$). There was a negligible decrease in the rate after a session of p.M.R. During treatment phase. the rate showed an increase in the first two sessions but a decrease In the third session. After the third session, there was a gradual increase in the rate of speech. Subject 2 had a mean post-therapy articulatory rate of 191.49 S.P.M.

Subject 3 : Examination of baseline for Subject 3 reveals a mean baseline articulatory rate of 193.91 S.P.M. with a slight increasing trend. A slight Increase in the rate was seen after a session of P.M.R. After an initial drop in the rate during the first treatment session. there was a gradual Increase in the rate in the subsequent sessions. After therapy, mean articulatory rate for Subject 3 was 171.17 S.P.M

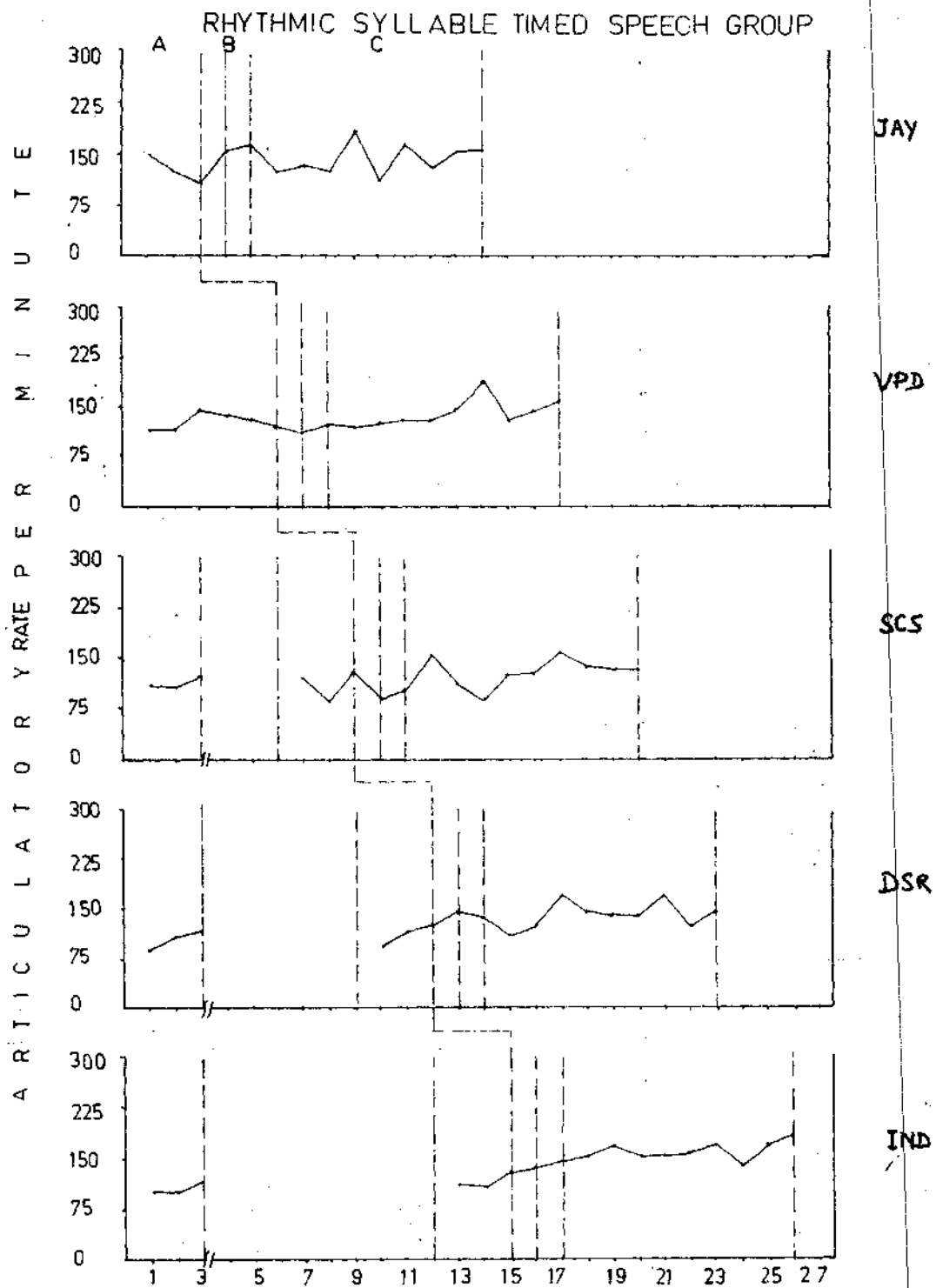
Subject 4 : Baseline data for Subject 4 showed an upward trend during the first three sessions, which stabilized in the last three sessions. The mean articulatory rate during baseline was 241.77 S.P.M. There was a reduction In the articulatory rate after a session of P.M.R. but an increase after the first treatment session. The articulatory rate showed a decrease in the second treatment session. The articulatory rate continued to increase in the remaining treatment sessions. Mean articulatory rate at the end of therapy was 224.43 S.P.M.

Subject 5 : The mean pro-therapy articulatory rate for Subject 5 was 89.30 S.P.M. which ranged from 74 to 100.66 S.P.M. There was an increase in the rate of speech after institution of P.M.R. During treatment the rate showed a further increase in the first session. Though the rate decreased gradually in the subsequent treatment sessions to a mean of 130.61 , it represented an increase of 49.61 % from the pre-treatment level.

Figure 6-12 and Table 6-19 show the articulatory rate for all the five subjects during speaking condition.

Subject 1 : The baseline data for Subject 1 reveals a decreasing trend, The mean articulatory rate during baseline was 123.57 S.P.M The rate showed an increase after a session of P.M.R There was further increase in the rate of speech in the first session after institution of treatment. There were variations in the articulatory rate in the rest of treatment sessions. At the end of therapy , mean articulatory rate in speaking condition was 143.49 S.P.M.

Subject 2 : From the Figure 6-1 a it becomes evident that Subject 2 had a mean articulatory rate of 127.44 S.P.M. during the baseline . The baseline had a slight increasing and decreasing trend. The articulatory rate showed a decrease after P.M.R. session. There was an increase in the articulatory rate.



SESSIONS

A-BASE RATE B-P.M.R. C-RHYTHMIC SYLLABLE TIMED SPEECH

FIGURE- 6-12 ARTICULATORY RATE PER MINUTE ON A SPONTANEOUS SPEAKING TASK.

-atory rate during the treatment phase. Subject 2 had a maximum articulatory rate of 188.81 in the 7th treatment session. After the end of therapy, mean articulatory rate was 140.02 S.P.M, Overall, there was an increase in the articulatory rate from the pre-treatment level.

Subject 3 : The pre-therapy articulatory rate for Subject 3 in speaking condition averaged 113.43 S.P.M. The rate showed a decrease after a session of P.M.R. During the treatment intervention, the rate showed an increase, The maximum increase in the rate was in the seventh session (157.59 S.P.M.). The mean articulatory rate after the treatment was 127.25 S.P.M.

Subject 4 : A review of figure 6-12 for Subject 4 reveals a mean articulatory rate of 106.70 S.P.M. during baseline. After a session of P.M.R, the articulatory rate was 146.92 S.P.M. On introduction of treatment, articulatory rate showed an Increase. The maximum articulatory rate was achieved by the subject in the 4th treatment session (171.66 S.P.M.) . At the end of therapy , mean articulatory rate of 139.45 was observed, a 30.69% increase over baseline.

Subject 5 : Examination of the data for Subject 5, shows a mean baseline articulatory rate of 111.43 S.P.M. with a slightly increasing trend. This trend continued through P.M.R. to the treatment phase, Post-therapy mean articulatory rate for Subject 5 was 159.02 S.P.M. It represented an 42.70% increase in the articulatory rate from baseline.

RESULTS OF THE PERSONALITY TESTS

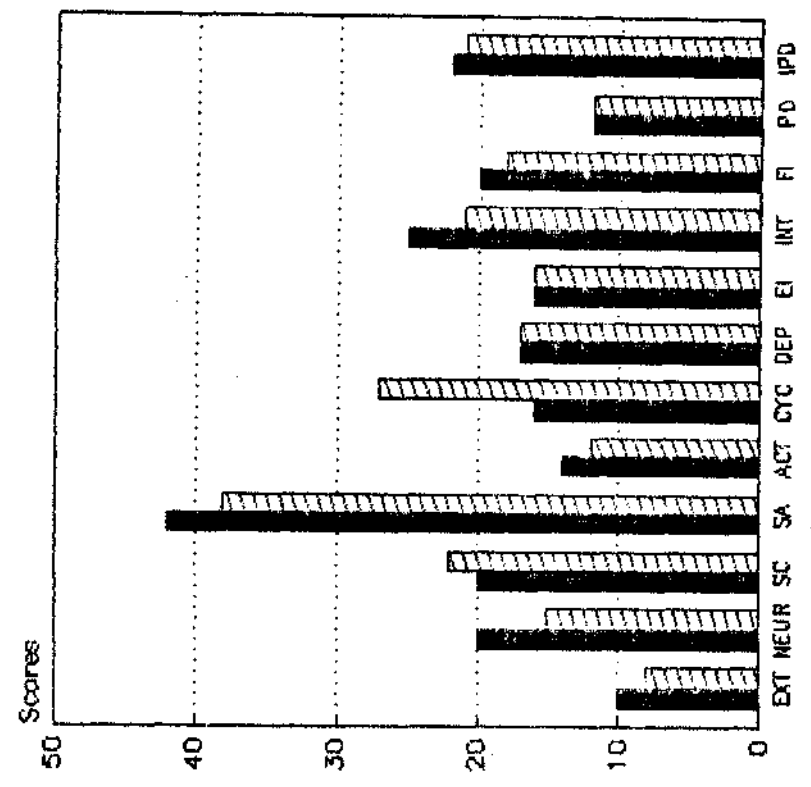
The results of the Personality Tests administered before and after therapy to Subject 1,2,3,4 and 5 are presented in the Appendices XII, XIII, XXV, XV and XVI respectively;

Subject 1 : for Subject 1, personality tests showed a slight decrease in the scores of Neuroticism, Social Anxiety, Activity, Depression Tendencies, Introversion, Psychosomatic Disorders and Interpersonal Communication Disorders traits after therapy. There was a significant increase in the scores of Self-confidence trait but only a slight for Extroversion trait. The Cyclothymia, Emotional Instability and Feelings of Inferiority traits did not show any change in the scores. Only the scores of Social Anxiety, Activity and Psychosomatic Disorders traits were within normal limits. (Fig.6-12A)

Subject 2 : Post-therapy personality tests results for Subject 2 showed a decrease in the scores of Extroversion, Neuroticism, Social Anxiety, Activity, Introversion, Feelings of Inferiority and Interpersonal Communication Disorders traits. There was an increase in the scores of Self-confidence and Cyclothymia traits, while the scores of other traits remained same. Only the scores of Introversion, Feelings of Inferiority, and Psychosomatic Disorders traits had normal values, though the scores of some other traits did show a tendency towards normalcy, (Fig. 6-12B)

VPD

Personality Traits Pre Vs Post Therapy



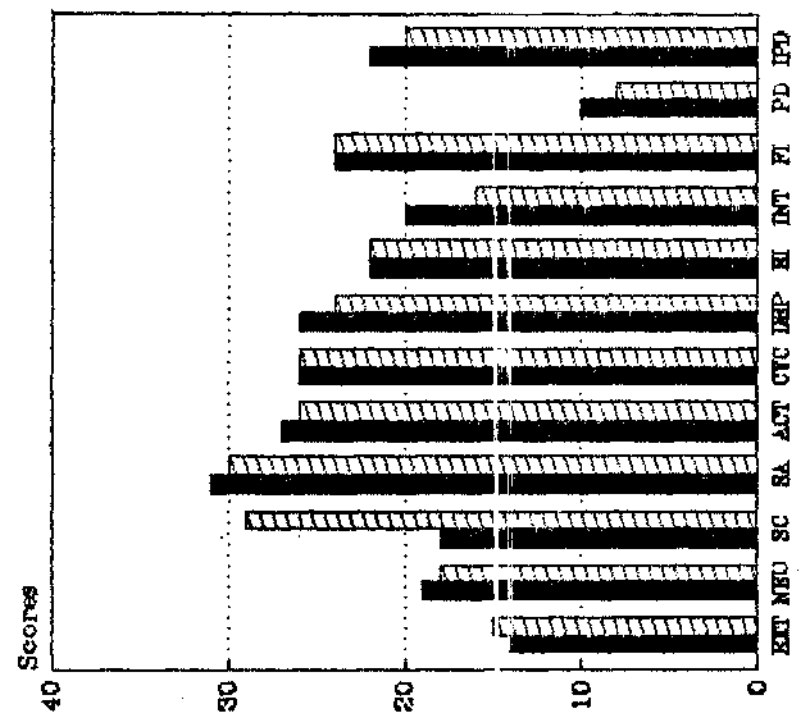
Personality Traits

Pre Therapy Post Therapy

FIGURE 6-12B

JAY

Personality Traits Pre Vs Post Therapy



Personality Traits

Pre Therapy Post Therapy

FIGURE 6-12A

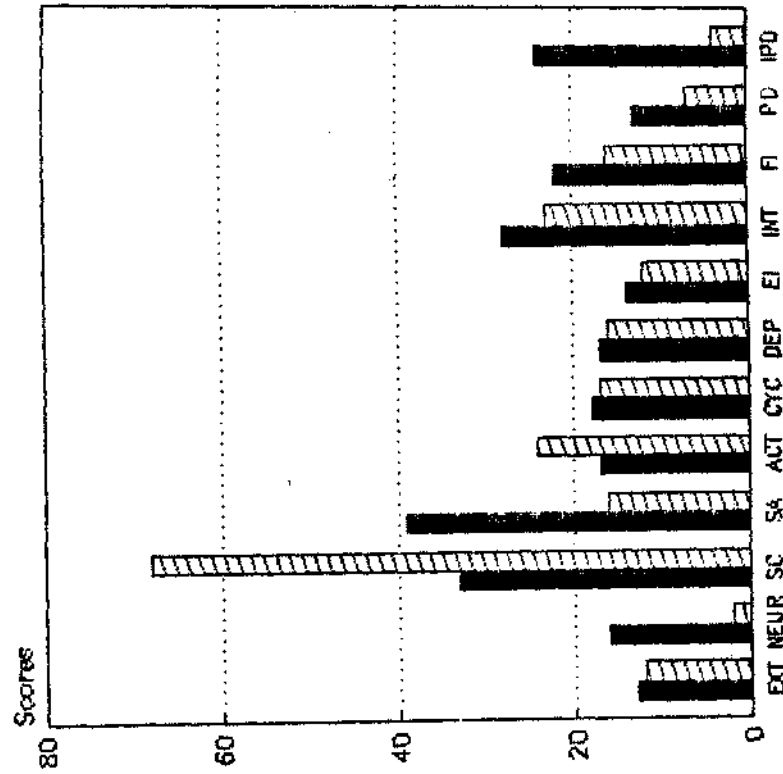
Subject 3 : Post-therapy, personality assessment for Subject 3 revealed an Increase towards normalcy in the scores of Self-confidence and Activity traits. There was a decrease In the scores of Neuroticism, Social Anxiety, Cyclothymia, Depression Tendencies, Emotional Instability, Introversion, Feelings of Inferiority, Psychosomatic Disorders and Interpersonal Communication Disorders traits and these became normal. The scores of Extroversion trait showed a slight decrease. Overall, there was a change in the personality scores towards better.(Fig.6-i2C)

Subject 4 : For Subject 4, personality assessment after therapy showed a decline in the scores of Neuroticism, Social Anxiety, Depression Tendencies, Emotional Instability, Introversion, Feelings of Inferiority and Interpersonal Communication Disorders traits. An upward trend was noted in the scores of Self-confidence, Activity and Cyclothymia traits while the scores of other traits did not change All these scores were within normal limits at the end of therapy, (Fig-6-12,D)

Subject 5 : Post-therapy personality questionnaire scores for Subject 5 showed a decline for Neuroticism, Social Anxiety, Activity, Cyclothymia, Emotional Instability, Introversion, Feelings of Inferiority, Psychosomatic Disorders and Interpersonal Communication Disorders traits. There was a dramatic improvement in the scores of Self-confidence trait. The scores of other traits did not show any change. All the scores were within normal limits after therapy.(Fig .6-12.E)

SCS

Personality Traits Pre Vs Post Therapy



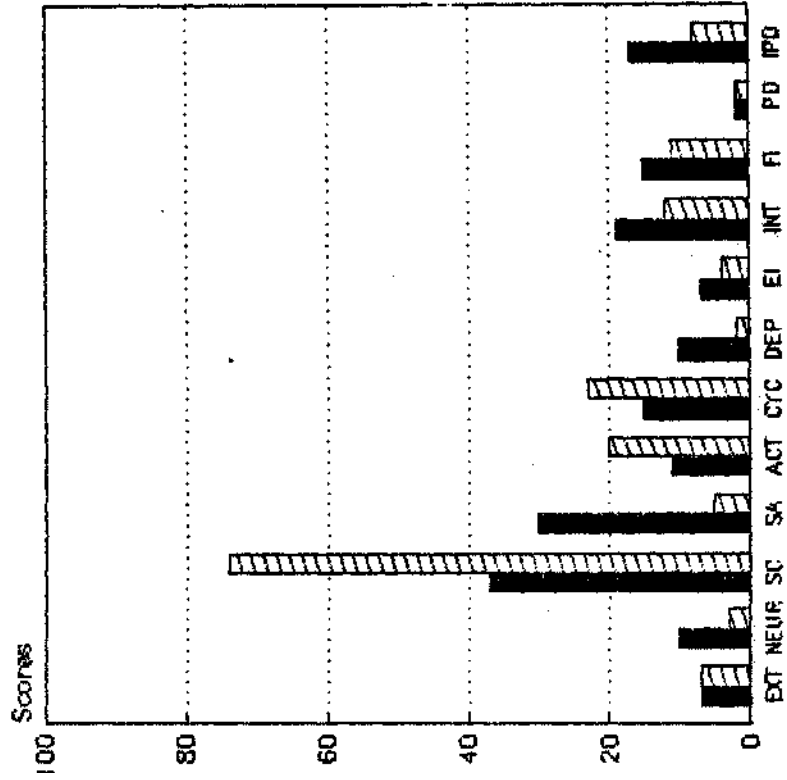
Personality Traits

Pre Therapy Post Therapy

FIGURE 6-12C

DSR

Personality Traits Pre Vs Post Therapy



Personality Traits

Pre Therapy Post Therapy

FIGURE 6-12D

IND

Personality Traits Pre Vs Post Therapy

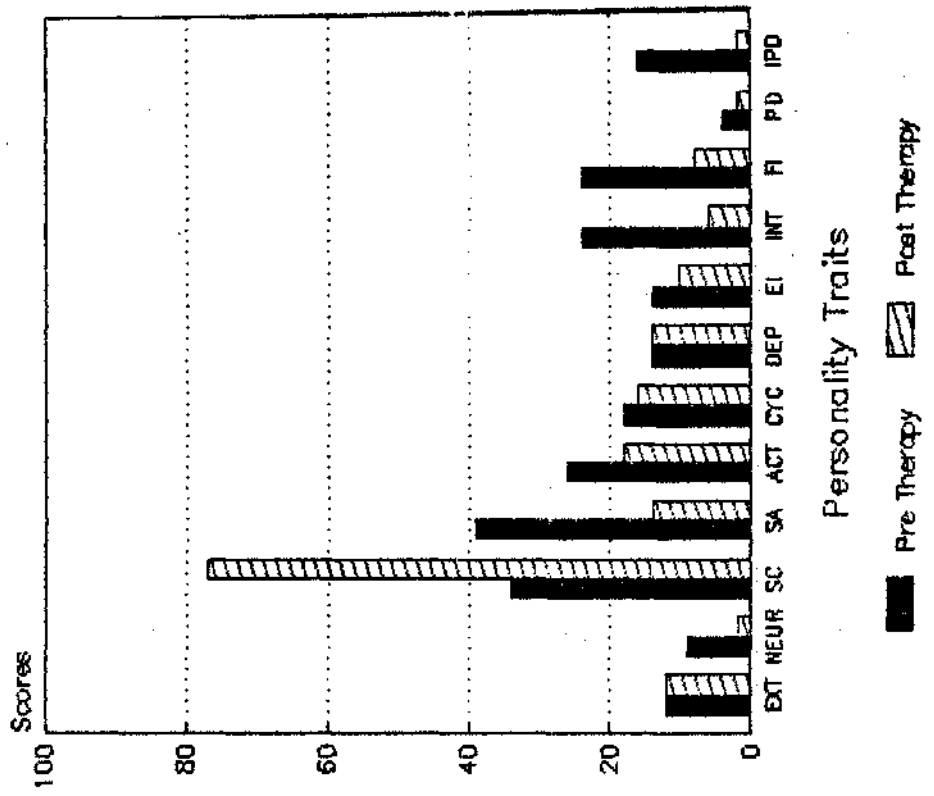


FIGURE 6-12E

GENERAL TREND OF RESULTS WITH THE USE OF RHYTHMIC SYLLABLE
TIMED SPEECH IN COMBINATION WITH PROGRESSIVE MUSCULAR
RELAXATION

Rhythmic Syllable Timed Speech in combination with P.M.R. was effective in reducing the stuttering in all the 5 cases treated, both in reading and speaking conditions. The mean percentage SS was less than 0.5 for three cases and for other one it was less than 1.00 in reading condition after therapy. Only for the fifth case it was slightly higher than 1% SS. The mean % SS was less than : 1.25 for two cases : 2.50 for three cases in the spontaneous speech condition. The speech rate in S.P.M. showed an increase in reading for 3 out of 5 cases, tout only in one case the difference was marked, SCS and DSR showed a slight reduction in speech rate in reading condition while there was an increase in speech rate in speaking condition. The increase was conspicuous for DSR only. All the cases except one achieved a normal rate of speech { 200 ± 20 S.P.M.) in reading condition. Speech rate. In speaking condition was slightly lower than the normal.

Meyer and Mair (1963) treated 5 stutterers with a portable metromome, When the beat was set at 90 per minute, all the stutterers became fluent. But this fluency was not carried over to unaided speech. Andrews et al.,(1964)

reported on using syllable timed speech with thirty five stutterers* both adults and children. Before initiation of therapy, baseline fluency levels were established and evaluations made for neurotic traits • Two groups with baseline severities of 21 per cent to 36 per cent SW dropped to about 1 per cent SW at dismissal and then rebounded to 7 per cent to 10 per cent SW in the next nine months. The five children (C age eleven) started at 20 per cent SW, dropped to 0 per cent SW, and then went back upto about 1 per cent SW in ensuing months. The researchers noted that these clients who responded best had very few neurotic traits, that the amount of improvement toward normality (not just reduction in per cent SW) was greater for the moderate than for the severe stutterers. Findings of the present study differ. Three subjects with Neuroticism score of 19. 20 and 16 and two subjects with Neuroticism score of 10 and 9 responded equally well to the treatment. All the subjects even with differing degree of severity showed improvement. These differences could be due to the addition of P.M.R. to the Rhythmic Syllable Timed Speech In the treatment programme. Holgate and Andrews (1966) added psychotherapy and longer training to syllable timed speech. They reported recurrence of stuttering after a short time.

Brandon and Harris (1967) utilised a syllable-timed speech programme that ran 150 minutes per day for two weeks, followed by two sessions per week for three months. phasing down to weekly sessions and finally dropping to quarterly sessions for group discussions and refresher practice on syllable timed speech. Eighteen clients were rated as successful (60 per cent or greater improvement in fluency) and ten were rated as failures. A low score on neurotic traits and a high level of extroversion appeared to relate to poor performance. Stutterers who showed least improvement appeared to have low anxiety and to have the following characteristics : relaxed , confident, cheerful, outgoing, friendly, sociable and egocentric. These observations are in agreement with the present study. Brandon and Harris felt that the above traits reduced conditionability and learning drive.

Brady (1968) combined metronomic speech with desensitisation and reported fluency within the normal range for 3 cases without the metronome • Wolpe (1969) found that a combination of syllable timed speech and relaxation resulted in 90 - 95% improvement in his case. These findings are similar to that of present study.

Meyer and Coraley (1969) reported on the use of rhythm with forty eight stutterers. They divided the

[

clients into three groups, which continued group therapy for purposes of problem solving, relaxation activity. and role-playing stimulation • One group used a monaural portable metronome outside, the second group used a binaural unit, and the third group acted as unaided controls. Over all , 35 per cent of the stutterers failed to master the rhythm technique , the majority of these showed " hard blockings."¹¹ Six patients in the whole sample attained complete fluency.

Wohl (1968) felt that the metronome reduced anxiety levels in general and inhibited awareness of speech and sensitivity to stress. In the present investigation, stutterers showed a mean decrease from 36.2 to 20.6 in the scores of Revised Willoughby Questionnaire For Self - Administration . Alford and Ingham (1969) felt that improved results could be expected with some more additions to basic rhythm procedures.

Ingham and Andrews (1971b) and Ingham, Andrews and Winkler (1972) used syllable timed speech technique with several groups of stutterers. After 9 months of treatment, half of them did not stutter , but only a quarter of them spoke at normal rates of speech. Andrews et al., (1980) while commenting on rhythm stated : " This treatment technique produces a good initial effect size, but deterioration over time is considerable. Stutterers dislike the cadence of

rhythmic speech and when they begin to stutter again, they commonly experience a return of the complicated secondary stuttering (Andrews and Ingham, 1972). Rhythm is an unloved treatment," Fiedler and Standop (1983) suggested that because of " ... a great many training sessions required ... stutterers often express an aversion to this procedure and perceive it at times to be as conspicuous as stuttering itself ... the method should be reserved for the severest stuttering configurations,"

In this study the four cases (JAY, SCS, DSR and IND) who had secondary characteristics did not show these once the treatment began and none reported dislike for the treatment programme. This observation further finds support in the work of Brady (1971) who stated! " ... " secondary symptoms' such as facial grimaces, shoulder Jerks, and eye blinking are especially sensitive to the metronome effect and usually greatly diminish or disappear even before a marked decrease in nonfluency is seen." Wohl (1968) felt that the metronome relieves anxiety in the clinician and the client's relatives.

Srady (1971) reported data on 23 out of 26 stutterers who completed the Metronome - Conditioned Speech Retraining (MCSR)programme and were followed six to 44 months later.

The data obtained at follow up indicated that 90% of subjects improved and the group as a whole decreased their disfluency by 67.3%.

timberger (1971) studied the effect of rhythmic auditory stimulation on selected parameters of the stuttering problem in ten adult male stutterers. He reported that the metronome was effective in reducing over-all disfluency frequency during spontaneous speech and fluency increased over time while the subjects spoke with and without the aid of the metronome • The majority of the subjects felt that their speech was more acceptable while speaking with the metronome than without. The stutterers' attitudes towards metronome were mixed. Two objections to the metronome were its physical appearance and the attention the metronome speech would attract.

Herman and Brady (1973) made a survey of clinicians experiences about the use of miniaturized metronomes in the treatment of stuttering. They noted that 723% of the total number of stutterers treated with the unit were judged to have " improved." Adams and Hotchkiss (1973) and Hotchkiss (1974) reported the responses of three adult stutterers to MCSR and noted that one subject responded well to the treatment, another failed to respond and the third refused to wear the metronome.

Coppola and Yalri (1982) reported on using rhythm with three stuttering pre-school children. They were seen for three forty-five minute therapy sessions each week for five weeks. The authors reported a good fluency development and spontaneous generalisation.

Pellraan (1947) had objected to the use of rhythm because he thought it intensified the feelings of inferiority and damage one's self-concept. The post-therapy personality scores of the subjects in the present study do not support these views.

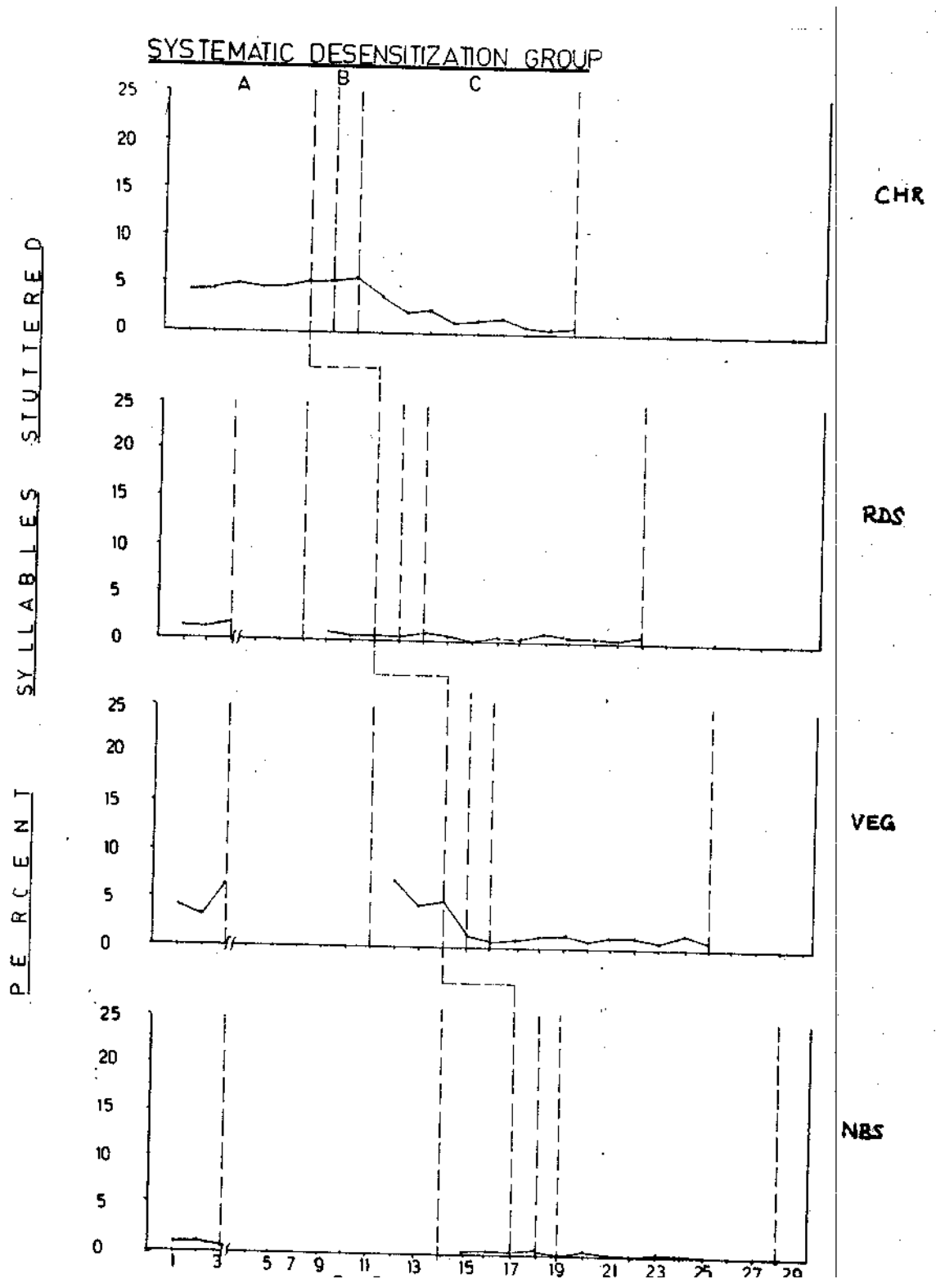
Rhythm is a method that seems to provide fluency improvement with great speed and comparative ease. Research has suggested the possibility of a constitutional fault in at least some stutterers. Rhythmic pacing of speech apparently overcomes or compensates for most of the dysfluency factors, although it is not known why it happens. Ham (1986) stated, "In comparing rhythm techniques, especially metronome* to other fluency inducing methods, we found many instances where rhythm seems to provide the most, or very High levels of, fluency for stutterers,...." Apparently all stutterers may not respond well to the use of rhythmic pacing. This technique is one of the most effective in supporting fluency. It also acts with great speed and provides extensive opportunities for self-direction to the client. The technique can be applied in group or individual formats* intensive or spaced schedules, and across a range of in-clinic and out-clinic activities.

GROUP III SYSTEMATIC DESENSITIZATION

Figure 6-13 and Table 6-20 show the percentage of syllables setter®* In reading for Subject 1 (CHR), 2(RDS), 3 (VEG) , and 4 (NBS 5).

Subject 1 : Inspection of the baseline for Subject 1 reveals gradually increasing stuttering and a mean rate of dysfluencies of 4.84%, this rate showed further Increase during the P.M.R. and first treatment session (5.51). After treatment session, there was a gradual decrease in the rate of stuttering . In the last three sessions, the percentage of stuttering., was less than 1 . On termination of therapy stuttering decreased by 69,71% from the pre-treatment level, After 8th therapy session, it was observed that the duration of the blocks had reduced . CHS reported that he had only one block while reading in chorus in church . After 9th session, he reported complete success.

Subject 2 : Subject 2 had a mean baseline dysfluency rate of 0.97% with a slight downward trend, however. this rate was markedly reduced during the P.M.R. session. Furthermore, the rate continued to decrease after the first treatment session and this reduction was maximum during the third session (0%). Post -therapy mean % of ss showed a



SESSIONS
A-BASE RATE B-P MR. C-SYSTEMATIC DESENSITIZATION
FIGURE- 6-13 PERCENTAGE OF SYLLABLES STUTTERED ON A READING TASK.

Table 6-20 Pre and post-therapy means (M) and standard deviations (S.D.) of S.P.M., %SS and A.R. for reading and spontaneous speaking tasks of Systematic Desensitization Group.

SUBJECT	CONDITION	PRE-THERAPY				POST-THERAPY							
		S.P.M.	S.D.	M	%SS	A.R.	S.P.M.	S.D.	M	%SS	A.R.		
CHR	READING	144.24	6.59	4.84	0.33	137.24	5.95	134.84	26.17	1.95	1.52	132.52	27.24
	SPEAKING	171.45	13.47	3.88	0.75	164.82	13.93	159.39	15.87	1.09	0.45	157.66	16.04
RDS	READING	207.90	16.31	0.97	0.53	205.91	16.83	201.35	12.39	0.41	0.25	200.52	12.48
	SPEAKING	131.50	10.02	4.52	0.76	125.65	10.47	138.94	15.06	1.15	0.58	137.02	15.27
VEG	READING	164.83	13.78	4.99	1.44	156.81	15.12	178.56	8.56	0.98	0.32	176.62	9.08
	SPEAKING	152.49	16.52	4.47	0.65	150.90	13.05	165.62	8.11	1.28	0.51	163.49	8.31
NBS	READING	228.47	18.04	0.44	0.16	227.46	18.16	214.07	21.98	0.09	0.12	213.87	21.98
	SPEAKING	162.29	22.96	6.19	2.57	152.83	23.66	172.93	15.67	1.24	0.92	170.87	16.59

decrease of 57.73 from the pre-therapy level, though both the means were less than 1 per cent. During P.M.R. training RDS reported a tingling sensation in the body, similar to that reported by Wolpe (1982) for his cases.

Subject 3 : For Subject 3, the rate of syllables stuttered in % averaged 4.99 , Baseline had an increasing trend during the first half and slight decreasing trend in the second half. There was considerable decrease in stuttering after P.M.R. and treatment sessions. The mean percentage of syllables stuttered decreased from 4.99 to 0.98 for reading condition.

Subject 4 : Examination of Figure 6-13 for Subject 4 reveals a mean baseline dysfluency rate of 0.44% with only a slight downward trend. Stuttering showed a decrease after the P.M.R. session, which was maintained during the treatment phase too. In the first and fourth treatment session, NBS did not have stuttering at all and the same state was maintained after the sixth session of therapy. There was marked decrease in stuttering from the pre-therapy to the post-therapy level.

The percentage of syllables stuttered in Speaking are displayed in Figure 6-14 and Table 6-20 for all the four subjects.

Subject 1 : Figure 6-14 reveals a mean baseline rate of 3.88% SS with a slight increasing trend. There was reduction in the stuttering after a session of P.M.R. This reduction

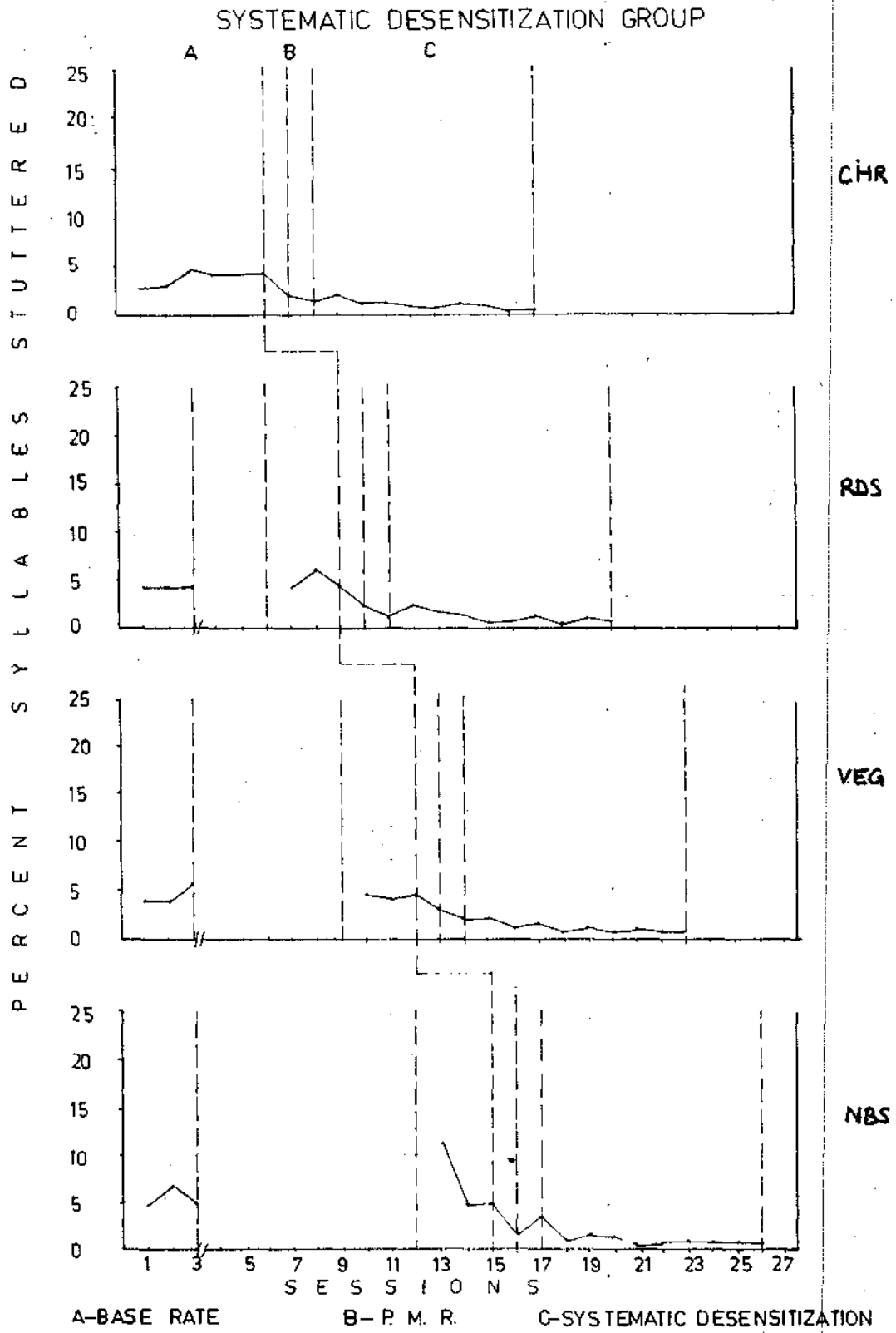


FIGURE-6-14 PERCENTAGE OF SYLLABLES STUTTERED ON A SPONTANEOUS SPEAKING TASK.

was maintained through out the treatment phase, There was a slight increase in dysfluency in the second treatment session, tout at a rate that was still far below the baseline* CUR acted in the drama, a week after the termination of therapy, for which he has been desensitized earlier. After about a month, on a casual visit to the clinic CHR stated that during drama, he did not stutter at all, even his speech sounded normal.

Subject 2 : Baseline data are stable for Subject 2, though there was slight increase in the rate during the second half in one session. Institution of P.M.R. resulted In marked decrease in stuttering. Stuttering showed a slight increase after the first treatment session. After the second treatment session, again there was a decrease in the rate of stuttering. This decrease was greater during the fifth and eighth session (0.58, 0.51 }, respectively.

Subject 3 : Review of the Figure 6-14 indicates that baseline frequency of stuttering for VEG ranged from 3.80 to 5.60 % SB { $X = 4.47$). Stuttering decreased to 3% SS after a session of P.M.R. Suring the first two treatment sessions, stuttering was maintained at a level of 2.17 % SS, but it showed a gradual decrease in the subsequent treatment sessions In the last treatment session, stuttering was reduced to 0.76% SS ($X = 1.28$).

Subject 4 : There was an increase in the stuttering during the fourth baseline session, but it stabilized in the next two sessions and had a mean of 6.19% SS. This rate was markedly reduced after the P.M.R. session (1.56% SS) , Though stuttering showed an increase after the first treatment session, this rate was still far below baseline. Stuttering showed a considerable decrease after the first treatment session and was maintained till the end of the therapy. The mean rate of stuttering after therapy was 1.24 .

figure 6-15 and Table 6.20 depict the rate of speech in reading for all the four subjects.

Subject 1 : A mean baseline rate of 144.24 S.P.M. with a slight increasing trend was observed for Subject 1. This rate showed a decrease after the P.M.R. and first treatment session. There was an Increase in the rate in the second and third treatment session, but again a decrease in the fourth session. After that there was a gradual increase in the rate of speech to a mean of 134.84 S.P.M, The difference between the pre-and post-therapy means was not substantial.

Subject 2 : Examination of the baseline data for Subject 2 shows a slightly increasing trend followed by a slight decreasing trend, but within stable limits (X = 207.90 S.P.M.) , There was a decrease In the rate of speech

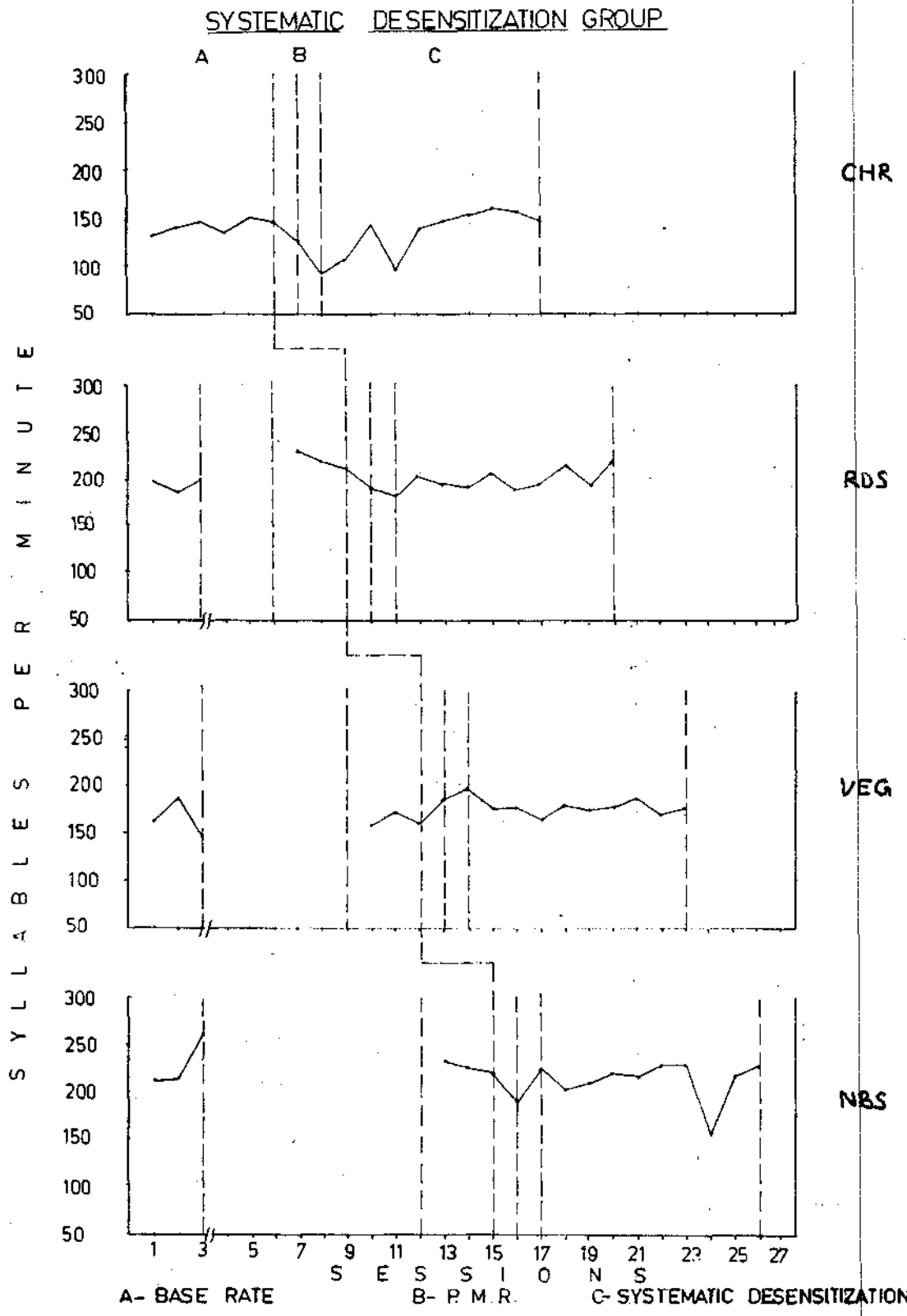


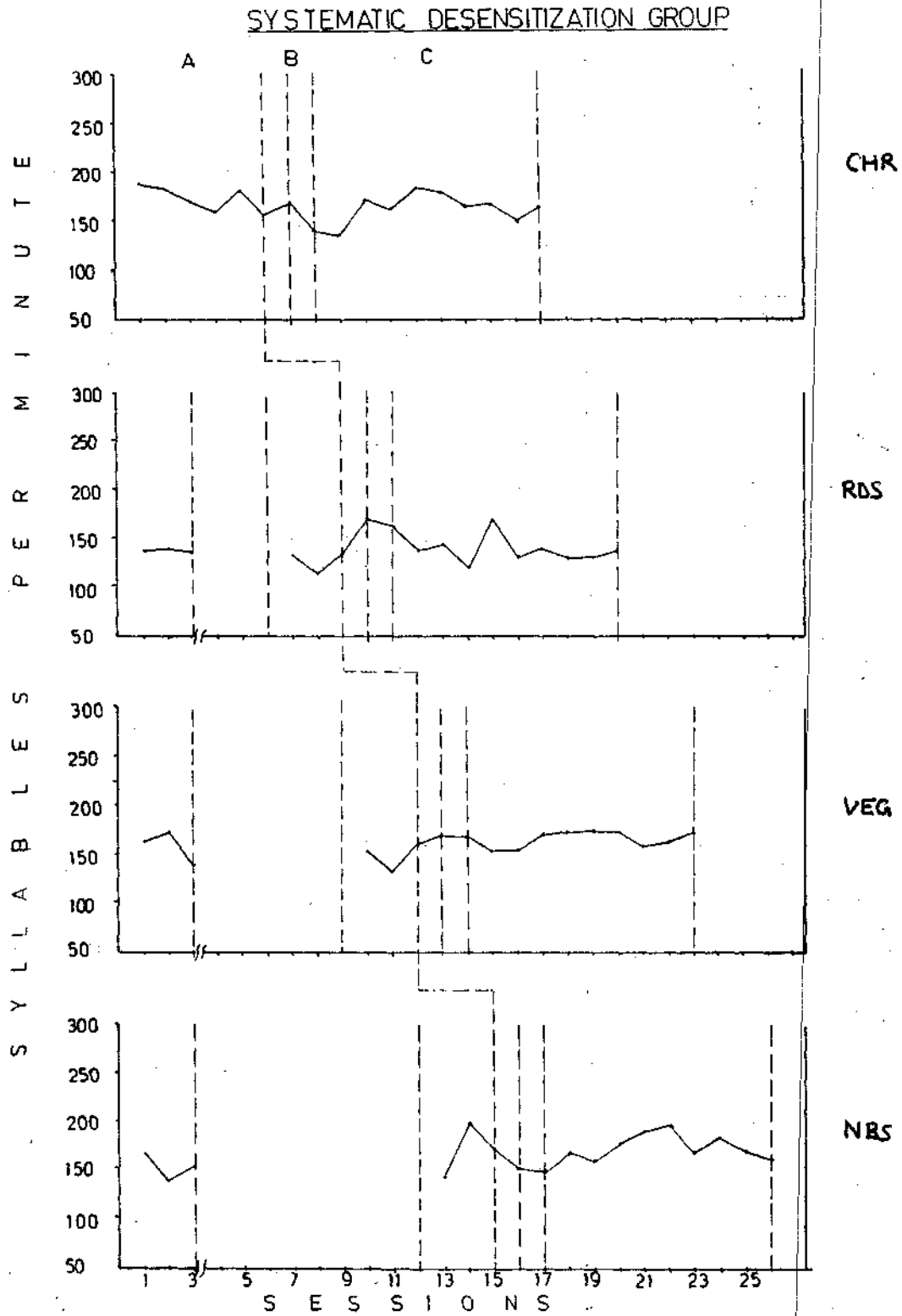
FIGURE- 6-15 SYLLABLES PER MINUTE ON A READING TASK.

after a session of P.M.R. The rate of speech did not show increase after the treatment intervention. The mean post* therapy syllable per minute rate of 201.39 ± 12.39 for reading condition is within the normal limits.

Subject 3 : The mean rate of speech during baseline for Subject 3 in reading condition was 164.83 s.p.M. There was an Increase in the rate of speech after a session of P.M.R. which was maintained throughout the treatment phase with slight variations. At the end of therapy, there was slight increase in the rate of speech ($X = 178.56$) from the pre-treatment levels. The mean post-therapy syllable per minute rate of 178.56 ± 8.56 for reading condition is almost normal*

Subject 4 : Baseline data for the Subject 4 had an increasing-decreasing trend with a mean of 228.47 s.p.M. Rate showed a slight decrease after a session of P.M.R. Upon treatment intervention, there was an increase in the rate of speech throughout the treatment phase except for the eighth session, when the rate of speech was 155.66 S.P.M. Overall, there did not appear any considerable difference between the mean pre-and post -therapy speech rates in the reading condition.

The rate of speech for all the subjects in speaking condition is shown in Figure 6-16 and Table 6-20.



A-BASE RATE B- P.M.R. C- SYSTEMATIC DESENSITIZATION
 FIGURE-6-16 SYLLABLES PER MINUTE ON A SPONTANEOUS SPEAKING TASK

Subject 1 : The rate of speech for Subject 1 ranged from 154.43 to 186.0 S.P.M. In speaking condition ($X = 171.45$). It decreased slightly after a session of P.M.R. Upon introduction of treatment, the rate showed a further decrease in the first two sessions. Later, there was an increase in the rate in the subsequent sessions. Pre- and post-therapy speaking rates did not show much variation.

Subject 2 : The base rate at the pre-therapy assessment was stable except for the 5th session when it showed a slight decrease (111.73 } and had a mean of 131.50 S.P.M, Institution of P.M.R. brought an increase in the rate . There was a gradual decrease in the rate of speech to a mean of 133.72 s.P.M. but an increase was noticed in the fifth session during treatment phase The post-therapy rate of speech did not differ much from the pre-treatment levels.

Subject 3 : The mean rate of speech during baseline was 152.49 S.P.M. After a session of P.M.R. the rate increased to 168.53 S.P.M. and was almost same even after first treatment session. There was a slight decrease in the rate during the second session. From third session onwards there was a gradual Increase in the rate of speech. At the end of the treatment, the mean rate of speech was 165.62 S.P.M., it represented a slight Increase (8.61%) from the pre-treatment level.

Subject 4 : Examination of baseline data shows that Subject 4 had a mean of 162.29 S.P.M. Which decreased to 151.01 S.P.M. after a session of P.M.R. There was further decrease in the rate of speech in the first treatment session. The rate of speech increased after idle second treatment session. The mean rate of speech at the completion of treatment was 172.93 S.P.M., a 21.92% increase from the baseline

Figure 6-17 and Table 6-20 show the articulatory rate of all the four subjects during reading condition*

Subject 1 : Baseline data for Subject 1 shows a slight increasing trend in the rate of articulation with a mean of 137.24 S.P.M. The rate showed a sharp decrease after P.M.R. and first treatment session. There was an increase in the rate during second and third treatment session but a decrease (93.33 } in the fourth session* From fifth session onwards, there was a gradual increase in the rate ($X = 132.52$). The mean pre-and post-therapy articulatory rate did not vary much.

Subject 2 : Baseline data for Subject 2 shows a slight increasing trend followed by a slight decreasing trend, but within stable limits ($X = 205.91$) The articulatory rate in reading decreased after a session of P.M.R. After the

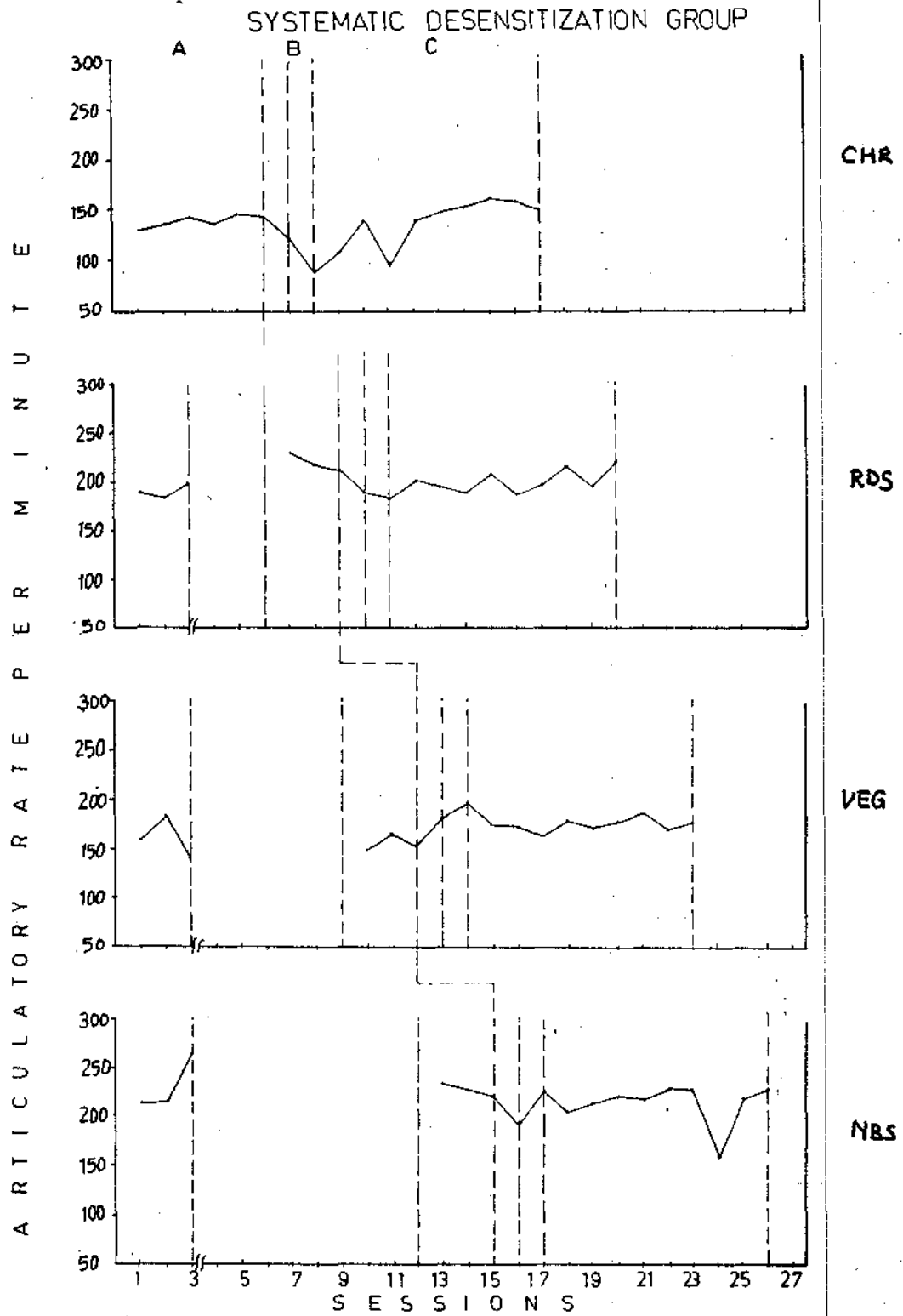


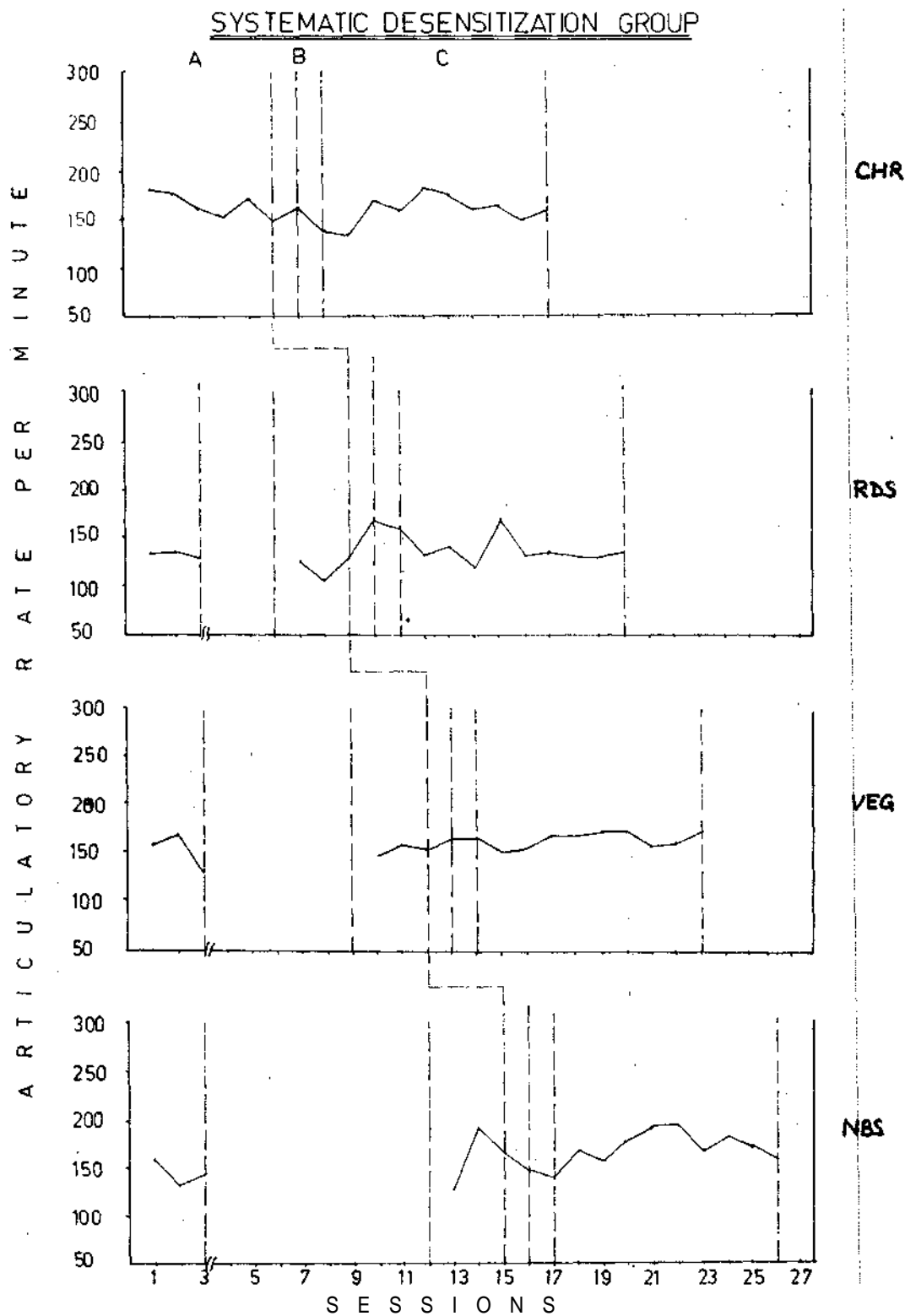
FIGURE 6-17 ARTICULATORY RATE PER MINUTE ON A READING TASK.

first treatment session, there was a gradual Increase in the rate to a mean of 200.52 S.P.M. at the end of treatment. There was almost a negligible decrease In the rate from the pre- to post-treatment level.

Subject 3 : The mean articulatory rate prior to the treatment was 156.81 S.P.M. with a slight decreasing trend which stabilized later. Slight increase in the rate was noted after a session of P.M.R. After an increase in the first treatment session, the rate did not vary much during the subsequent sessions. At the end of the treatment, there was an increase of 12.63% In the rate from the pre-treatment level.

.Subject 4 : There was an increase in the rate of articulation during the first half of the baseline which stabilized in the second half ($\bar{X} = 227.46$). The rate showed a decrease after a session of P.M.R. Upon introduction of treatment, the rate of articulation continued to increase but dropped in the eighth session (155.60). After that there was again an Increase in the rate during the last two sessions. Though the rate at the end of the treatment was slightly lower than the pre-treatment rate, it did not differ significantly.

The articulatory rates for all the subjects during speaking condition are presented in Figure 6-18 and Table 6-20.



A-BASE RATE B - P M R . C- SYSTEMATIC DESENSITIZATION
 FIGURE-6-18 ARTICULATORY RATE PER MINUTE ON A SPONTANEOUS SPEAKING TASK

Subject 1 : A review of the Figure 6-18 for Subject I reveals a mean baseline rate of 164.82 S.P.M. with a slight downward trend. During P.M.R. session there was a decrease in the rate of articulation. When the experimental procedures were introduced, the rate showed an increase during the last eight sessions. Overall, there was a decrease in the rate after treatment ($X = 157.66$) but it did not differ much from the pre-treatment level.

Subject 2 : From examination of the Figure 6.13 , it becomes evident that baseline data for Subject 2 was stable except for the fifth session. when there was a slight decrease in the rate. It can be seen that there was an increase in the rate of speech after a session of P.M.R, Subject 2 achieved a maximum articulatory rate of 163.66 S.P.M. in the fifth treatment session. The rate was stable in all the other treatment sessions. After the experimental intervention, the articulatory rate showed a slight increase ($X = 137.02$).

Subject 3 : There was a decrease in the articulatory rate during the third baseline session, which stabilized in the last three sessions. The rate showed an increase after P.M.R, session . After treatment intervention ,

there was a slight decrease in the articulatory rate in the second treatment session which reversed in the next treatment sessions. Overall, the rate showed an increase after the treatment with Systematic Desensitization .

Subject 4 : the mean articulatory rate for Subject 4 during baseline in speaking condition was 152.83 S.P.M. the articulatory rate showed a decrease after the P.M.R. and first treatment session. During the treatment phase, the articulatory rate showed an increasing trend. The mean rate of speech at the end of therapy was 170.87 S.P.M.

RESULTS OF THE PERSONALITY TESTS

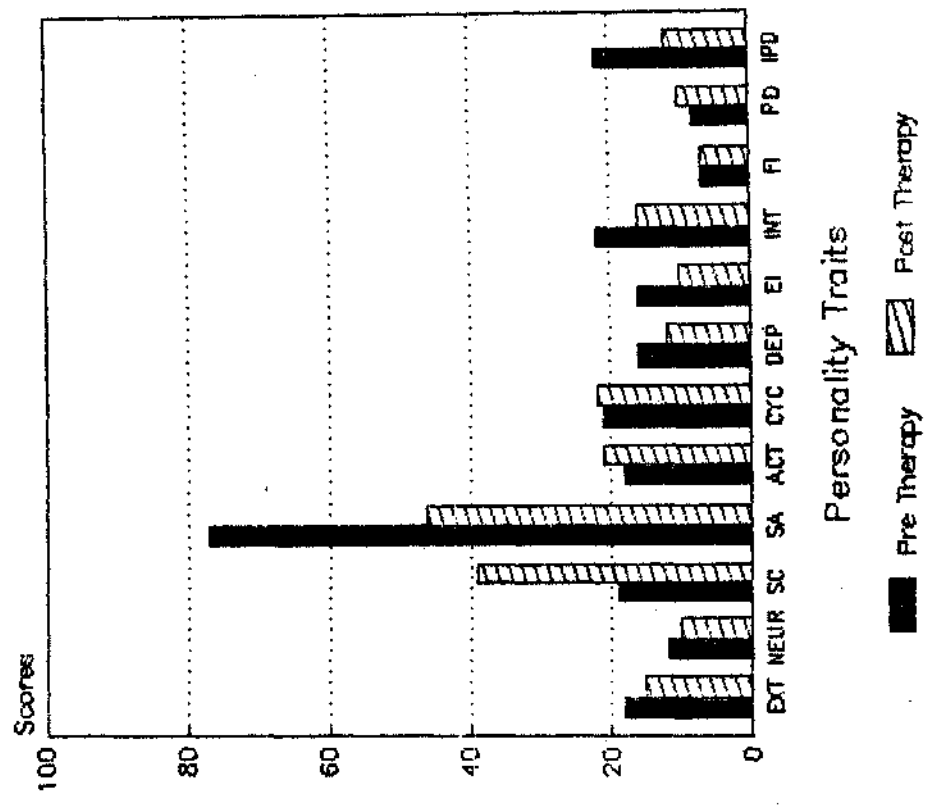
Appendices XVII, XVIII, XIX and XX show the results of the Personality Tests administered to Subject 1,2,3 and 4 respectively.

Subject 1 : Post-therapy personality questionnaire scores showed a decrease in the scores of Extroversion, Neuroticism, Social Anxiety, Depression Tendencies, Emotional Instability, Introversion, Feelings of Inferiority, Psychosomatic Disorders and Interpersonal Communication Disorders traits. Only the scores of Feelings of Inferiority and Psychosomatic Disorders traits reached normal values as reported in this study. The scores of Self-confidence, Activity and Cyclothymia traits showed an increase. Activity and Cyclothymia traits were within normal limits of the Person- Scan Interpretation Profile.(Fig6-18A)

Subject 2 : The comparison of the pre-and post-therapy personality scores showed a decrease for the Extroversion, Neuroticism, Social-Anxiety, Depression Tendencies, Emotional Instability, Introversion and Interpersonal Communication Disorders traits, but an increase for the Self-Confidence, Activity, Cyclothymia and Psychosomatic Disorders traits. The score for Feelings of Inferiority trait remained unchanged. The scores of the Neuroticism, Activity, Cyclothymia, Depression Tendencies, Emotional

RDS

Personality Traits Pre Vs Post Therapy



CHR

Personality Traits Pre Vs Post Therapy

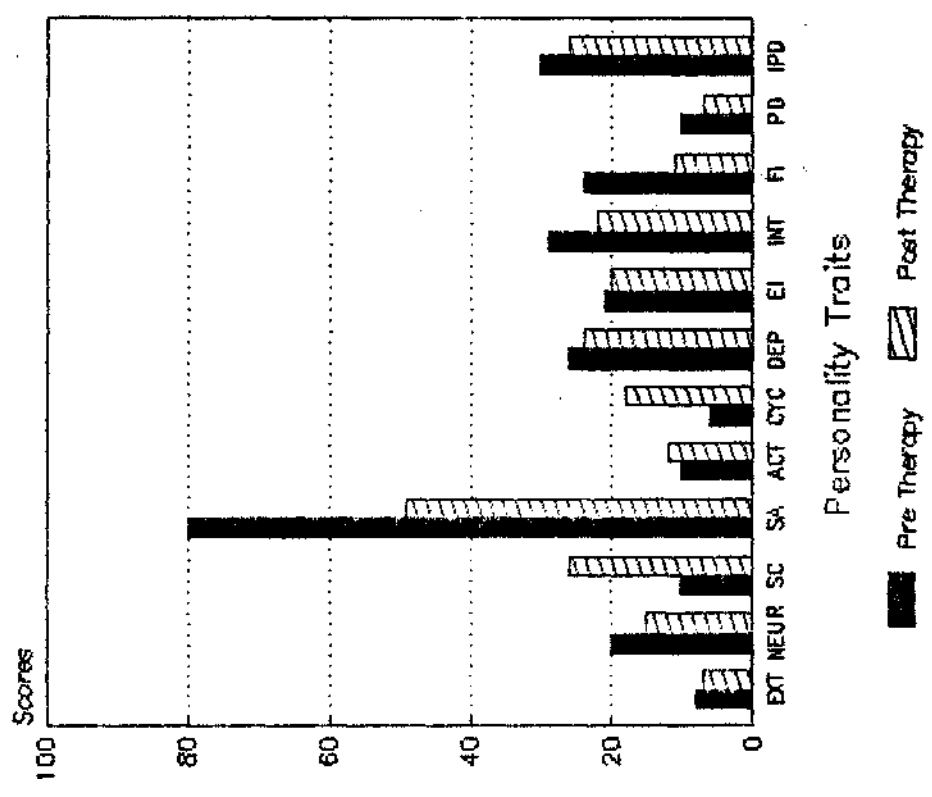


FIGURE 6-18B

FIGURE 6-18A

Psychosomatic Disorders and Interpersonal Communication Disorders traits were within the normal range after the therapy. Although the scores of Self-confidence and Social Anxiety traits changed for the better, yet these did not reach normal values. (Fig. 6-18 B)

Subject 3: Personality tests administered after therapy showed reduction in the scores of Extroversion, Neuroticism, Social Anxiety, Activity, Depression Tendencies, Emotional Instability, Introversion and Feelings of Inferiority traits. There was an Increase in the scores of Self-confidence and Interpersonal Communication Disorders traits while the scores of Cyclothymia and Psychosomatic Disorders traits remained unchanged. The scores of all these traits reached normal values at the end of the therapy. (Fig . 6-18C)

Subject 4 : Post-therapy personality test. administered showed reduction in the scores of Neuroticism, Social, Anxiety, Depression Tendencies, Emotional Instability, Introversion, Feelings of Inferiority and Interpersonal Communication Disorders traits. There was an increase in the scores of Self-confidence and Activity traits. The scores of Extroversion and Cyclothymia traits did not show any change. The scores of all the traits were well within normal limits after therapy. Only the score of Cyclothymia trait was slightly higher.(Fig. 6-18D)

NBS

Personality Traits Pre Vs Post Therapy

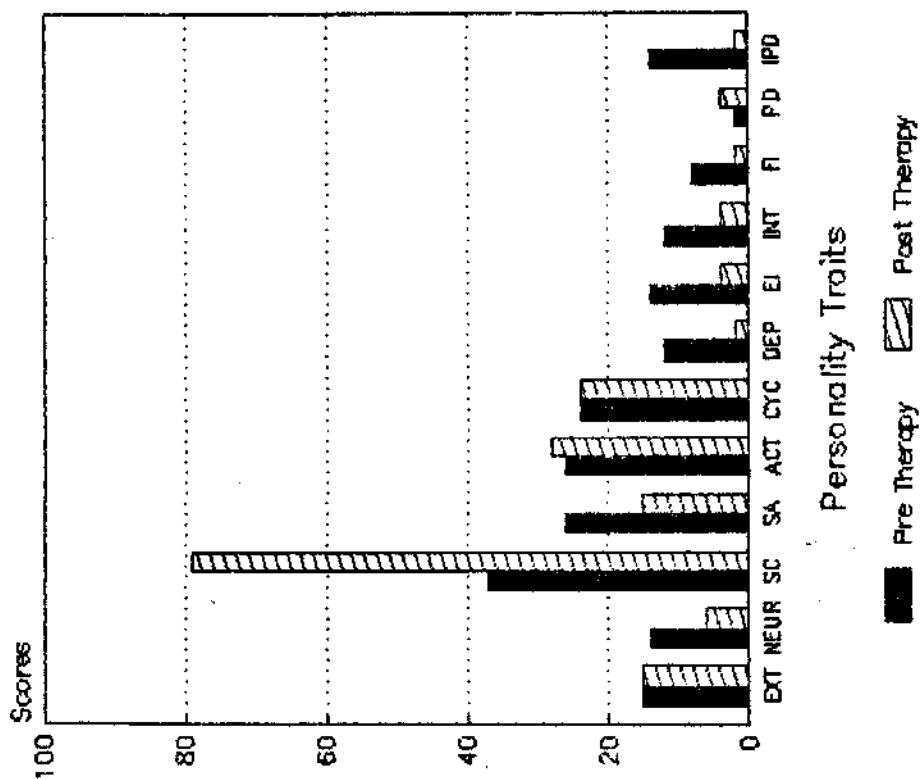


FIGURE 6-18D

VBG

Personality Traits Pre Vs Post Therapy

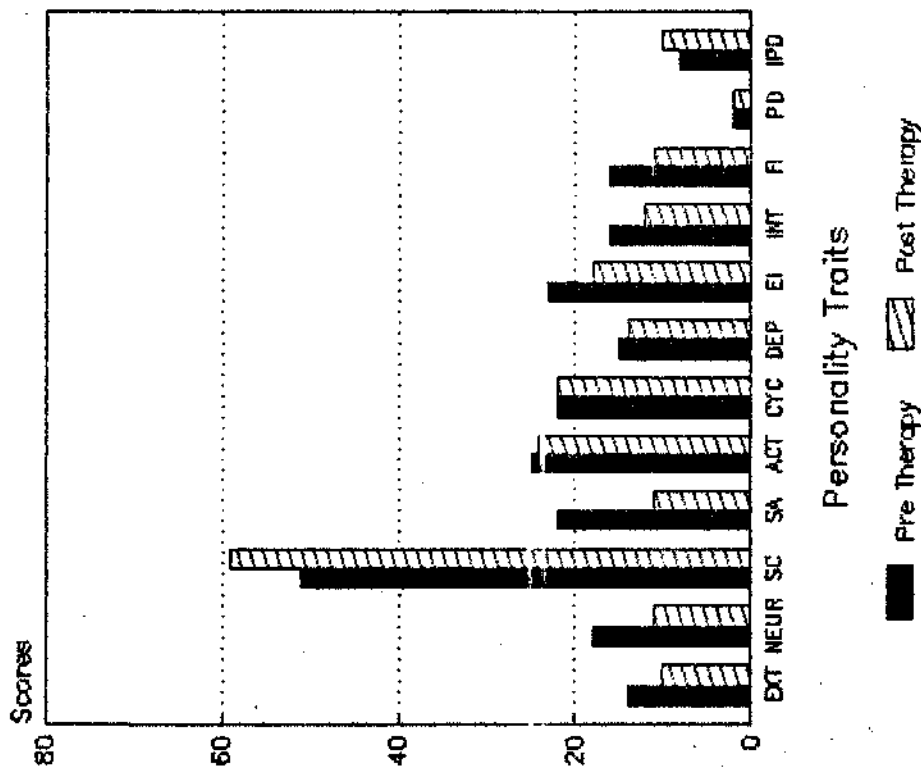


FIGURE 6-18C

GENERAL TRENDS OF RESULTS WITH THE USE OF SYSTEMATIC
DESENSITIZATION PROCEDURE

Systematic Desensitization along with P.M.R. was effective in reducing stuttering in all the four cases treated, both for reading and speaking conditions. The mean percentage of syllables stuttered was less than 0.5 for two cases, and less than 1.00 and 2.00 for each one case for reading condition. The mean % SS was less than 1,30 for all the four subjects for speaking condition. The speech rate in S.P.M. did not show any change after therapy. The subjects who had normal rates of speech before therapy either in speaking or reading condition continued to have the same after therapy. The analysis of the recorded samples of the speech revealed that the duration of the stuttering blocks reduced gradually with the progression of the therapy and reached near normal after therapy.

Brutten and Shoemaker (1967) described stuttering as fluency failure due to learned negative emotion and advocated the use of Reciprocal Inhibition and Systematic Desensitization as described by Wolpe (1953) as a major procedure in its management. Shortly thereafter, several

group studies and individual case reports began to suggest that the use of Reciprocal Inhibition and Systematic Desensitization was effective in improving the fluency of stutterers, Wolpe (1969) , Lanyon (1969) and Kuchner (1970) each reported Individual cases in which Systematic Desensitization resulted in improved fluency.

Burgratt (1974) studied the efficacy of Systematic Desensitization via imagery as a therapeutic technique with stutterers and compared these results to those derived when a traditional symptomatic therapeutic approach was used. Both the groups showed a statistical significant improvement but there was no significant difference in the degree of improvement between the groups. He further reported that the group of stutterers who received Systematic Desensitization showed a significant reduction in the effective rate of speech after therapy. In the present study , no significant reduction in the speech rate was noted.

Tyre, Maisto, and Companik (1973) reported an individual case in which Systematic Desensitization resulted in improved attitude and fluency immediately post-treatment and 6 months after treatment had terminated. Lal,Latthe

and Bharath Raj (1976) also reported a case in whom Systematic Desensitization brought about 75% improvement as judged by the case himself.

Adams (1972) , Aten and Burgraff (1969) Webster (1970), and Gray and England (1972) report group data on the effectiveness of Reciprocal Inhibition therapy, Adams (1972) found that 9 of 12 subjects showed improvement in fluency associated with the use of Reciprocal Inhibition . Aten and Burgraff (1969) found that Systematic Desensitization resulted in nearly total fluency In one stutterer and stuttering rate was nearly halved in six others. Webster (1970) found that on a reading passage stuttering rates were reduced and there was no spontaneous recovery of stuttering after adaptation as a result of Systematic Desensitization .

Gray and England (1972) investigated the usefulness of desensitization in reducing the anxiety of stutterers and in testing the effect of anxiety reduction on the frequency of stuttering. Fifteen subjects received Systematic Desensitization therapy over a period of several months* Fluency and anxiety levels were monitored at several points during the therapy. They found that (1) anxiety reactions were reduced,(2) fluency failure was

reduced on oral reading tasks, and (3) little correspondence appeared to exist between anxiety and stuttering frequency based on the extreme latency between anxiety reduction and fluency Improvement . In addition to the above findings, they subjectively rated 14 of the 15 subjects as four- cured , two- greatly improved, one - improved, three- marginally improved, and four-no change. A consistent observation, similar to that In the present investigation, was that the severity of the blocks had noticeably decreased even when little improvement was noted in stuttering frequency.

These studies strongly suggest that Reciprocal Inhibition therapy and Systematic Desensitization are effective in speech-related anxiety and. In some cases, improving fluency, In the present study, all the subjects achieved fluency within normal limits both for reading and speaking conditions.

The dynamics of the relationship between anxiety and stuttering and anxiety reduction and fluency improvement remain obscure. Tyre, Maisto and Campanik observed a concomitant decrease in stuttering and anxiety while Gray and England failed to demonstrate such a relationship.

Revised Willoughby Questionnaire scores of 26 and 22 for two subjects in this study are within normal limit. Wolpe (1969) also reported a score of 13 on the Willoughby Neuroticism Schedule for his case. Other two cases in the study had a score of "77 and 88 on WPS-R. there was a significant reduction in the Wps-R scores of all the four subjects. wps-R score for the two subjects who had a very high score before therapy, did not reach normal values after treatment, though the fluency for these subjects was within normal limits.

GROUP IV : REGULATED BREATHING PROCEDURE

figure 6-19 and Table 6-21 show the percentage of syllables stuttered for Subject 1 (NPR), 2 (NMK), 3(SAK) and 4 (HBC) in reading condition during baseline. Progressive Muscular Relaxation and Progressive Muscular Relaxation and Regulated Breathing Procedure combined.

Subject 1 : Subject 1 had a mean baseline dysfluency rate of 0.67 % SS, which is well within the normal range. Though in the figure , a slight reduction in the rate of stuttering after a session of P.M.R. is seen, there was no change from the pre-treatment level. The stuttering rate was markedly reduced during the treatment phase ($X = 0.17$). There was no stuttering at all in the Session 2, 5,6,and 10 . Stuttering was below 0.5% SS in all the other sessions.

Subject 2 : A review of the Figure 6-19 reveals a decreasing trend which stabilized in the last three sessions during baseline. Average percentage of stuttering 3.93 (M.S.D.) was slightly higher than the normalcy criterion (3.65). The training in P.M.R. brought a considerable decrease in stuttering. After initiation of therapy, there was no stuttering at all during the treatment, except for fourth and eighth session , when it was 0.15% and 0.14% respectively.

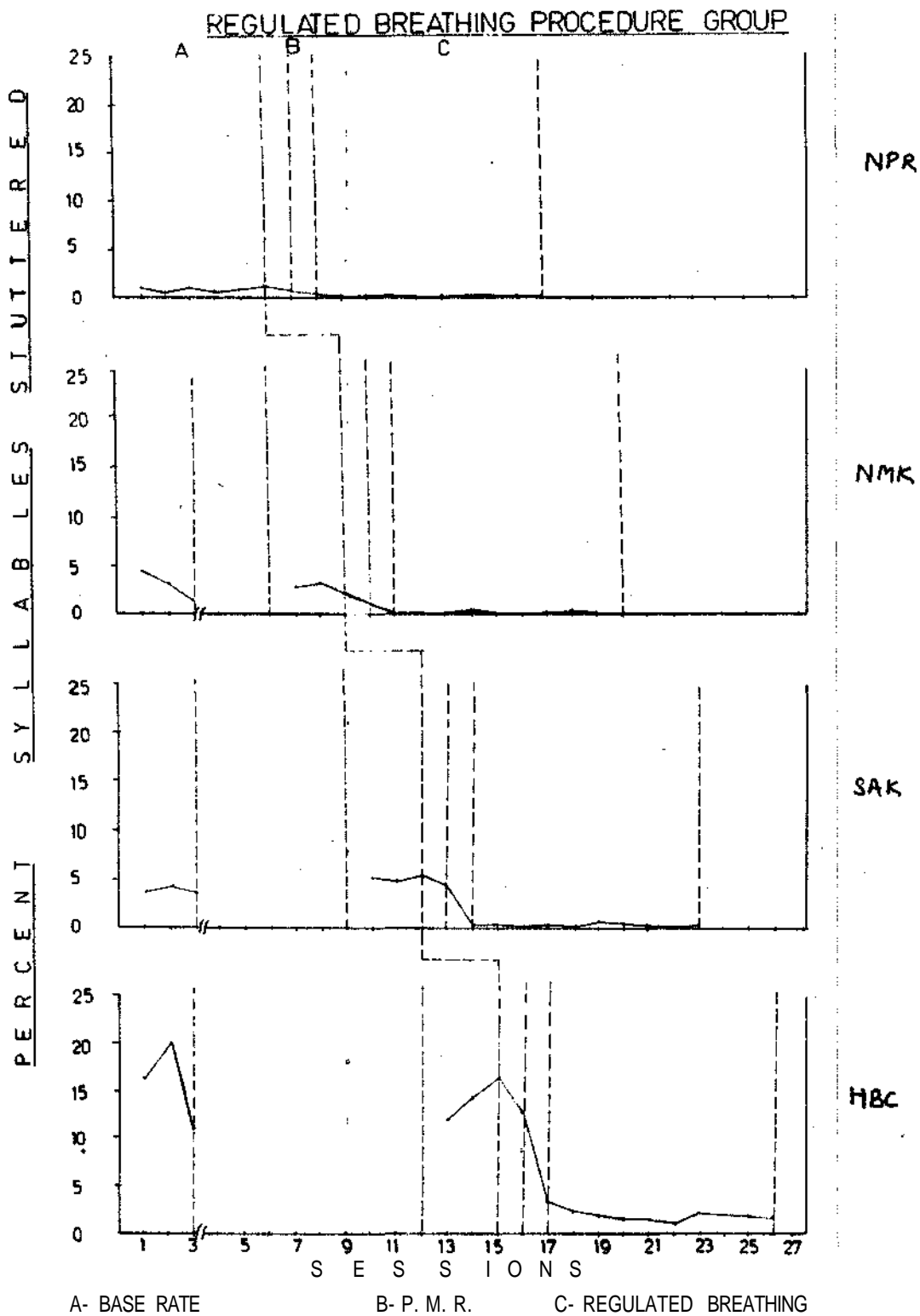


FIGURE-6-19 PERCENTAGE OF SYLLABLES STUTTERED ON READING TASK.

Table 6-21 Pre- and Post-therapy means (M) and standard deviations (S.D.) of S.P.M., %SS and A.R. for reading and spontaneous speaking tasks of Regulated Breathing Procedure Group.

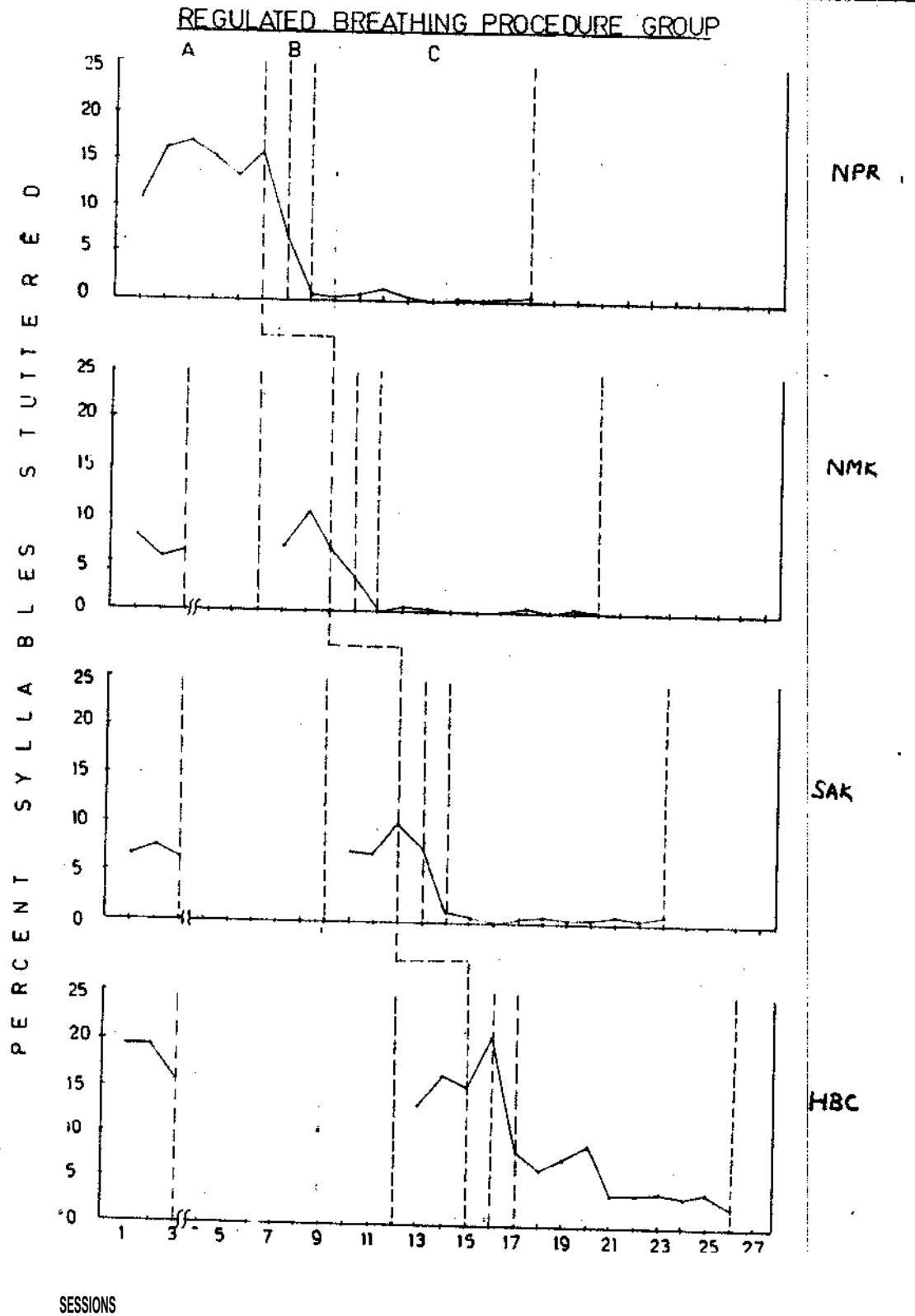
SUBJECT	CONDITION	PRE-THERAPY						POST-THERAPY					
		S.P.M.	M	S.D.	%SS	A.R.	S.P.M.	M	S.D.	%SS	A.R.		
NPR	READING	263.60	15.68	0.67	0.19	261.94	16.12	176.68	16.58	0.17	0.17	176.34	16.33
	SPEAKING	152.48	13.31	14.72	2.34	129.23	15.86	161.87	15.33	0.44	0.32	161.14	14.96
NMK	READING	244.11	33.95	2.98	0.95	236.60	34.83	210.50	24.60	0.02	0.06	210.44	24.57
	SPEAKING	192.77	14.47	7.24	1.75	179.19	15.04	214.15	43.58	0.14	0.20	213.70	43.79
SAK	READING	187.24	15.58	4.55	0.71	178.76	15.72	166.96	13.52	0.20	0.17	166.59	13.31
	SPEAKING	138.03	24.59	7.53	1.34	127.86	23.71	131.33	11.71	0.59	0.34	130.56	11.72
HBC	READING	94.74	8.98	14.87	3.44	80.94	10.79	130.49	17.05	1.84	0.55	128.08	16.70
	SPEAKING	70.73	6.21	16.48	2.40	59.12	6.11	77.53	12.79	4.87	2.32	73.86	12.50

Subject 3 : Examination of the data for Subject 3 showed a stable rate of stuttering ($X = 4.55$) during baseline. there was a slight decrease in stuttering after a session of P.M.R. There was a marked reduction in stuttering after Institution of Regulated Breathing Procedure. There was virtually no stuttering in the Session 3, 5 and 9, Stuttering was less than 0.5% in all the sessions during treatment phase except for the 6th session (0.52%). The mean stuttering at the end of therapy was only 0.20%.

Subject 4 : Inspection of the data for Subject 4 revealed a moderately high baseline ($X = 14.87$ } with decreasing-increasing trend. There was slight reduction in stuttering after a session of P.M.R. Upon introduction of treatment , there were substantial reductions in frequency of stuttering. The mean percentage of syllables stuttered decreased from 14.87 to 1.84.

Figure 6-20 and Table 6-21 display the percentage of syllables stuttered for all the subjects in speaking condition.

Subject 1 : Figure 6-20 reveals a moderately high mean baseline dysfluency rate of 14.72% with increasing and a slight decreasing trend, which stabilized somewhat



A BASE RATE b- P.M. R C-REGULATED BREATHING
FIGURE-S-20 PERCENTAGE OF SYLLABLES STUTTERED ON A SPONTANEOUS
SPEAKING TASK.

in the last three sessions. After a session of P.M.R. a mean rate of 6.63% SS was observed, a 54.95% reduction over baseline. The percentage of SS was less than one for all the sessions, once the therapy was started except for the fourth session when it rose to 1.15.

Subject 2 : Examination of Figure 6-20 for Subject 2 Indicates that baseline frequency of stuttering ranged from 5.54 to 10.43 % SS ($X = 7.24$). Stuttering decreased considerably after a session of P.M.R. Stuttering was Immediately reduced to zero after first session of therapy and remained so in fourth, fifth, sixth, eighth and last session. The percentage of syllables stuttered was below 0.5 in other treatment sessions. The mean percentage of syllables stuttered at the end of therapy was 0.14.

Subject 3 : For Subject 3, Figure 6-20 reveals a mean baseline dysfluency rate of 7.53% with a slightly increasing trend. Stuttering did not show any decrease after a session of P.M.R. However, after treatment intervention there was considerable decrease in the stuttering ($X = 0.59$). Stuttering remained below 1.5% SS in speaking condition, from the start to the termination of the therapy. No stuttering was observed in the third treatment session.

Subject 4 : Examination of the data for Subject 4 shows a moderately high baseline ($X = 16.48\%$ SS) with a slight downward trend. There was an increase in stuttering after a session of P.M.R. This upward trend sharply reversed after the first treatment session and reached its lowest point during the last treatment session ($X = 4.87$) . Though the mean percentage of syllables stuttered decreased significantly from the pre-treatment level, it did not reach normalcy criterion.

The data for rate of speech for all the four subjects in reading condition are depicted in Figure 6-21 and Table 6-21.

Subject 1 : The mean rate of speech for Subject 1 during baseline was 263.60 S.P.M, with a slight downward trend but within stable limits. The rate of speech showed a further reduction after a session of P.M.R, There was a slight increase in the rate of speech during first treatment session , from second session onwards a decrease was noticed. The mean post-therapy syllables per minute rate of 176.68 ± 16.58 is normal for the reading condition.

Subject 2 : Rate of speech for Subject 2 averaged 244.11 S.P.M. with increasing-decreasing trend and was almost stable. There was a slight increase in the rate of

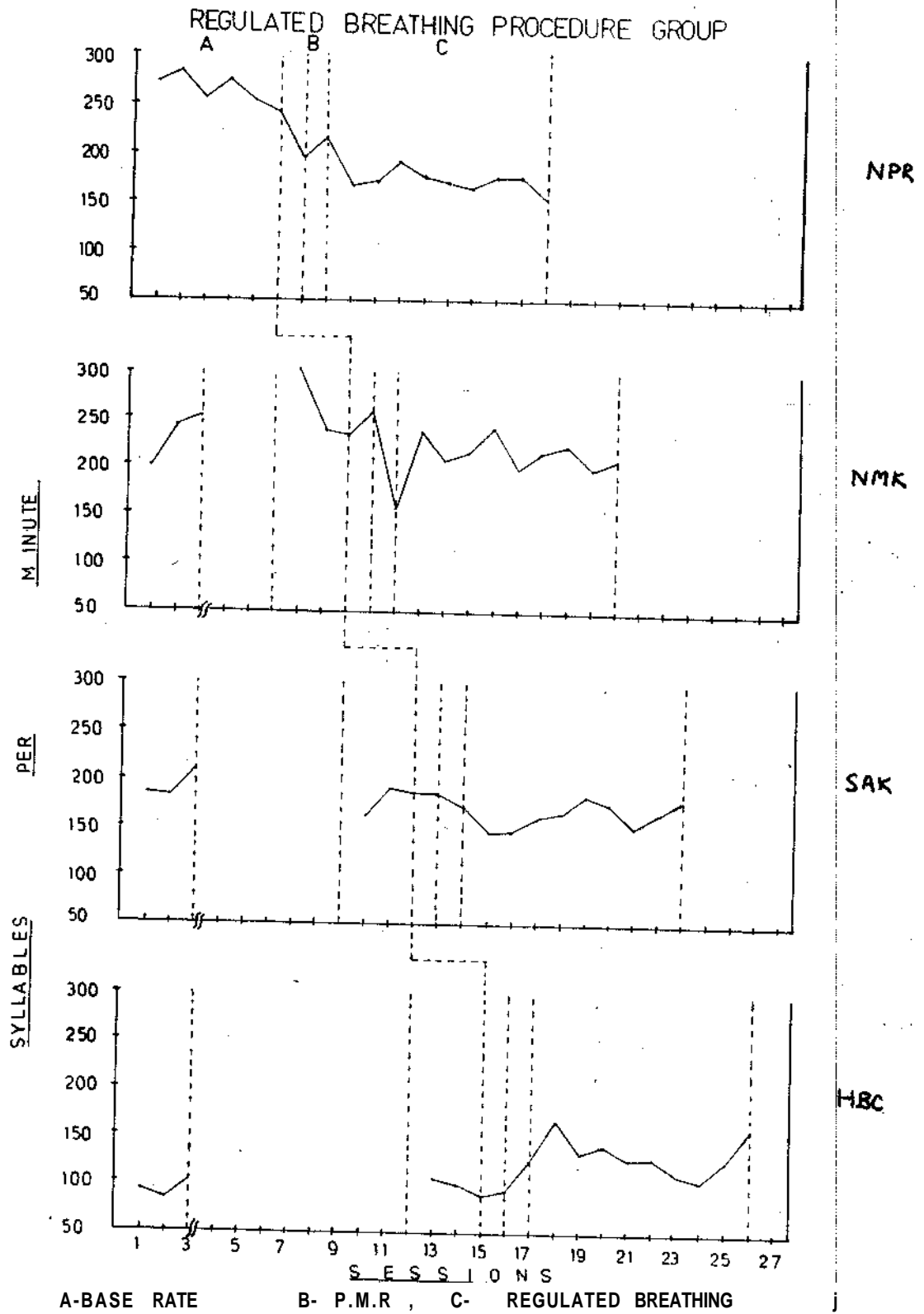


FIGURE- 6-21 SYLLABLES PER MINUTE ON A READING TASK.

speech after a session of P.M.R., but decrease was noted after the first treatment session. During subsequent sessions there was an increase in the rate of speech to a mean of 210.50 S.P.M. The rate of speech showed a decline from the mean pre-therapy rate, but it was still well within normal limits.

Subject 3 : The baseline data for Subject 3 shows an increasing trend with a decrease in the fourth session during baseline ($X = 187.24$) . The rate was almost the same (138.90 } after P.M.R. session. The rate showed a decrease in the first two treatment sessions but an increase in the next four sessions. In the remaining sessions, a decrease and then an increase was observed. There was a reduction in the rate after the treatment ($X = 166.96$).

Subject 4 : Inspection of baseline data for Subject 4 revealed a slightly increasing trend followed by a slightly decreasing trend within stable limits ($X = 94.74$) . There was no change in the rate after a session of P.M.R. Upon treatment intervention there was an increase in the rate in first two sessions followed by a decrease in the next six sessions. Further, the rate showed an upward trend during the last two sessions. At the end of therapy, mean rate of speech in reading condition was 130*49 S.P.M.

Figure 6-22 and Table 6-21 depict the rate of speech in speaking condition for all the four subjects.

Subject 1 : The rate of speech for Subject 1 showed a decrease in the second session but subsequently an increase was observed in the remaining sessions during baseline ($X = 152.48$) . Upon introduction of P.M.R. further increase in the rate of speech was noted. During treatment intervention, the rate increased in the first session. however, this trend was reversed in the second session. From third session onwards there was gradual decrease in the rate till seventh session. The rate showed an upward trend in the last three sessions. There was slight Increase in the rate of speech from pre-treatment level but it did not reach normal value.

Subject 2 : The baseline rate of speech ranged from 178.98 to 211.16 S.P.M. with a mean of 192.77 S.P.M. The rate increased slightly after a session of P.M.R. After introduction of treatment, there were slight variations in the rate within stable limits. till seventh session.. In the last three treatment sessions there was considerable decrease in the rate of speech. After the therapy, there was an increase in the rate of speech from the pre-treatment ($X = 192.77$) to the post-treatment

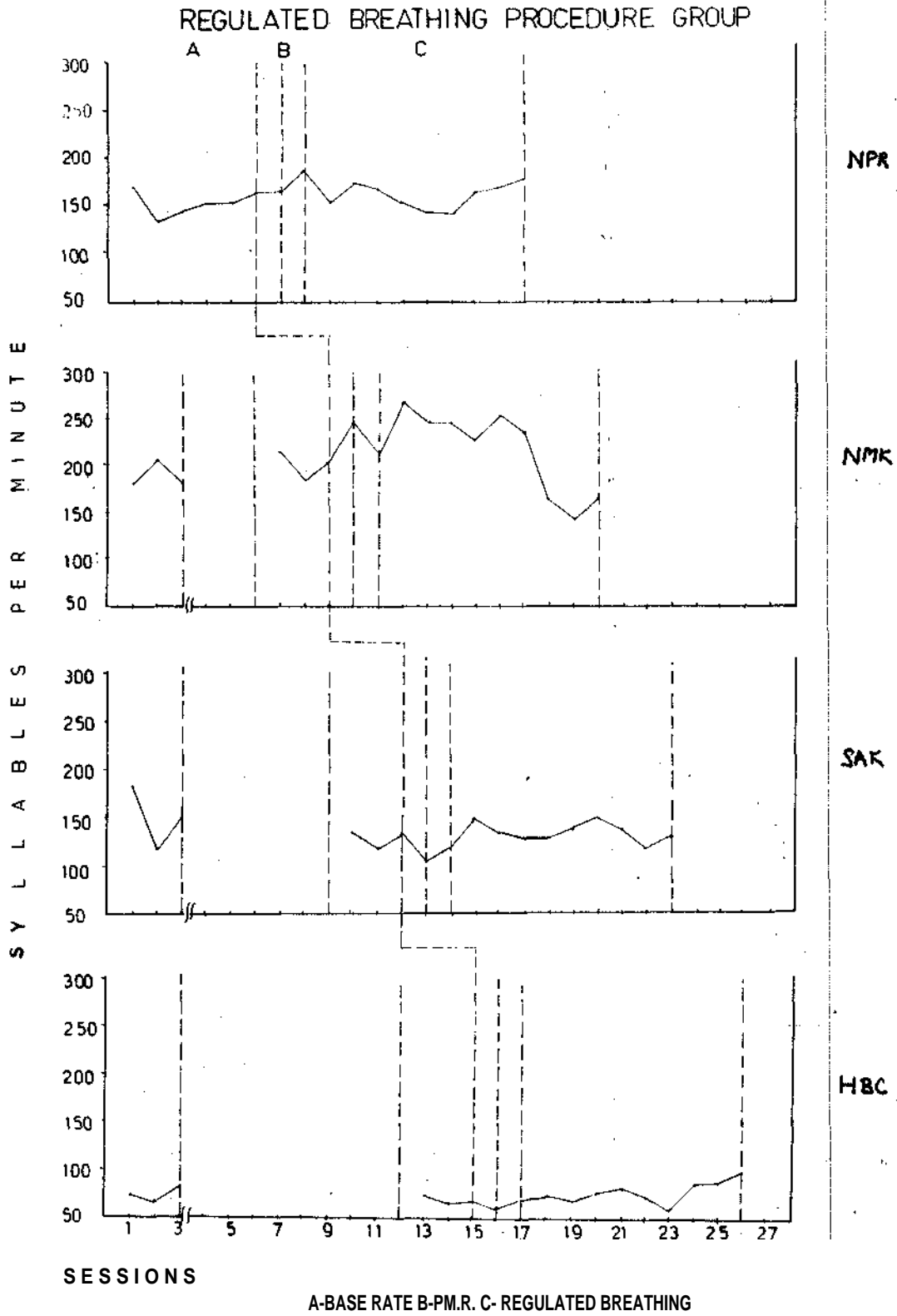


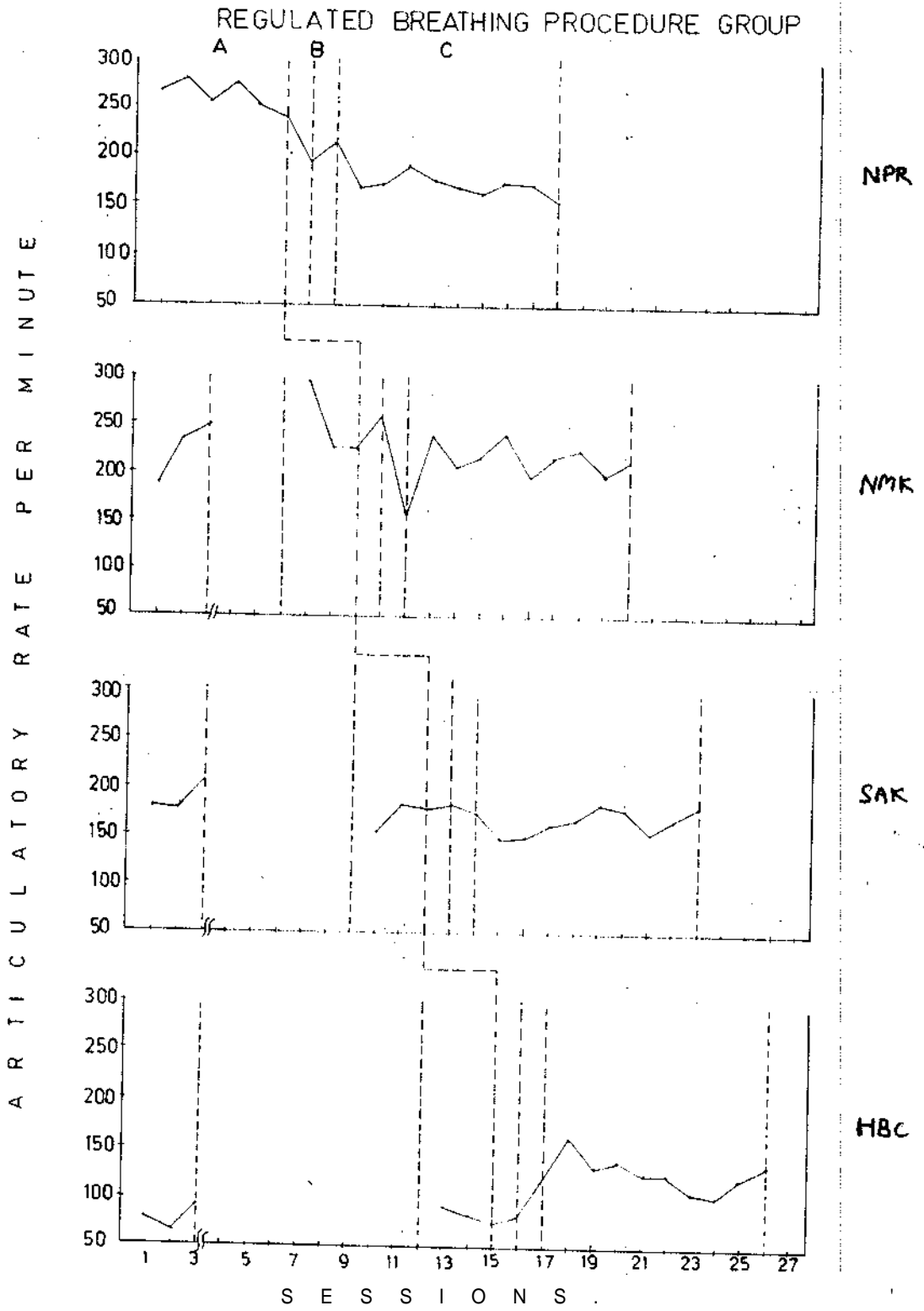
FIGURE-6-22 SYLLABLES PER MINUTE ON A SPONTANEOUS SPEAKING TASK

($X = 214.15$) • The pre-therapy rate of speech was within the normal range, but the post- therapy rate was slightly faster than the normal.

Subject 3 : Baseline data for Subject 3 showed a decrease in the second session, which stabilized in the last four sessions and had a mean of 138.03 S.P.M. The rate showed a slight decrease after a session of P.M.R. Though the rate showed an increase during the treatment phase, overall, there was a slight decrease in the rate from pre-treatment level. The mean rate of speech at the end of therapy was 131.33 S.P.M.

Subject 4 : The rate of speech for Subject 4 ranged from 64.70 to 81.21 S.P.M. with a mean of 70.73 S.P.M. There was a decrease in the rate after a session of P.M.R. There was gradual increase in the rate of speech to a mean of 77.53 S.P.M. HBC had a very slow rate of speech which did not become normal after therapy. He developed long pause in speaking as a result of stopping when he anticipated or had a speech block.

Figure 6-23 and Table 6-21 present the articulatory rate in reading condition for all the four subjects.



A - BASE RATE B - P. M. R. C - REGULATED BREATHING
FIGURE-6-23 ARTICULATORY RATE PER MINUTE ON A READING TASK.

Subject 1 : Pre-therapy articulatory rate for Subject 1 has a slight decreasing trend ($X = 261.94$) which continued even after a session of P.M.R. Furthermore, there was considerable reduction in the articulatory rate during the treatment phase (176.34). However, the post-therapy articulatory rate was within normal limits

Subject 2 : The baseline data showed an increasing trend during the first four sessions but later on a decreasing trend which stabilized in the last two sessions ($X = 236.60$). The rate showed a slight increase after a session of P.M.R. There was a sharp drop in the rate during first treatment session (156.00). The rate showed an upward trend in the second treatment session. During the subsequent session, the rate stabilised to some extent. Articulatory rate was faster before the treatment. It became normal after the treatment ($X = 210.44$).

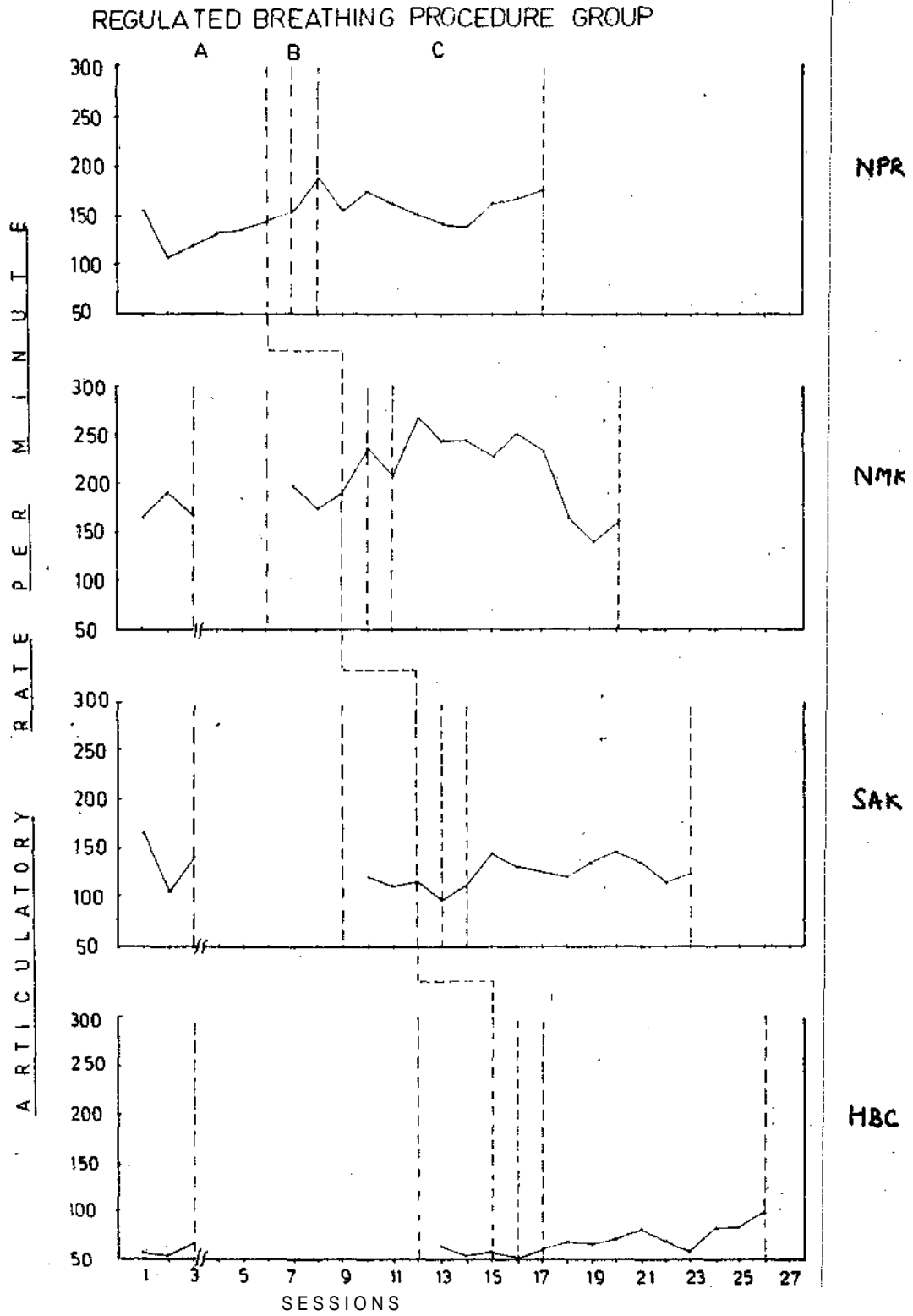
Subject 3 : The pre-therapy articulatory rate had an increasing trend in the first three sessions which was maintained in the last three sessions, with a slight drop in the fourth session. There was a slight increase in rate after P.M.R. During treatment phase, there was a gradual increase in the articulatory rate, with slight reduction in 8th session.

At the end of the treatment, post-therapy articulatory rate showed a decrease from the pre-treatment level.

Subject 4 : The articulatory rate during baseline for Subject 4 ranged from 65 to 92.66 S.P.M. in reading condition with a mean of 80.94 S.P.M. There was an Increase in the rate after a session of P.M.R. which continued during the first two treatment sessions. From then onwards a downward trend in the rate was seen till the 8th treatment session. During the last two sessions, rate showed an Increase. Though the rate showed a considerable increase (58.24%) from the pre-treatment level, it did not reach normal value.

Figure 6-24 and Table 6-21 show the articulatory rate in speaking condition for all the four subjects.

Subject 1 : After an initial drop in the baseline during second session,articulatory rate showed a steady increase for Subject i to a mean of 129.23 S.P.M. This trend was maintained after the P.M.R. and first treatment session. After the second treatment session, the rate showed a slight increase , then a decrease was observed till seventh session. The articulatory rate showed an upward trend in the last three sessions. The post-therapy articulatory rate showed increase from the pre-therapy rate and was within normal limits.



A-BASE RATE B- P. M. R. C-REGULATEO BREATHING
 FIGURE-6-2U ARTICULATORY RATE PER MINUTE ON A SPONTANEOUS SPEAKING TASK.

Subject 2 : The pre-articulatory rate for Subject 2 ranged from 164.08 to 196.57 S.P.M. with a mean of 179.19 S.P.M. An increase in the articulatory rate after a session of P.M.R. was noted. There was a slight decrease after the first treatment session and later on an increase which was maintained till seventh session with only slight variations. During last three sessions a considerable decrease was observed but overall there was an Increase from the pre-treatment level ($\bar{X} = 213.70$).

Subject 3 : The data for Subject 3 had a variable trend in first three sessions which stabilized in the last three sessions during baseline. After a session of P.M.R. a slight reduction in the articulatory rate was observed . During treatment phase, there was an increase in the articulatory rate which ranged from 114.33 to 147.83 S.P.M. The pre- and post-therapy articulatory rates did not vary much.

Subject 4 : The articulatory rate for Subject 4 during baseline averaged 59.12 S.P.M, and was almost stable. During P.M.R. there was slight reduction in the articulatory rate. Upon introduction of the treatment, the articulatory rate showed a gradual Increase till fifth session, but, a decrease in the sixth and seventh session. Again an Increase was seen in the last three sessions. Despite an increase over the pre-treatment rate , the post-treatment articulatory rate was slow.

RESULTS OF THE PERSONALITY TESTS.

Appendixes*show the results of the Personality Tests administered before and after the therapy to Subject 1,2, 3 and 4 respectively.

Subject 1 : The post-therapy personality questionnaire scores showed a decrease for the Social Anxiety, Activity, Depression Tendencies, Feelings of Inferiority and Interpersonal Communication Disorders traits • There was an Increase in the scores of Self-confidence , Cyclothymia and Interconversion traits. Scores for the other traits remained unchanged. All the scores were within normal limits after therapy except for the scores of Self confidence trait.(Fig.6-24A)

Subject 2 : NMK was extrovert,self-confident and emotionally well adjusted before therapy and he continued to be so even after therapy. The personality questionnaire scores were normal.(Fig.6-24B)

Subject 3 : The personality questionnaire when administered again after therapy showed an increase towards normalcy in the scores of Extroversion, Self-confidence, Activity and Cyclothymia traits. There was a decrease in the scores of Social Anxiety, Depression Tendencies, Emotional Instability,

* XXI, XXII, XXIII, and xxrv

NMK

Personality Traits Pre Vs Post Therapy

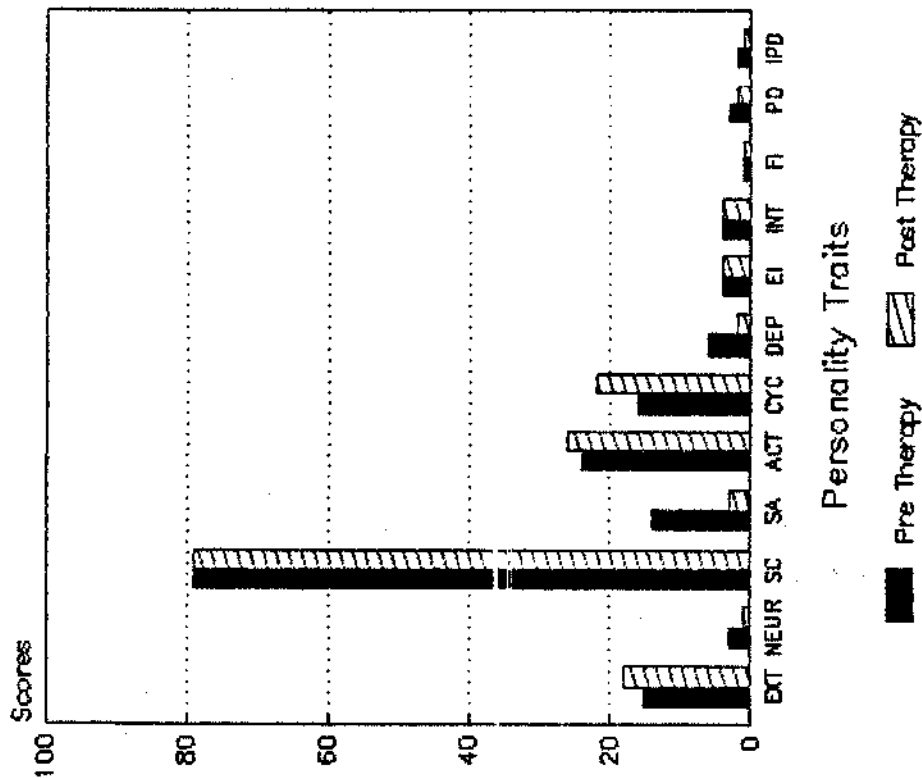


FIGURE 6-24B

NPR

Personality Traits Pre Vs Post Therapy

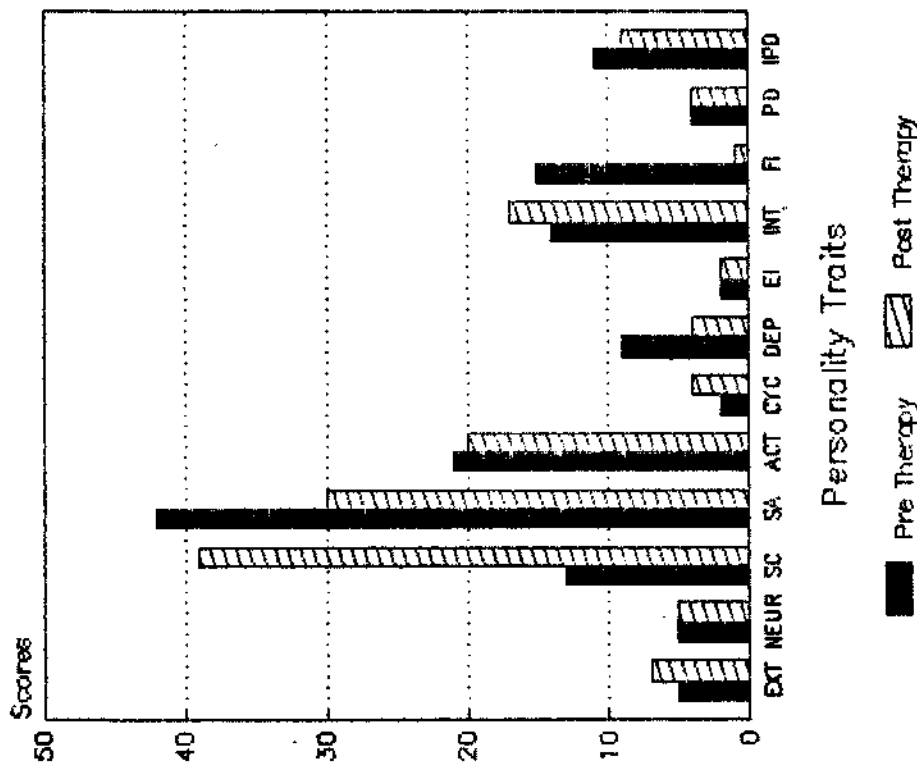


FIGURE 6-24A

Introversión, Feelings of Inferiority, Psychosomatic Disorders and Interpersonal Communication Disorders traits and these scores became normal after treatment . The Neuroticism score, however, remained unchanged, (Fig. 6-24C)

Subject 4: The Self-confidence trait scores showed a tendency towards normalcy for HBC after therapy. The scores of other traits, though they were normal, showed a further decline after treatment. The Neuroticism and Interpersonal Communication Disorders Traits' scores were within normal limits and did not change even after therapy. (Fig.6-24D)

HBC
 Personality Traits
 Pre Vs Post Therapy

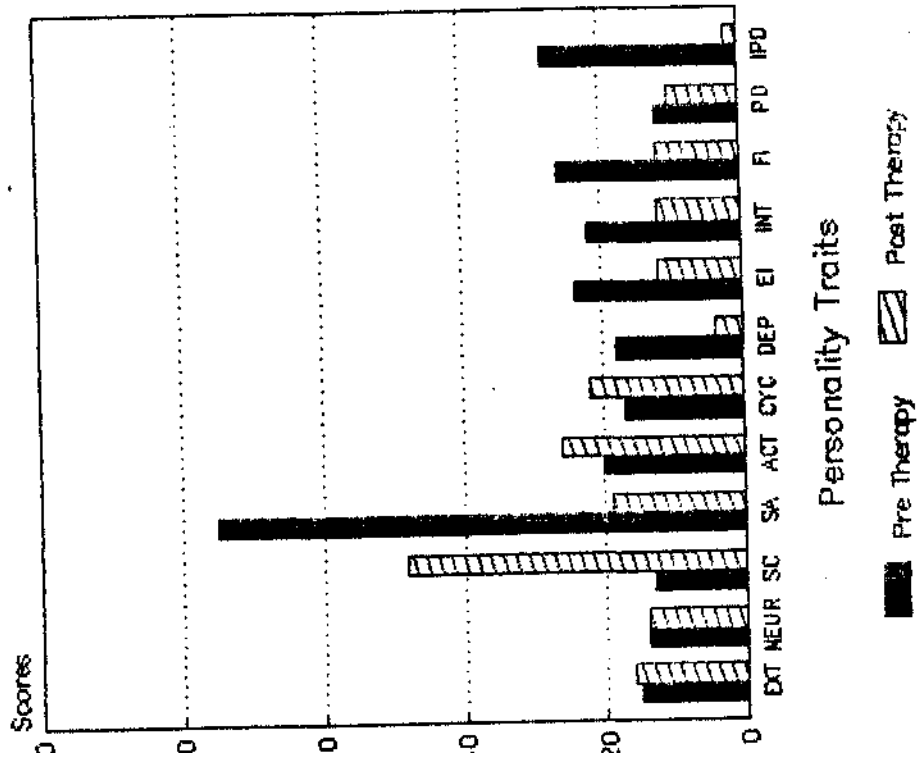


FIGURE 6-24D

SAK
 Personality Traits
 Pre Vs Post Therapy

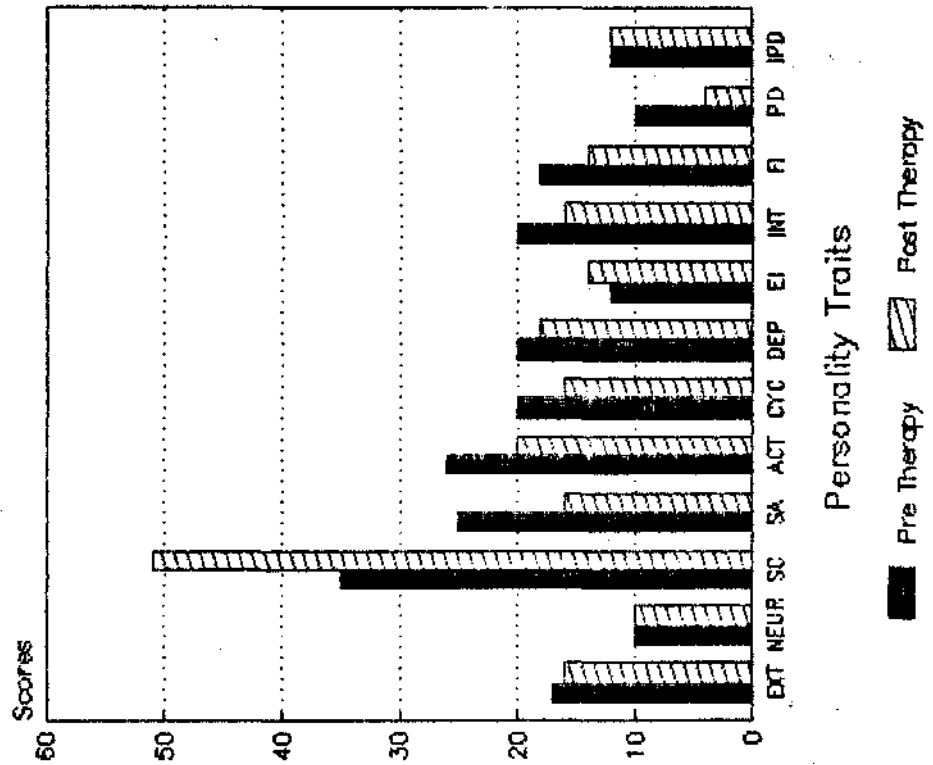


FIGURE 6-24C

GENERAL TREND OF RESULTS WITH THE USE OF *REGULATED*
BREATHING PROCEDURE IN COMBINATION WITH PROGRESSIVE
MUSCULAR RELAXATION

The results suggest that Regulated Breathing procedure and P.M.R. were effective in improving the fluency of the speech in all the cases treated both for reading and speaking conditions. Only the stuttering of HBC did not reach the normalcy criterion used { 3.6f%}. His stuttering remained at a level of 4.87 ± 2.32 after therapy. The mean percentage of syllables stuttered was less than 0.2 for three cases and less than 1.85 for the fourth case for reading condition. The mean percentage of syllables stuttered was less than 0.60 for three subjects and was 4.87 for the fourth in speaking condition*. The speech rate in S.P.M. showed significant reduction for three cases in reading condition, while two showed an increase and third a decrease in speaking condition. The fourth subject showed a significant increase in S.P.M. for reading condition but not for speaking condition.

Aarin and Nunn (1974) reported striking success in the treatment of stuttering through a method based on Regulated Breathing, After a single two-hour treatment session, subjects showed a decrease of 94% in stuttered

words at the end of the treatment and a 98% decrease after a four-month follow up. A replication of this study attained similar results (Azrin, Nunn and Frantz, 1979). However, both the studies have been criticised as these lacked methodological rigour. The authors did not provide an operational definition of stuttering and all measures were based on self-report data. After a single two-hour treatment session, in the present study, two subjects whose stuttering was above the normalcy criterion (3.65%), reduced their stuttering by 95.60% and 79.28% for reading condition. At the end of the treatment, the total decrease in the stuttering was 95.60% and 87.62%. For speaking condition, the decrease in stuttering was 96.39, 100, 82.73 and 51.39 for the four subjects respectively, after first session of treatment. The total decrease at the end of therapy was 97.01, 98.06, 91.43 and 70.44%.

Williamson et al., (1981) when applied Regulated Breathing procedure in a single subject design, stuttering was immediately reduced to 0.10 with a mean of 0.036 across the four different situations. As Williamson provided the data only in the graphical form, the approximate reductions in stuttering when calculated were: 96.15, 76.66, 77.60 and 81%. The range for pre-treatment dysfluencies/word

was from 0.16 to 0.46. The therapeutic gains were generalised and maintained . But additional procedures were combined with the RB technique in order to facilitate transfer and maintenance. Another significant change in Azrin's procedure was the duration of the therapy : nine 1-hour sessions of RB were followed by a transfer maintenance phase,

Jones (1981) used the Regulated Breathing method with a stuttering girl for nine 2-hour sessions. The results showed that stuttering was reduced from 46.1% to 5.2 % for free speech and from 27.4 to 3.2 for reading. At 5th session the method was combined with relaxation and bio-feedback. The improvement was generalized beyond the clinical setting and was maintained after the three month follow up.

Ladouceur et al., (1982) applied the Azrin's system to twelve stutterers, dividing them into four groups. Each group received the procedure described earlier, but three of the groups received special training in awareness in biofeedback, on respiration, or in biofeedback on muscle tension. Cote and Ladouceur (1982) treated twenty-four stutterers, divided into three equal groups. The

first group received Regulated Breathing treatment, the second group received social help in addition to Regulated Breathing Treatment, and the third group served as a control. In both the studies, they found no significant difference among the groups and could not confidently report stuttering decrements nearly as good as claimed In the original study* Andrews and Tanner (1982) reported the results of four adult subjects after applying the Regulated Breathing method. The effect of treatment was to reduce stuttering by about 45% when Day 100 scores were compared to pre-treatment scores* Individually the reduction in stuttering for these cases was: 54.21, 3.75, 73.5 and 27%. In their study the Regulated Breathing did not produce comparable results,

Saint-Laurent and Ladouceur (1987) evaluated the effects of Regulated Breathing procedure on 27 male and 13 female subjects. Stuttering was reduced by 52% after the Regulated Breathing treatment and the decrease was 41%, ten months later. The normalcy criterion (3,65% of stuttering) was achieved by only 46% of subjects. The present investigation supports the findings of Azrin and Nunn(1974) and Azrin , Nunn and Frantz (1979).

Few studies have reported a systematic increase in syllables per minute, after treatment with Regulated Breathing Procedure (Williamson, Epstein and Cobum, 1981, Saint - Laurent and Ladouceur, 1987). The present study and that of Andrews and tanner (1982a) did not show any consistent increase in syllables per minute.

The Regulated Breathing Procedure seems to be effective from the treatment point of view, in certain cases the investment in time required may be much greater than originally reported by Azrin and his colleagues. The procedure may need more modifications or emphasis on certain aspects, depending upon the individual needs of the cases. One must be cautious about the development of too long pauses in few subjects, which will attract attention towards the speech.

In this investigation, four treatment methods, namely. Prolonged Speech, Rhythmic Syllable Timed Speech, Regulated Breathing Procedure and Systematic Desensitization, along with Progressive Muscular Relaxation were applied in the management of stuttering . Non - concurrent multiple baseline design across subjects was used to evaluate the effectiveness of the therapy • There were marked reductions in the stuttering frequency for all the groups both in

reading and speaking conditions. These reductions were systematically replicated across subjects for all the treatment methods. Results of the multiple baseline analysis clearly document the controlling effects of the treatment ,When it was directly applied to each stutterer. In reading condition the maximum improvement In the stut-tering was brought by Prolonged Speech followed by the Regulated Breathing Procedure. However, Regulated Breathing Procedure was more effective over Prolonged Speech in speaking condition. Systematic Desensitiza-tion did not show much improvement in the rate of stuttering in comparison with other techniques in both the conditions. Rhythmic Syllable Timed Speech procedure was more effective after Regulated Breathing Procedure in reading but after Prolonged Speech treatment In speaking condition.

Andrews et al.,(1980) employed the empirical meta-analytic technique to review studies of treatment of stutt-ering. They concluded that five treatments (prolonged speech, precision fluency shaping , rhythmic speech,airflow therapy, and attitude change) had been demonstrated to produce significant benefits. They further stated , "... prolonged speech and gentle onset techniques appear the strongest treatments in the short and long term. ...

Rhythm exerts a strong effect on fluency, but after 12 months fades rapidly. Both attitude and airflow appear to have weaker effects although their rates of relapse are slower than with rhythm, " These findings are similar to those reported in the present study except that Regulated Breathing Procedure demonstrated more improvement than Rhythmic Syllable Timed Speech • They also noted, "The other "treatments, rhythm apart, have a mean effect size of 0.77, and all but desensitization produce effects greater than that due to any improvement likely to be observed in untreated adult stutterers over time," The findings of the present investigation are in agreement with the above.

After a session of P.M.R, majority of the cases showed a decrease in stuttering both for reading and speaking conditions in all the treatment groups. One subject in Prolonged Speech Group and two in Regulated Breathing Group showed Increase in stuttering for speaking condition. For one subject in Rhythmic Syllable Timed Speech (Group, stuttering became slightly worse after a session of P.M.R, in both reading and speaking conditions. In Systematic Desensitization Group, for one subject, an increase in stuttering was noticed in speaking condition after a session of P.M.R. A consistent observation was that all these subjects had high scores both on Neuroticism and Social

Anxiety traits except one who had high score on Social Anxiety only.

There was no change in the rate of speech for Subject 1 while Subject 2 and 3 showed a decrease both for reading and speaking condition in Prolonged Speech Group. There was a slight Increase in the rate of speech for Subject 1 and 2 but marked increase for Subject 5 in reading and speaking condition for Rhythmic Syllable Timed Speech Group. Subject 3 and 4 had a decrease in the rate of speech in reading condition but an increase in the speaking condition. Significant increase was observed only for Subject 4.

The rate of speech did not change for all the subjects in Systematic Desensitization Group except for one who showed significant increase in reading as well as speaking condition. There was marked decrease in the rate for Subject 1, 2 and 3 but increase for the Subject 4 in the Regulated Breathing Procedure Group, The rate of speech either showed an Increase or remained stable in majority of the cases when decreases in dysfluencies were evidenced. Only in some cases reductions in dysfluencies were not accompanied by increases in the speech rate.

The articulatory rate of speech did not vary for Subject 1 and 2, but a marked decrease was observed for Subject 3 In reading condition for the Prolonged Speech Group, In the speaking condition, there was no change in the articulatory rate for Subject 1, while significant reductions were noted for Subject 2 and 3.

Subject 1,2, 3 and 4 did not alter much their articulatory rate of speech after Rhythmic Syllable Timed Speech treatment in the reading condition but there was marked increase in the rate for Subject 5. There were not much variations in the articulatory rate of Subject 1,2 and 3 but substantial increase was seen for Subject 4 and 5 in speaking condition after therapy.

There was significant increase in the articulatory rate for Subject 3 , but no such change was evidenced for other subjects both in reading and speaking condition after treatment with Systematic Desensitization. Articulatory rate showed a marked decrease for Subject 1 but an increase for the Subject 4, there was no change for other subjects in reading condition after treatment with Regulated Breathing Procedure, In the speaking condition , all the subjects except one had an increase in the rate of articulation in speaking condition after therapy.

So general trends could be observed in the rate of speech for the subjects in all the groups after a session of P.M.R. In majority of the subjects, a decrease in rate was evidenced in reading condition while, an Increase in speaking condition. For few subjects there was no change in the rate.

In general, results indicate that the stutterers experienced marked improvement in fluency after treatment. The data concerning the generalization and maintenance of improved fluency among treated stutterers was not collected. Hence the maintenance of generalized effects has typically not been addressed. This, is an area solely in need of further research, since the ultimate goal of the therapy must be to facilitate sustained fluency in as wide range of speaking conditions as possible. Suffice it to say, current behavioural methods have contributed substantially to the clinical management of stuttering and that such methods offer a strong foundation for the continued development of services for stutterers. The relative importance of each therapy component was not determined. The effects of therapy were cumulative. To better analyze the contribution of Progressive Muscular Relaxation, to treatment effectiveness, other appropriate single case study designs may be used.

Personality assessments carried out after the Prolonged Speech treatment along with P.M.R. showed a change for better in the scores of both the subjects. For both the subjects there was an increase in the scores of Extroversion and Self-confidence traits, but these did not reach normal values. There was a decrease in the scores of many other traits and these were normal after therapy for both the subjects.

Personality tests' result, after treatment with Rhythmic Syllable Timed Speech along with P.M.R. ,revealed that the scores of Social Anxiety, Activity and Psychosomatic Disorders for Subject 1, and the scores of Introversion, Feelings of Inferiority and Psychosomatic Disorders traits for Subject 2 had normal values. The scores of other traits showed a tendency towards normalcy. For Subject 3,4 and 5 almost all the scores were within normal limits at the end of the therapy.

Personality questionnaire administered after treatment with Systematic Desensitization showed a decrease towards better in the majority of the scores for Subject 1. Only the scores of Activity, Cyclothymia, Feelings of Inferiority and Psychosomatic Disorders traits reached normal values. For Subject 2,3 and 4, personality test results showed a change for the better.

The scores of the personality questionnaires after treatment with Regulated Breathing Procedure along with P.M.R. were within normal limits for many traits for Subject 1,3 and 4. Self-confidence trait score for these subjects showed a tendency towards normalcy but it did not reach normal value. Subject 2 was extrovert, self-confident and emotionally well adjusted prior to the treatment and he continued to be so after treatment.

In the treatment of stuttering, the question of whether treatment should try to change behaviour, attitude or both is still largely unresolved. Behaviourist's approach called for changing " a person's observable action, instead of attempting modification of hypothesized personality structures " (Kanfer and Phillips, 1970), Stuttering therapy avolved from this model does not try to modify attitude. The attitudes are left alone, in the belief that they will eventually fall into line, with the new behaviours Ryan (1974) stated, "... the production of fluent speech alone tends to bring about concurrent changes in anxiety and .attitude. "

Guitar (1976) Indicated that stutterer's attitudes may be related to long-term improvement. He found that those stutterers with more negative attitudes measured just prior to treatment, were most lively to have high levels of

stuttering a year later, even though all subjects left therapy entirely fluent. Another study (Andrews and Cutler, 1974) of attitudes in operant stuttering therapy supports the claim that changes in attitude occur after changes in speaking behaviour are made . But they recognized that not all subjects developed normal speaker's attitudes and suggested that this lack of attitude normalization in some stutterers may affect their long-term maintenance of fluency. Guitar and Bass (1978) observed that stutterers , whose attitudes normalized after transfer of fluency, showed significantly less stuttering than stutterers, whose attitudes did not normalize after transfer.

Studies by Andrews and Cutler (1974) and Perkins et al., (1974) suggest that changes in stutterers' attitudes occur not during establishment of fluency, but during transfer of fluency to everyday situations. In the present study , for all the groups, majority of the subjects, had normal attitudes on many traits, immediately after the treatment * They were free from Neurotic Tendencies, Social Anxiety, Depression Tendencies, Emotional Instability and Feelings of Inferiority . Scores on the above traits did not become normal for few of the subjects after treatment . It is not possible to deduce from the results why some subjects test scores did not become normal after thera

Pre-treatment personality questionnaire score and % SS do not appear to be responsible for these differences. Because personality, test scores and % SS levels for these subjects were relatively equivalent, some more subtle attributes of these subjects may have accounted for their different responses.

For at least some stutterers, attitudes and personality seem to be important targets for modification. For these stutterers, attitudes are not automatically modified by changes in the fluency. On the contrary, it might be the unchanged attitude that modify the fluency, bringing behaviours back into line with feeling, and thus causing relapse at a later stage. New therapeutic approaches , or combination of several current therapies, may be needed to change the attitudes of these stutterers.

SUMMARY AND CONCLUSIONS

The aim of the present investigation (Part I) was to study the personality difference among stutterers and non-stutterers. 102 stutterers and 119 normals participated in the study. The age range of the study subjects was from 16 to 42 years for both the groups. The normal subjects were matched with the experimental group on the criteria mentioned earlier. The following 4 personality tests, consisting of 12 traits in all and an Intelligence test were used to investigate the differences among stutterers and non-stutterers

1. Eysenck Personality Inventory
2. Self-confidence Inventory
3. Revised Willoughby Questionnaire for Self-Administration
4. Surface Trait Inventory
5. Advanced Progressive Matrices Set I

The major objectives of the present research (Part I) were as under :

1. To find out how stutterers differ from non-stutterers in personality.
2. To find out whether there are significant differences between stutterers and non-stutterers in intelligence.

3. To arrive at potentially significant items on personality tests differentiating stutterers from non-stutterers.
4. To derive factors from the obtained scores on the personality tests by factor analysis.

Appropriate research methodology and statistical techniques have been used in the study. Factor Analysis was performed using Sample Main Programme For Factor Analysis - Facto.

There were no significant differences between stutterers and non-stutterers on Extroversion Scale of Eysenck Personality Inventory and Activity and Psychosomatic Disorders Traits of Surface Trait Inventory. There were significant differences between stutterers and non-stutterers on other 9 scales, namely, Neuroticism (E.p.I.), Self-confidence (S.C.I.), Social Anxiety(wps-R), Cyclothymia, Depression Tendencies, Emotional Instability, Introversion, Feelings of Inferiority and Interpersonal Communication Disorders (S.T.I.).

There were, no significant differences between stutterers and non-stutterers in intelligence as measured by Raven's Progressive Matrices Set I.

The Chi square values for every Item of each personality test, between stuttering and non-stuttering subjects revealed significant differences in their responses to 13 items of the Extroversion Scale, 18 items of the Neuroticism Scale (E.P.I.) ; 86 items of Self-confidence Inventory , 19 items of the Revised Willoughby Questionnaire For Self-Administration ; 6 items of the Activity Trait, 8 items of the Cyclothymia Trait, 10 items each of the Depression Tendencies and Emotional Instability Trait, 8 items of the Introversion Trait, 12 items of the Feelings of Inferiority Trait, 4 items of Psychosomatic Disorders Trait and 14 items of Interpersonal Communication Disorders Trait (S.T.I.).

On Hotelling's T^2 statistic, the obtained F value, pointed out that there were significant differences between normals and stutterers on 12 as well as 5 personality variables. The discriminant function was also obtained for both the 12 and 5 personality variables to classify the subjects into a normal or stuttering group.

Three groups, stutterers (N = 102, 5 variables), stutterers (N = 50, 12 variables) and normals (N = 119, 12 variables), yielded 2,4 and 2 factors respectively.

Factor I, II, III and IV for the stuttering group has been named as Emotional Instability, Cyclothymia, Lack of Self-confidence vs. Social Anxiety and Neuroticism, Factor I and II for the non-stuttering group has been termed as Emotional Stability and Extroversion*

The following conclusions can be drawn :

1. Stutterers differ from non-stutterers on Important personality traits,
- 2, There are no significant differences between stutterers and non-stutterers on intelligence.
- 3# Each test contains items on which stutterers responses are significantly different from non-stutterers.
- 4, Stuttering is not a unitary disorder Four sub-groups of stutterers have been identified on the basis of personality traits with the help of factor analysis.

The purpose of the Part (II) of the research was to study the effectiveness of the four treatment methods along with P.M.R. on stuttering. A total of 30 . subjects were evaluated for the study. Out of these ,. 16 participated actively in the treatment

Programmes, except one who discontinued therapy after three treatment sessions. Their ages ranged from 19 to 31 years.

Non-concurrent multiple baseline design was used for assessing the effect of treatment intervention. When the subject became available for a particular treatment of interest, he was randomly assigned to one of the pre-determined time-lag conditions.

Pre-treatment baseline measures for Part II of the study consisted of personality and speech evaluation. Four personality tests, E.P.I., S.C.I., WPS-R, and S.T.I. were used to assess personality. Raven's Progressive Matrices Set I was used to measure intelligence. Three speech measures percentage of syllables stuttered, rate of speech (S.P.M.) and articulatory rate (S.P.M.) were employed to evaluate stuttering both in reading and speaking conditions. Evaluation sessions consisting of speech measures were held daily and speech samples for 3 minutes each, was obtained for reading and speaking conditions. Treatment sessions were also held daily. All the personality tests were repeated at the end of the therapy.

Four treatment methods namely. Prolonged Speech, Rhythmic Syllable Timed Speech, Regulated Breathing

and Systematic Desensitization along with P.M.R were used in the treatment of stuttering. Subjects in all the groups experienced marked reduction in stuttering frequency both in reading and speaking conditions•

Prolonged Speech method was more effective in reducing stuttering in reading condition in coraparinson to other methods. However, Regulated Breathing Procedure brought more reduction in stuttering in speaking condition in comparison to other methods.

In majority of the subjects a decrease in stuttering was evidenced after a session of Progressive Muscular Relaxation both in reading and speaking condition In few of the subjects, where an increase in the stuttering was noticed, it was observed that almost all of them had high scores on Neuroticism and Social Anxiety traits.

After the treatment intervention, the rate of speech increased or remained unchanged in majority of the cases, when reduction in dysfluencles were noticed. There were few subjects in whom, the decreases in the stuttering were not accompanied by the increases in the speech rate.

After treatment intervention no change was evidenced in the articulatory rate for majority of the

subjects, some showed an increase while others a decrease In the reading condition. There was no change in the articulatory rate for 8 subjects, 6 showed an increase and 2 a decrease, upon introduction of therapists procedures In speaking condition.

After a session of P.M.R. , no systematic trends could be noted in the rate of speech for the subjects in all the groups. Many subjects showed a decrease in the rate in reading condition # but an increase in speaking condition. There were no changes in the rate in few of the subjects.

Personality tests revealed that many subjects had normal scores on most of the traits, after treatment. They showed a tendency towards normalcy in the scores of other traits. For some subjects, personality questionnaires scores did not become normal. These stutterers may need therapy for longer duration or a combination of other therapies, in order to bring their attitudes back to normal.

The limitations of the present research are as under:

1. In this study, the data on the 12 personality traits was not obtained from all the subjects in the experimental group, the data for five variables, Extroversion Neuroticism, Self-confidence Social-Anxiety and Depression Tendencies was obtained from 102 subjects. The data for additional seven variables; Activity, Cyclothymia, Emotional Instability, Introversion, feelings of Inferiority, psychosomatic Disorders and Inter-personal Communication Disorders traits was obtained from the last 50 subjects only. This is not likely to affect the results in a substantial way as minimum N was ensured to be 50.
2. The data on the maintenance and generalisation of treatment gains among treated subjects could not be collected.
3. The contribution of the each therapeutic component to the treatment effectiveness has not been assessed.

IMPLICATIONS OF THE PRESENT RESEARCH

The following are the implications of the present research;

1. It becomes evident from the present study that there are significant differences between stutterers and non-stutterers on important personality traits. In any treatment programme, our efforts should be directed at normalizing these differences,
2. Stutterers differed significantly on certain items of the each test. It suggests that number of items for studying

the personality of stutterers can be reduced considerably. This information may be used while constructing a test to study the personality of stutterers.

3. The discriminant function scores for both the groups (N= 102, 5 variables and N=50, 12 variables) have been provided for easy classification of subjects into a normal or stuttering group.
4. From the factor analysis, it becomes clear that the number of tests to study the personality of stutterers and non-stutterers can be reduced to four and two respectively.
5. Among the four methods used for the treatment of stuttering, prolonged Speech method was more effective in reducing stuttering in comparison to other methods, in reading condition. Regulated Breathing procedure brought more reduction in stuttering in speaking condition in comparison to other methods.
6. After therapy, the scores for many subjects became normal on most of the personality traits. For some subjects, personality questionnaire scores did not become normal. A combination of several therapeutic approaches may be needed to bring the personality traits¹ scores to normal for these subjects.

BIBLIOGRAPHY

- Adams, M.R. (1970). Some comments on "Time-out as punishment for stuttering" • Journal of speech and Hearing Research, 13, 218-220.
- Adams, M.R. (1972). The use of reciprocal inhibition procedures in the treatment of stuttering. Journal of Communication Disorders* 1, 59-66.
- Adams M.R. (1976). Some common problems in the design and conduct of experiments in stuttering. Journal-of Speech and Hearing Disorders, 41, 3-9.
- Adams, M.R., and Hayden, P. (1976). The ability of stutterers and non-stutterers to initiate and terminate phonation during production of an isolated vowel. Journal of Speech and Hearing Research, 19, 290-296.
- Adams, M.R., and Hotchkiss, J. (1973). Some reactions and responses of stutterers to a miniaturized metronome and metronome-conditioning therapy: three case reports. Behavior Therapy, 4, 565-569.
- Adams, M.R., and Hutchinson, J. (1974). The effects of three levels of auditory masking on selected vocal characteristics and the frequency of disfluency of adult stutterers. Journal of Speech and Hearing Research, 17, 682-688.

- Adams, M.R., and Moore, W.H., (1972). The effect of auditory masking on the anxiety level, frequency of disfluency, and selected vocal characteristics of stutterers. *Journal of Speech and Hearing Research*, 17, 572- 578.
- Adams, M.R.. and Popelka. G. (1971). The influence of "Time-out" on stutterers and their fluency. *Behavior Therapy*, 2, 334-339,
- Adams, M.R., Runyan, C. , and Mallard, A.R. (1975). Air flow characteristics of the speech of stutterers and non-stutterers. *Journal of Fluency Disorders*, 1, 4-12.
- Agnello, J. (1962). The effects of manifest anxiety and stuttering adaptation : Implications for treatment. *American Speech and Hearing Association*, 4, 377, Abst.
- Alford, J., and Ingham, R.J. (1969). The application of token reinforcement system to the treatment of stuttering in children. *Journal of Australian College of Speech Therapists*, 19, 53-57. »
- Altrows, I., and Bryden, M.P, (1977), Temporal factors in the effects of masking noise on the fluency of stutterers. *Journal of communication Disorders*, 11, 315- 329.
- Anderson, E.G. (1967) . A comparison emotional stability in stutterers and non-stutterers. Doctoral Thesis, Wayne State university, Cited by Bloch and Goodstein 1971, In *Functional Disorders of Personality : A Decade of Research*; *Journal of Speech and Hearing Disorders*, 36, 295 -314.

- Andrews, G., and Craig, A. (1982). Stuttering : Overt and covert measurement of the speech of treated subjects. *Journal of Speech and Hearing Disorders*. 47, 96-99.
- Andrews,G., Craig,A., and Feyer, A.M. (1983). Therapist's manual, for the stuttering treatment programme. Division of Communicative Disorders. The Prince Henry Hospital.
- Andrews, G., Craig,A., Feyer,A., Hoddinoff,S., Howie, P., and Neilson, M. (1983). Stuttering : A review of research findings and theories circa 1982. *Journal of Speech and Hearing Disorders*, 48, 226-246.
- Andrews .G., and Cutler. J, (1974}. Stuttering Therapy : The relation between changes in symptom level and attitudes. *Journal of Speech and Hearing Disorders*. 39, 312-319.
- Andrews, G., Guitar,B., and Howie. P. (1990). Metaanalysis of the effects of stuttering treatment. *Journal of Speech and Hearing Disorders*, 45, 287- 307.
- Andrews, G., and Harris, M.(1964). The syndrome of stuttering. The Spastics Society Medical and Educational Unit, London: Heinemann.
- Andrews, G., and Tanner, S. (1982a). Stuttering : An attempt to replicate the regulated-breathing method. *Journal Of Speech and Hearing Disorders*, 47, 138-140,

- Andrews, G., and Tanner, S. (1982 b). Stuttering : The results of 5 days treatment with an airflow technique, Journal of Speech and Hearing Disorders, 47, 427-429.
- Andrews, G., and Inghara, R.J. (1971). Stuttering : Considerations in the evaluation of the treatment. British Journal of Disorders of Communication, 6, 129-138.
- Andrews, G., and Ingham, R.J. (1972). An approach to the evaluation of stuttering therapy. Journal of Speech and Hearing Research, 15, 296-302.
- Aron, M.L. (1965). The effects of the combination of trifluoperazine and amylobarbitone on adult stutterers. Medical Proceedings (South Africa), 11, 227-233, Cited by Van Riper, C. 1973, In The Treatment of Stuttering, Englewood Cliffs, N.J., Prentice Hall.
- Aruna, G. (1975) A study of the relationship between self-confidence and social intelligence, M.A. Dissertation, S.V. University, Tirupati.
- Aten, J.L., and Blanchard, S. (1974). EMG biofeedback in the treatment of stuttering : Selected case studies, American Speech and Hearing Association, 16, 555, Abstract.
- Aten, H., and Burgraff, R. (1969). Therapy for stutterers* An objective clinical appraisal of results. Paper presented at the Annual Convention of the American Speech and Hearing Association, Chicago.

- Atkinson, C.J. (1952) . Vocal responses during controlled aural stimulation. *Journal of Speech and Hearing Disorders*, 17, 419-426.
- Azrin, N.H. Jones, R.J., and Flye, B. (1968). A synchronization effect and its application to stuttering by a portable apparatus. *Journal of Applied Behavior Analysis*, 1, 283- 299.
- Azrin, N.H., and Nunn, R.G. (1973). *Habit Reversals : A Method of eliminating nervous habits and tics.* *Behaviour Research and Therapy*, 11, 619-628.
- Azrin, N.H., and Nunn, R.G. (1974) . A rapid method of eliminating stuttering by a regulated breathing approach. *Behaviour Research and Therapy*, 12, 279-286.
- Azrin, N.H., and Nunn, R.G. (1977) . *Habit Control (Stuttering, Nailbiting, and other Nervous Habits)* . New York: Simon and Schuster.
- Azrin, N.H., Nunn, R.G., and Frantz, S.E. (1979). Comparison to regulated -breathing vs abbreviated desensitization on reported stuttering episodes. *Journal of Speech and Hearing Disorders*, 44, 331-339.
- Baer, D.M., Wolf, M.M., and Risley, T.R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis*, 1, 91-97.

- Balson, P.M. (1976) . The use of behavior-therapy techniques in crisis intervention : A case report. In Wolpe, J., and Leo, J.R. (Eds.). Behavior Therapy in Psychiatric Practice. N.Y.: Pergamon Press Inc.
- Barber, V. (1940). Studies in the psychology of stuttering. XVI. Rhythm as a distraction in stuttering. Journal of Speech and Hearing Disorders, 5, 29-42.
- Barlow, D.H., Blanchard, E.B., Hayes, S.C., and Epstein, L.H. (1977) • Single case designs and biofeedback experimentation. Biofeedback and Self-Regulation, 2, 211- 236.
- Barlow, D.H., and Hersen, M. (1973) . Single case experimental design Uses in applied clinical research. Archives of General Psychiatry, 29, 319-325.
- Barlow, D.H., and Hersen, M. (1984). Single case experimental design Strategies for studying Behavior change. W.J.: Pergamon
- Baron, M. (1949). The effect on eyelid conditioning of a speech variable in stutterers and non-stutterers. Ph.D. Dissertation University of Iowa. Cited by Santostefano, S. 1960. In 'Anxiety and Hostility in stuttering'. Journal of Speech and Hearing Research, 337- 347.
- Basavanna, M. (1971). A study of self-confidence as an attribute of self-concept. Ph.D. Dissertation, S.V. University,
- Basavanna, M. (1975) . Manual for the S-C Inventory. Varanasi t Rupa Psychological Centre.

- BasavaraJ, s. (1980). Effect of stimuli with and without Time-out on stuttering. M.Sc. Dissertation, University of Mysore.**
- Bearss, M.L. (1951). An investigation of conflict in stutterers and non-stutterers. Speech Monograph, 18, 237. (M.S. Disaertation, purdue University, 1950).**
- Beech, H . R . , and Fransella, F. (1968). Research and experiments in stuttering. New York : pergamon press.**
- Bander , J.F. (1939). the personality structure of stuttering. N.Y. : pitman pub. Corp.**
- Bender, J.F. (1942). the stuttering personality. American Journal of Orthopsychiatry, 12, 140-146. Cited by Goodstein, L.D. 1958. In'Functional Speech Disorders and personality : A survey of the research', Journal of Speech and Hearing Research, 1, 359 - 376.**
- Bergin, A.E., and Lambert, M.J. (1978). The evaluation of therapeutic outcomes. In Garfield, S.L., and Bergin, A . E . (Eds.), Handbook of psychotherapy and behavior change : An empirical analysis (2nd ed.). New York : Wiley.**
- Bergin, A . E . , and Strupp, H . H . (1970). New directions in psychotherapy research. Journal of Abnormal Psychology, 76, 13 - 26.**

- Berlinsky, S.L. (1954), A comparison of stutterers and non-stutterers in four conditions of experimentally induced anxiety. Abstract of Doctoral Dissertation, University of Michigan. Cited by Sheehan, J.G. 1970. In 'stuttering : Research and Therapy, New York : Harper and Row Pub.
- Berman, P.A., and Brady, J.P. (1973). Miniaturized metronomes in the treatment of stuttering : A survey of clinician's experiences* Journal of Behavior Therapy and Experimental Psychiatry, 4, 117 -119.
- Bernreuter, R.G. (1935). The personality inventory : Manual of instruction. Stanford : Stanford University Press.
- Bharath Raj, J. (1974-75). Control of stuttering behaviour through response contingent shocks. Journal of All India Institute of Speech and Hearing, 5-6 10-16.
- Bharath Raj, J. (1982a). Treatment of stuttering : A new proposition. Psyche-Care News, Jan, - March, IV, 11-12.
- Bharath Raj, J. (1982b). Validation of Surface Trait Inventory. An unpublished test : All India Institute of Speech and Hearing, Mysore.
- Bharath Raj, J., and Pranesha Rao, B.N. (1970). Some personality characteristics of stutterers. Journal of All India Institute of Speech and Hearing, 1, 7- 13.

- Biggs, B., and Sheehan, J. (1969) • Punishment or distraction : Operant conditioning revisited. *Journal of Abnormal Psychology*, 74, 256-262.
- Bloch, E.L., and Goodstein, L.D. (1971). functional speech disorders and personality s A decade of research . *Journal of Speech and Hearing Disorders*, 36, 295- 214.
- Bloodstein, o. (1969, 1975). Early stuttering and normal disfluency. *A Hand Book of Stuttering*. Chicago : The National Easter Seal Society for Crippled Children and Adults.
- Bloodstein, O. (1974). The rules of early stuttering. *Journal of Speech and Hearing Disorders*, 39, 379- 393.
- Bloodstain, O. (1979). *Speech pathology : An introduction*. Illinois , Houghton Hifflin Company.
- Bloodstain, o. (1981) . *A handbook on stuttering*. Chicago : The national Easter Seal Society.
- Bloodstain, O., and Gantwerk, B. (1967). Grammatical function in relation to stuttering in young children. *Journal of Speech and Hearing Research*, 10, 786- 789.
- Bloodstain, O., and Schreiber, L.R. (1957) . Obsessive compulsive reactions in stutterers. *Journal of Speech and Hearing Disorders*, 22, 33- 39.
- Bloomfield, L. (1933). *Language* . Holt, Rinehart and Winston, Allen and Unwin.

- Bluemel,C.S,(1957). The riddle of stuttering. Danville, Illinois : Interstate Publishing Co.
- Boland, J.L. (1953). A comparison of stutterers and non-stutterers on several measures of anxiety. Speech Monograph, 20, 144. Abstract.
- Boudreau,L.A.,and Jeffrey,C.J.(1973) . Stuttering treated by desensitization. Journal of Behavior Therapy and Experimental Psychiatry, 4, 209- 212.
- Brady,J.P.(1968). A behavioral approach to the treatment of stuttering. American Journal of Psychiatry, 125, 843-848.
- Brady,J.P. (1969). Studies on the metronome effect on stuttering. Behaviour Research and Therapy, 7, 197-204.
- Brady.J.P.(1970). Behavior therapy. In Price,J.H.(Ed.), Modern trends in psychological medicine, Vol.II. London i Butterworths.
- Brady,J.P.(1971) Metronome-conditioned speech retraining for stuttering. Behavior Therapy,2,129-150.
- Brady,W. (1967) . The effect of electric shock on the frequency of stuttering. Masters Thesis, Pennsylvania State College. Cited by Van Riper,C.1982.'In The Nature of stuttering' .Englewood Cliffs, N.J.: Prentice Hall Inc.

- Brandon, S., and Harris, M. (1967). stammering : An experimental treatment *programme* using syllable-timed speech. *British Journal, of Disorders of Communication*, 2, 64 - 68.
- Brayton, E.R., and Concure, E.G. (1978) . Effect of noise and rhythmic stimulation on the speech of stutterers. *Journal of Speech and Hearing Research*, 21, 285- 294.
- Brown, S.F., and Hull, H.C. (1942) . A study of some social attitudes of a group of 59 stutterers. *Journal of Speech Disorders*, 7, 323 -324.
- Browning, R.M.(1967) . Behavior therapy for stuttering in a schizophrenic child. *Behavior Research and Therapy*, 5, 27- 35.
- Brutten, E.J. (1957) • A colorimetric anxiety measure of stuttering and expectancy adaptation. *Dissertation Abstract*, 17, 2707 - 2708.
- Brutten, E.J. , and Shoemaker, D.J. (1967), *The modification of stuttering*. Englewood Cliffs, N.J. : Prentice-Hall.
- Brutten, G.J. (1969). Reflections on a two-factor approach to behavior modification. In Gray, B.B., and England, G. (Eds.), *Stuttering and conditioning therapies*. Monterey, Calif* t Monterery Institute.

- Brutten, G.J. (1975) . Stuttering : Topography, assessment and behavior change strategies. In Eisenson, J.(Ed.), Stuttering : A second symposium. N.Y.t Harper and Row.
- Bryngelson, B. (1935) . A method of stuttering. Journal of Abnormal Psychology, 30, 194 - 198.
- Burgraff, R.L. (1974), The efficacy of systematic desensitization via imagery as a therapeutic device with stutterers. British Journal of Disorders of Communication, 9, 134 - 139.
- Burke, B.D, (1969). Reduced auditory feedback and stuttering. Behaviour Research and Therapy, 7, 303- 309.
- Burns, D., and Brady, J.P. (1980). The treatment of stuttering. In Goldstein,A., and Poa, E.B. (Eds.) Handbook of Behavioral Interventions : A Clinical Guide. N.Y.: John Wiley.
- Burr, H.G., and Mullendorf, J.M, (1960). Recent investigations on tranquillizers and stuttering. Journal of Speech and Hearing Disorders, 25, 33- 37.
- Buscaglia, L.P. (1962). An experimental study of the Sarbin-Hardyck Test as indexes of role perception for adolescent stutterers. Ph.D. Dissertation, University of South California. Cited by Sheehan,J.G. 1970. In Stuttering : Research and Therapy, N.Y. : Harper and Row.

- Cady, B., and Robbins, C.J. (1968) . The effect of verbally presented words 'wrong', 'right' and "tree" on the disfluency rate of the stutterers and mm-stutterers. Convention address , American Speech and Hearing Assoc.
- Campbell, D.T., and Stanley, J.C. (1963), Experimental and quasi - experimental designs for research, Chicago : Rand McNally.
- Canter, G.J. (1971) . Observations on neurogenic stuttering : A contribution to differential diagnosis, British Journal of Disorders of Communication, 6, 139 - 143.
- Carrigan, P.M. (1960). Extraversion-introversion as a dimension of personality : A reappraisal. Psychological Bulletin, 57, 329 - 336,
- Case, H.W. (1960). Therapeutic methods in stuttering and speech blocking. In Eysenck, H.J, (Ed,) , Behavior Therapy and Neuroses : London : Pergamon Press.
- cattell, R.B. (1965, 1970), The scientific analysis of personality, Middlesex : Penguin Books Ltd,
- Chase, R.A., Sutton, S., and Rapin, I. (1961), Sensory feedback influences on motor performance, Journal of Auditory Research, 1, 212 - 223,

Cherry, E.C. , and Sayers, B.MCA. (1956)• Experiments on the total inhibition of stammering by external control, and some clinical results. *Journal of Psychosomatic Research*, 1, 233 - 246.

Cherry, E.C., Sayers, B.McA., and Marland, P. (1956). Some experiments on the total suppression of stammering, and a report on some clinical trials. *Bulletin of the British Psychological Society*, 30, 43 - 44. Cited by Van Riper, c. 1982. In 'The Nature of Stuttering. N.J. : Prentice-Hall

Chertok, L. (1967) . Theory of hypnosis since 1884. *International Journal of Psychiatry*, 3, 188 - 211 . Cited by Van Riper, C, 1973. In the Treatment of stuttering. N.J.: Prentice-Hall

Ciminero, A.R., Nelson, R.O., and Lipinski, D.P. (1977). Self-Monitoring procedures. In Ciminero, A.R., Calhoun, K.S., and Adams, H.E. (Eds.). *Handbook of Behavior Assessment*. N.Y. : Wiley.

Clark, R.M. , and Murray , F.M. (1965). Alterations in self-concept : a barometer of progress in individuals undergoing the therapy for stuttering. In Barbara, D.A. (Ed.) . *New Directions in Stuttering*. Springfield, 111, : Thomas.

Cohen, M,s., and Hanson, M.L. (1975). Intersensory processing efficiency of fluent speakers and stutterers. *British Journal of Disorders of Communication*, 10. 111 - 112.

- Columbat, (De L'Isere), M. (1831). Du begaiement et les autres de la parole, Paris t Masut . Cited by Van Riper, C. 1973. In 'The treatment of stuttering' .Englewood Cliffs, N.J. : Prentice-Mall.
- Corarey, A.L. (1973) . A first course in factor analysis. N.Y. : Academic Press.
- Gonlon, S. (1966). Attitudes of adults towards themselves and those who stutter. Dissertation Abstract, 27, 841-842
- Connell, P.J., and Thompson C.K. (1986). Flexibility of single-subject experimental designs. Part III : Using flexibility to design or modify experiments. Journal of Speech and Hearing Disorders, 51, 214 - 225.
- Conture, E.G. (1974). Some effects of noise on the speaking behavior of stutterers. Journal of Speech and Hearing Research, 17, 714 - 723.
- Conture, E.G., and Brayton, E.E. (1975). The influence of noise on stutterers' different disfluency types. Journal of Speech and Hearing Research, 18, 381- 334.
- Cooper, E.B., Cady, B.B., and Robbins, C.J. (1970). The effect of the verbal stimulus words 'wrong', 'right' and 'tree' on the disfluency rate of the stutterers and normal speakers. Journal of Speech and Hearing Research, 13, 230 - 244.

- Coppola, V.A., and Yairi, E. (1982). Rhythmic speech training with preschool stuttering children : An experimental study. *Journal of Fluency Disorders*, 7, 447- 457.
- Costello, J., and Hurst, M. (1981) . An analysis of the relationship among stuttering behaviors. *Journal of Speech and Hearing Research*, 24, 247- 256.
- Cote'.C., and Ladouceur, R. (1982). Effect of social aids and the regulated - breathing method in the treatment of stutterers. *Journal of Consulting and Clinical Psychology*, 50, 450.
- Cullinan, W.L., Prather, E.M., and Williams, D.E. (1963) • Comparison of procedures for scaling severity of stuttering. *Journal of Speech and Hearing Research*, 6, 187- 194.
- Curloe, R.F., and Perkins, w.H. (1968) . The effect of punishment of expectancy to stutter on the frequencies of subsequent expectancies and stuttering. *Journal of Speech and Hearing Research*, 11, 787- 195.
- Curleo, R.F., and Perkins, w.H, (1969) . Conversational rate control therapy for stuttering. *Journal of Speech and Hearing Disorders*, 34, 245 - 252 .
- Curlee, R.F., and Perkins, w.H. (1973). Effectiveness of DAF conditioning program for adolescent and adult stutterers. *Behaviour Research and Therapy*, 11, 395-401.

- Curlee, R.F., and Perkins, W.H. (1985). Nature and treatment of stuttering : New directions. San Diego, Calif, : College Hill Press.
- Carry, P.K.W., and Gregory, H.H. (1969), The performance of stutterers on dichotic listening tasks thought to reflect cerebral dominance, Journal of Speech and Hearing Research 12, 73 - 82.
- Cypreansen, L. (1948) . Group therapy for adult stutterers. Journal of Speech and Hearing Disorders, 13, 313- 319.
- Dahlstrom, w.G., and Craven, D. (1952). The MMPI and stuttering phenomenon in young adults. American Psychologist, 7, 341.
- Dalali, I.D., and Sheehan, J.G. (1974). Stuttering and assertion training. Journal of Communication Disorders, 7, 97 - 111.
- Daly, D.A, , and Cooper, E.B. (1967). Rate of stuttering under two electroshock conditions. Behavior Research and Therapy, 5, 49 - 54.
- Daly, D.A., and Frick,J.V. (1970) . The effects of punishing stuttering expectations and stuttering utterances : A comparative study . Behavior Therapy, 1, 228- 239.
- Daly, D.A., and Kimbarow, M.L. (1973). Stuttering as operant behavior t Effects of wrong, right and tree on the disfluency rates of school - age stutterers and non-stutterers. Journal of Speech and Hearing Research, 21, 581 - 597.

- Datatreya, T. (1973). Effect of continuous contingent, random contingent and random negative stimulation on selected responses in a moment of stuttering. M.Sc. Dissertation. University of Mysore.
- Denes, L. (1931). Diagnostic und therapic der functionellen stimmund sprachst o- rangen mit auss chaltung des gehoers. Proceedings of IVth Congress , International Association of Logopedics and Phoniatries, Berlin. Cited by Van Riper, C. 1973. In 'The Treatment of Stuttering'. Englewood Cliffs, N.J. : Prentice-Hall.
- Deraxne, J. (1966). Speech pathology in the U.S.S.R., In Rieber, R.w. , and Brubalcer, R.s. (Eds.), Speech Pathology, Amsterdam • North Holland.
- De Saussure, F. (1915). Course In general linguistics. N.Y. : Philosphical Library, 1959.
- Devaki,R. (1981). Comparison of stutterers and normals on Sacks sentence completion test in Kannada. Journal of All India Institute of Speech and Hearing, 12, 95-97.
- Devaraj, N. (1978). A study of the effect of palatal and labial anesthesia on stuttering. M.S. Dissertation, University of Mysore.
- Dewar, A., Dewar, A.D., and Anthony, J.F.K. (1976). The effect of auditory feedback masking on concomitant moments of stammering. British Journal of Disorders of Communication, 11, 95 - 102.

Dewar, A. Dewar, A.D., and Barnes, H.S. (1976). Automatic triggering of automatic masking in stammering and cluttering. British Journal of Disorders of Communication, 11, 19 - 26.

Dieffenbach, J.F. (1841). Heilung des Stotterns durch eine neue chirurgische Operation. Berlin: Porstner. Cited by Van Riper, C. 1971. In 'The Nature of Stuttering'. Englewood Cliffs, N.J.: Prentice-Hall.

Dixon, W.J. (Ed.) (1964). BMD: Biomedical computer programs. Berkeley: University of California Press.

Boneth, J. (1932). (Hypnosis in stuttering therapy). Therapia. Gegeniv. 73, 456- 458. Cited by Van Riper C. 1973, In 'The Treatment of Stuttering'. Englewood Cliffs, N.J.: Prentice-Hall.

Downie, N.M., and Heath, R.W. (1970). Basic statistical methods. Harper International Edition, N.Y.: Harper and Row Pub.

Duncan, M. (1949). Home adjustment of stutterers versus non-stutterers. Journal of Speech and Hearing Disorders. 14, 255 - 259.

Dunlap, K. (1928). A revision of the fundamental law of habit formation. Science, 37, 360 - 362.

Dunlap, K. (1932). Habits: Their making and unmaking. N.Y.: Liveright.

- Eisler, R.M., Miller, P.M., and Hersen, M. (1973). Components of assertive behavior. *Journal of Clinical Psychology*, 29, 295 - 299.
- Emerick, L.L. (1966) . An evaluation of three psychological variables in tonic and clonic stutterers and in non-stutterers. Doctoral Thesis, Michigan State University. Cited by Block and Goodstein 1971 . In 'functional Speech Disorders and Personality : A decade of research. *Journal of Speech and Hearing Disorders*; 35, 295 - 314.
- English, H.B., and English, A. (1958). A comprehensive dictionary of psychological and psychoanalytical terms. N.Y. : Longman.
- Erickson, R.L. (1969) . Assessing communication attitudes among stutterers. *Journal of Speech and Hearing Research*, 12, 711 - 724.
- Evans, I.M. (1983). Behavioral assessment. In Wallance, C.E. (Ed.), *Handbook of Clinical Psychology : Vol. I Theory research and practice*. Homewood, IL : Dow Jones-Irwin.
- Eysenck, H.J. (1952). The effects of psychotherapy : An evaluation. *Journal of Consulting Psychology*, 16, 319-324
- Eysenck, H.J. and Eysenck, S.B.G. (1964) . The Eysenck personality inventory. University of London Press.

- Eysenck, H.J. , and Eysenck, M.w. (1985) . Personality and individual differences - A natural science approach. N.Y. : Plenum Press.
- Eysenck, H.J.and Rachman, S.(1965). The causes and cures of neurosis. London : Routledge and Kegan Paul
- Pagan, L.B. (1932). A clinico-experimental approach to the re-education of the speech of stutterers. Psychological Monograph, 43, 53-66, Cited to Bloodstein, O.1975. In 'A Handbook on Stuttering'. Chicago : Rational Easter Society for Crippled Children and Adults.
- Fahmy, M. (1950) . The theory of habit control and negative practice as a curative method in the treatment of stammering. Speech (London),14, 24-30.
- Farley, F.H. (1967). On the Independence of extraversion and neuroticism. Journal of Clinical Psychology, 23, 154- 156.
- Fiedler.F.E., and wepman,J.M. (1951) . An exploratory investigation of the self-concept of stutterers. Journal of Speech and Hearing Disorders, 16, 110- 114.
- Fiedler, P.A., and standop, R. (1978) Stuttering, integrating theory and practice* Translated by silverman, S,R. 1983. from Stottern,Wegezueiner Intergarvein Theorie und Behar.dlung.Urban and Schwarzzenberk . RocJeville , Md., Aspen Systems Corp.

- Fishman, H.C. (1937). A study of the efficacy of negative practice as a correction for stammering. *Journal of Speech Disorders*, 2, 67 - 72.
- Flanagan, B., Goldiamond, I., and Azrin, M.H. (1958). Operant stuttering : The control of stuttering behavior through response contingent consequences. *Journal of Experimental Analysis of Behavior*, 1, 173 - 177.
- Fletcher, J.M* (1928). *The problem of stuttering*. M.Y. : Longmans, Green.
- Frank, J.D. (1961). *Persuasion and healing*. N.Y. : Schocken.
- Fransella, F. (1967). Rhythm as a distractor in the modification of stuttering. *Behaviour Research and Therapy*, 5. 253 - 255.
- Fransella, F. (1972). Self concepts and the stutterers. *British Journal of Psychiatry*, 114, 1531- 1535.
- Fransella, F. (1972). *Personal change and reconstruction*. London : Academic Press.
- Fransella, F., and Beech, H.R. (1965). An experimental analysis of the effect of rhythm on the speech of stutterers. *Behaviour Research and Therapy*, 3, 195-201.
- Freund, H. (1932) • Der Indiktiv vorgant imstottern und seine therapeutische verwertung, *Zeitschrift fur Neurologie und Psychiatrie*, 141, 180- 192. Cited by Van Riper, C. 1973. In the 'Treatment of stuttering'. Englewood Cliffs, N.J. : Prentice-Hall

- Freund, H. (1966). Psychopathology and problems of stuttering, Springfield, 111, : Charles C. Thomas.
- Frick, J. B. (1951) • An exploratory study of the offsets of punishment (electric shock) upon stuttering behavior Ph.D. Thesis. University of Iowa. Cited by Hegde, N. N. 1972. In 'Stuttering, Neuroticism and Extroversion'. Behaviour . Research and Therapy, 10, 395- 397.
- Frick, J. V. (1952) . An exploratory study of the effect of punishment (electric shock) upon stuttering behavior. Speech Honograph, 10, 146- 147.
- Fried, C. (1972). Behavior therapy and psychoanalysis in the treatment of a severe chronic stutterer. Journal of Speech and Hearing Disorders, 37, 347- 372.
- Froeschels, E. (1950), A technique for stutterers 'ventriloquism'. Journal of Speech and Hearing Disorders, 15, 336 - 337.
- Froeschels, E. (1951). Stuttering and psychotherapy. Folia Phoniatrica, 3, 1-9.
- Froeschels, S. (1964). Selected papers of S. Froeschels. Amsterdam : North Holland, Cited by Van Riper, C. 1973. In 'The Treatment of stuttering'. Englewood Cliffs, N.J. : Prentice-Hall.

- Fruawald, E. (1936). Intelligence rating of severers collage stutterers compared with that of other entering universities. *Journal of speech Disorders*, 1, 47- 51.
- Glauber, I.P. (1958) . The psychoanalysis of stuttering, In Eisenson (EQ.).stuttering : A symposium.N.Y.:Harper and
- Goldiamond, I. {1965} . Stuttering and fluency as manipulatable operant response classes. In Krasner,L.,and Ullman,L.P. (Eds.) . *Research in Behavior Modification*. N.Y.:Holt.
- Goldiamond, I. (1967) . Supplementary statement to operant analysis and control of fluent and non-fluent verbal behavior, Report to U.S. Department of Health,Education, and Welfare, Public Health Service, Application No.MHO 8976-03.
- Goldman. R.,and Guth.P. (1965) . The effects of psycho-therapeutic drugs on stuttering. (*De Therapia Vocis et Loquilles*, 1, 411- 414). Cited by Van Riper,C. 1977. In'*The Treatment of Stuttering*'. Englewood Cliffs, N.J.s Prentice Hall.
- Goodstein,L.D. (1958). Functional speech disorders and personality : A survey of the research. *Journal of Speech and Hearing Research*, 1, 359- 376.

Goodstein,L.D., Martire.J.G., and Speilberger,C.D.(1955).

The relationship between " achievement imagery" and stuttering behavior In college males. Proceedings (S) Iowa, Academy of Science, 62, 399- 404. Cited by Goodstein,L.D. 1958. In 'Functional Speech Disorders and Personality s A Survey of the Research'. Journal of Speech and Hearing Research, 1, 359- 376.

Goss, A.E. (1943) . An experimental investigation of anxiety in stuttering behavior as a function of temporal factors Ph.D. Dissertation, University of Iowa. Cited by Santostefano, S, 1960. In 'Anxiety and Hostility in Stuttering' Journal of Speech and Hearing Research, 3, 337 - 347.

Grahanu J., and Bruralik. J.C. (1965). Stuttering characteristics of neurologically normal and abnormal stutterers ASHA, 7, 409.

Grammont, M. (1933) . Traite de phonetique.Deiagrave,Paris. Cited by Fudge,E.C. 1973, In'Phonology' Baltimore. Maryland: Penguin Books Inc.

Gray,B.B., and Brutton,E.J (1965) . The relationship between anxiety,fatigue and - spontaneous recovery in *stuttering* Behaviour Research and Therapy,2, 251- 259.

- Gray, B.B., and England, G. (1972). Some effects of anxiety deconditioning upon stuttering frequency. *Journal of Speech and Hearing Research*, 15, 114 - 122.
- Gray, B.B. and Karmen, J.L. (1967) . The relationship between non-verbal anxiety and stuttering adaptation. *Journal of Communication Disorders*, 1, 141- 151.
- Green, J.S., and Small, S.M. (1944). Psychosomatic factors In stuttering. *Medical clinics of North America*, 28, 615- 623. Cited by Santostefano, S. 1960. In 'Anxiety and Hostility in Stuttering'. *Journal of Speech and Hearing Research*, 3, 337- 347.
- Gregory, H.H. (1969). An assessment of the results of stuttering therapy. Final report, Research and demonstration project 1725-S , Social and Rehabilitation Service, U.S. Department of Health, Education and Welfare.
- Greiner, J.R., and Fitzgerald, H,E., Cooke, P.A., and Djurdjic, S.D. (1955). Assessment of sensitivity to interpersonal stress in stutterers and non-stutterers. *Journal of Communication Disorders*, 18, 215- 225.
- Grimes, R., and Healey, E.c. (1985). Relationship between young stutterers oral-motor abilities and fluency skills Paper presented at the Annual convention of the American Speech - Language- Hearing Association, Washington.

- Groan, M.S., and Holland, H.L. (1965) . The effects of response contingent electroshock on stuttering, ASHA, 7, 376.
- Gudi, S., and Kumar, P. (1986). A study of stutterer's self-concept. Journal of Indian Speech and Hearing Association, 1, 8- 17.
- Guitar, B. (1974) . Treatment of stuttering t Electro-myographic feedback for reduction of pre-utterance muscle action potentials. ASHA, 16, 514- 515(Abstract).
- Guitar,B. (1975) . Reduction of stuttering frequency using analog electromyographic feedback. Journal of Speech and Hearing Research, 13, 672- 685.
- Guitar, B. (1976). Pre-treatraent factors associated with the outcome of stuttering therapy. Journal of Speech and Hearing Research, 19, 590- 600.
- Guitar,B.,and Bass C. (1978). Stuttering therapy : The relation between attitude change and long term outcome. Journal of Speech and Hearing Disorders, 43, 392-400.
- Gutzmann, H. (1343). Das Stottern t Sine Monographic fur Aerate, Pedagofen und Rehorden. Frankfurt : Rosenheim. Cited by Van Riper, C. 1973. In 'The Treatment of Stuttering'.Englewood Gliffs, N.J.: Prentice-Hall.

- Hackett, J.D., Hoffman, M., MacLeod, A.W., and Surtees, R. (1958), A study of the effects of chlorpromazine as an aid to therapy for stuttering with one year follow up. *Journal of American Speech and Hearing Association*. Abstract
- Hale, L.L., (1951). Consideration of thiamin supplement in prevention of stuttering in pre-school children. *Journal of Speech and Hearing Disorders*, 16, 327-333.
- Ham, R. (1936). *Techniques of stuttering therapy*. Englewood Cliffs, N.J.: Prentice-Hall.
- Haney, H.R. (1951). Motives implied by the act of stuttering as revealed by prolonged experimental projection. *Speech Monographs*, 18, 129.
- Hanley, J.M. (1982). Stuttering : A unified perspective for theory and therapy. *Journal of Fluency Disorders*, 7, 123- 128.
- Hanna, R., Wilfling, F., and McNeill, B. (1975). Biofeedback treatment for stuttering. *Journal of Speech and Hearing Disorders*, 40, 270- 273.
- Herman, H.H., (1968). *Modern factor analysis*. Chicago : The University of Chicago Press.
- Haroldson, S.K., Martin, R.R. and Starr, C.D. (1968). Time-out as a punishment for stuttering. *Journal of Speech and Hearing Research*, 11, 560 - 566.

- Harpreet Singh .(1986). Bilingualism, emotional difficulties- and stuttering. Paper presented in a seminar on 'Child Language Acquisition and Patterns of Bilingualism', Central Institute of Indian Languages, Mysore.
- Harris, C.M., Martin, R.R., and Haroldson, S.K. (1971), Punishment of expectancy responses by stutterers. *Journal of Speech and Hearing Research*, 14, 710- 717.
- Hartmann, D.P. (1982) . Assessing the dependability of observational data. In Hartmann, D.P. (Ed.), *Using observers to study behavior : New directions for methodology of social and behavioral science* . San Francisco : Jossey - Bass.
- Hawkins, R.P., and Fabry, B.D. (1979). Applied behavior analysis and Interobserver reliability: A commentary on two articles by Birkimer and Brown. *Journal of Applied Behavior Analysis*, 12, 545 - 552.
- Heaver, L., Franklia, R.W., and Arnold, G.E.(1956). By personal communication with Kent, L.R. Cited by Kent, L.R. 1963. In 'The use of tranquilizers in the treatment of stuttering'. *Journal of Speech and Hearing Disorders*, 28, 238 - 294.
- Hegde, M.N. (1971a). The short and long term effects of contingent aversive noise on stuttering. *Journal of All India Institute of Speech and Hearing*, 2, 7-14.

- Hegde, M.N. (1971b). The effect of shock on stuttering. *Journal of All India Institute of Speech and Hearing*, 2, 104 - 110.
- Hegde, M.N. (1972). Stuttering, neuroticism and extraversion . *Behaviour Research and Therapy*. 10,395-397
- Hegde, M.N.(1979). Stuttering as an operant behavior. *Journal of Speech and Hearing Research*, 22, 657- 671.
- Helps, R., and Dalton, P. (1979). The effectiveness of an intense group speech therapy programme for adult stammerers, *British Journal of Disorders of Communication*, 14. 17-30,
- Herscovitch,A., and he Bow, M.D. (1973). Iraaginal pacing in the treatment of stuttering* *Journal of Behavior Therapy and Experimental Psychiatry*, 4, 357- 360.
- Hestand,R., Howard,D,, and Gregory,R. (1971). The Willoughby Schedule : A replication. *Journal of Behavior Therapy and Experimental Psychiatry*, 2, 111 - 112.
- Hjelmslev, L.(1953), *Prologomena to a theory of language* (tr. Whitfield, F,J,). Baltimore (IJAL Mamoir No.7).

- Hoffman, A. (1840) . Theoretisch- praktische answering zur radical heilung stotternder .Berlin t Sehroeder. Cited by Van Riper, C. 1971. In 'The nature of stuttering' Englewood Cliffs, N.J. : Prentice - Hall.
- Hogewind, F. (1940) . Medical treatment of stuttering. Journal of Speech Disorders, 5, 203 - 208.
- Holgate, D., and Andrews, G. (1966), The use of syllable-timed speech and group psychotherapy in the treatment of adult stutterers. Journal of Australian College of Speech Therapists, 16, 36- 40.
- Hollingsworth, H.L. (1931) . Abnormal psychology .London : Methuen
- Horlick, R.S., and Miller, M.H. (1960). A comparative personality study of a group of stutterers and hard of hearing patients. Journal of General Psychology, 63 259 - 266. Cited by Sheehan, J.G. (1970). In 'stuttering : Research and Therapy' N.Y.: Harper and Row.
- Hotchkiss, J. (1974) . Some reactions and responses of stutterers to a maniaturized metronome and metronome-conditioning therapy : A follow-up report. Behavior Therapy, 5, 574 - 575.
- Hoteillng, H. (1931). The generalization of student's ratio. Annals of Mathematical Statistics, 11 , 360 - 378. Cited by Anderson, T.w. 1958. In 'An introduction to multivariat statistical analysis. N.Y.: John Wiley and Sons Inc.

- Howie, P., and Andrews, G. (1985). Treatment of adult stutterers Managing fluency, In Curlee, R.F., and Perkins, W.H. 1985. Nature and Treatment of Stuttering New Directions. San Diego, Calif. : College Hill Press.
- Howie, P.M., Tanner, S. and Andrews, G. (1981). Short and long-term outcome in an intensive treatment program for adult stutterers. Journal of Speech and Hearing Disorders, 46, 104- 109.
- Howie, P.M., Woods, C.L., and Andrews, G. (1982). Relationship between covert and overt speech measures Immediately, before and Immediately after stuttering treatment. Journal of Speech and Hearing Disorder, 47, 419 - 426.
- Hunt, J. (1861). Stammering and stuttering, their nature and treatment { Original Edition }. Reprinted New York : Hafnsr, 1967.
- Hutchinson, J.M., and Norris, G.M. (1977). The differential effects of three auditory stimuli on the frequency of stuttering behavior Journal of Fluency Disorders, 2, 283- 292.
- Imhofer, R. (1927). Pathogenesis of stammering: Neurosis. and expectation • Med.Klin., 23, 628 - 631, Cited by Van Riper, C. 1973. In 'The treatment of stuttering'. N.J.: Prentice-Hall.

- Ingebregsten, E. (1936). Some experimental contributions to the psychology and psychopathology of stuttering. *American Journal of Orthopsychiatry*, 6, 630 - 651.
- Ingham, R.J. (1975). Operant methodology In stuttering therapy. In Elsenon, J. (Ed.), *Stuttering : A second symposium*. N.Y. : Harper and Row.
- Ingham, R.J. (1980) . *Stuttering therapy manual : Hierarchy control schedule , A clinician's guide* . Sydney : School of Communication Disorders, Cumberland College of Health Sciences.
- Inghara, R.J. (1984). *Stuttering and behavior therapy : Current status and experimental foundations*. San Diego : College- Hill Press.
- Ingham, R. J. (1989). A personal communication.
- Ingham, R.J., Adams, S., and Reynolds, G. (1978). The effects on stuttering of self-recording the frequency of stuttering on the word "the". *Journal of Speech and Hearing Research*, 21, 459 - 469.
- Ingham, R.J., and Andrews, G. (1968). The control of stuttering : An application of token reinforcement systems In a voluntary setting. Paper presented at the Australian Psychological Society Conference, Brisbane.

- Ingham, R.J. and Andrews, G. (1971 a) . A description and analysis of a token economy in an admit therapy program. Paper presented at the Annual Convention of the American Speech and Hearing Association, Chicago.
- Ingham, R.J., and Andrews,G. (1971 b) , stuttering : The quality of fluency after treatment. Journal of Communication Disorders, 4, 279 - 288,
- Ingham, R.J. , and Andrews, G. (1973). Behavior therapy and stuttering : A review. Journal of Speech and Hearing Disorders, 38, 405 - 441.
- Ingham, R.J., Andrews, G.,and Winkler,R. (1972).
Stuttering : A comparative evaluation of the short - term effectiveness of four treatment techniques. Journal of Communication Disorders, 5, 91- 117.
- Ingham, R.J., and Lewis,J.I. (1978), Behavior therapy and stuttering : And the story grows. Human Communication, 125 - 152.
- Inghara, R,J.,and Packman,A. (1977). Treatment and generalization effects in an experimental treatment for a stutterer using contingency management and speech rate control. Journal of Speech and Hearing Disorders, 42, 394 - 407.

- Ingham, R.J., and Packman, A. (1978). Perceptual assessment of normalcy of speech following stuttering therapy. *Journal of Speech and Hearing Research*, 21, 63 - 73 .
- James, J.E. (1981) . Self- monitoring of stuttering : Reactivity and accuracy. *Behavior Research and Therapy*, 19, 291 - 296.
- James, J.E., and Ingham, R.J. (1974). The influence of stutterer's expectancies of Improvement *upon* response to time-out. *Journal of Speech and Rearing Research*, 17, 86 - 93.
- James, J.E., Ricciardelli, Lina, A., Hunter, C.E., and Rogers, P. (1989). Relative efficacy of intensive and spaced behavioral treatment of stuttering. *Behavior Modification*, 13, 376 - 295.
- Janssen, P., and Brutten, G.J. (1973). The differential effects of punishment of oral prolongations. In Le Brun, Y. and Hoops, R. (Eds.) *Neurolinguistic approaches to stuttering*, The Hague : Mouton.
- Janssen, P., and Kraaimatt, F. (1980). Disfluency and anxiety in stuttering and non-stuttering adolescents. *Behavior Analysis and Modification*, 4, 116- 126.
- Johnson, w. (1932). The influence of stuttering on the personality. *University of Iowa Studies : Studies in child welfare*, 5, no. 5.

- Johnson, W. (1946). *People In quandaries*, N.Y.: Harper.
- Johnson, W. (1957). Perceptual and evaluational factors in stuttering, In Travis, L. (Ed.) . *Handbook of Speech Pathology*, N.Y. : Appleton-century-Crefts.
- Johnson, W., Darley, F.L., and Spriestbach, D.C. (1963). Diagnostic methods In *speech pathology* . N.Y.: Harper and Row.
- Jones, H.G. (1969), Behavior therapy and stuttering : The need for a multifarious approach to a multiplex problem. In Gray, B.B. and England, G. (Eds.). *Stuttering and the conditioning therapies* . Monterey, Calif. : Monterey Institute.
- Jones, R.B. (1981) . Modified regulated-breathing on the treatment of a single case of stuttering. *Perceptual and Motor Skills*, 52, 130.
- Kanfer, F., and Philips, J. (1970). *Learning foundations of behavior therapy*. N.Y. : John Wiley and Sons.
- Kastein, S. (1947) . The chewing method of treatment of stuttering. *Journal of Speech Disorders*, 12, 195- 198.
- Kazdin, A.E. (1974). Self-monitoring and behavior change. In Mahoney, M.J. and Thoresen, C.E. (Eds.). *Self-control : Power to the person*. Calif, : Brooks-Cole.

- Kazdin, E.E., and Kopel, S.A. (1975). On resolving ambiguities of the multiple-baseline design s Problems and recommendations, *Behavior Therapy*, 6, 601 - 603.
- Kelham, R., and McHale, A. (1966), The application of the learning theory to the treatment of stuttering. *British Journal of Disorders of Communication*, 1, 114- 118.
- Kelly, G.A. (1955) . The psychology of personal constructs. N.Y.: Norton.
- Kent, L.R. (1963). Stuttering and endocrine malfunction, *Journal of Speech and Hearing Disorders*, 28, 197- 193.
- Kent, L.R., and Williams, D,E, (1959). Use of Meprobromate as an adjunct to stuttering therapy. *Journal of Speech and Hearing Disorders*, 24, 64 - 69.
- Kent, R.D.(1985 a). Stuttering as a temporal programming disorder. In Curlee,R., and Perkins,W. (Eds,). *Nature and treatment of stuttering : New directions*. San Diego t College-Hill Press.
- Kent, R.D. (1985 b) . Application of research to assessment and therapy. *Seminars in Speech and Language*, 6, 1-12.
- Kerlinger, F.N.(1973). *Foundations of behavioral research*. N.Y. : Holt, Rinehart and Winston, Inc.

- Kern, A. (1932). Der einfluss des hoerens auf das stottern, Archiv, Psychiatric Nervenkr., 97 , 429 - 449. Cited by Van Riper, C. 1973, In 'The treatment of stuttering, Englewood Cliffs, H.J.: Prentice-Hall.
- Kim, J.O., and Mueller, C.W. (1978 a). Introduction to factor analysis. Beverly Hills and London : Sage Publications.
- Kim, J.O., and Mueller, C.W. (1978 b) . Factor Analysis, Beverly Hills and London : Sage Publications.
- Kingdon-Ward, W. (1942). Stammering : A contribution to the study of its problems and treatment. London : Hamilton.
- Kondas, o. (1967). The treatment of stammering in children by the shadowing method. Behaviour Research and Therapy 5, 325 -329.
- Kondas, o., and Pukacova, M. (1977). Speech shadowing under the adaptation effect condition in the treatment of stammering. Behavior Therapy, 8, 274- 275.
- Kozhevnikov, V.A., and Chistovitch, L.A. (Eds.) (1965) . Speech : Articulation and perception. Translated, and available as JPRS. 30, 543. Washington : Department of Commerce.

Krugman, M. (1946) . Psychosomatic study of fifty stuttering children. IV. Rorschach study. American Journal of Orthopsyehiatry, 16, 127 - 133.

Kuchner, S . (1970) . Treatment of stuttering from the viewpoint of behavior therapy. Sprachheilarbeir, 4 , 103 - 109. Cited toy Gronhavd,K.D. and zenner,A.&. 1982. In Speech and language : Advance in basic research and practice .Vol. 8 . Edited by Lass, N.J.t Academic Press Inc.

Kussrmaul,A. (1910) . Die Storungen der sprache (The Impediments of Speech) .4th. (F.C.W.Vogel,Leipzig, 1881) . Cited by Rieber,R.W. and Srubaker,R.S. (Eds.) In 'Speech Pathology'. Amsterdam : Horth Holland.

La Croix, Z.E. (1973). Management of disfluent speech through self-recording procedures.Journal of Speech and Hearing Disorders, 38, 272 - 274.

Ladefoged,P. (1967) . Three areas of experimental phonetics, London : Oxford University Press.

Ladefoged, p . (1973). Preliminaries to linguistic phonetics, Chicago : University of Chicago Press.

Ladefoged,P. (1982) . A course in Phonetics. N . Y . : Harcourt Brace Jovanovich Inc.

- Ladouceur, R., Cote, C., Leblond, G., and Bouchard, L. (1982). Evaluation of regulated -breathing method and awareness training in the treatment of stuttering. *Journal of Speech and Hearing Disorders*, 47, 424- 426.
- Ladouceur, R., and Saint-Laurent, L. (1986). Stuttering : A multidimensional treatment and evaluation package. *Journal of Fluency Disorders*, 11, 93- 103.
- Laird, D.A. (1925). Detecting abnormal behavior. *Journal of Abnormal and Social Psychology*, 20, 128-141.
- Lal, K.K., Latthe, G.A., and Bharath Raj, J, (1976). A case report " Treatment of stuttering with systematic desensitization." *Indian Journal of Clinical Psychology*, 3, 219- 221.
- Lane, H., and Tranel, B. (1971). The Lombard sign and role of hearing in speech. *Journal of Speech and Hearing Research*, 14, 677- 709.
- Lanyon, R.I. (1965). The relationship of adaptation and consistency to improvement in stuttering therapy. *Journal of Speech and Hearing Research*, 8, 263 -271.
- Lanyon, R.I. (1969). Behavior change in stuttering through systematic desensitization. *Journal of Speech and Hearing Disorders*, 34, 253 - 259.

- Lanyon,R.I., and Barocas,V.S. (1979). Effects of contingent events on stuttering and fluency. *Journal of Consulting and Clinical Psychology*, 43 , 486- 493.
- Lasarus,A.A. (1963) • The results of behavior therapy In 126 cases of severe neurosis. *Behavior Research and Therapy*, 1, 69 - 79.
- Leach, E. (1969) . Stuttering : Clinical application of response-contingent procedures. In Gray,B.B.. and England,G.(Eds.). *Stuttering and conditioning therapies*. Monterey , Calif. : Monterey institute of Speech and Hearing.
- Lechner,B.K. (1979). The effects of delayed auditory feedback and masking on the fundamental frequency of stutterers and non-stutterers. *Journal of Speech and Hearing Research*, 22, 343- 353.
- Lee,J. (1976). Application of Martin Schwartz's airflow technique in the treatment of stuttering. *Journal of Speech and Hearing Disorders*, 41, 133- 134.
- Lichtinger, (1344) . Ueber die Natur des Stoterns .*Med. Zeitung Ver. Helk. Preussen*, 8, 149, 153, 159. Cited toy Freund,H. 1966. In *Psychotherapy and the problems of stuttering'*. Springfield Charles C.Thomas Pub.

- McDowell, E. (1923) . Educational and emotional adjustments of stuttering children. Columbia University Teachers College Contributions to Education No.314. N.Y.: Teachers College.
- MacKay, D.G. (1969) . To speak with accent : Effect of nasal distortion on stuttering under delayed auditory feedback. *Perceptual Psychophysics*, 5, 103-188.
- MacKay, D.G., and MacDonald, M.C. (1935). Stuttering as a sequencing and timing disorder. In Curlee, R., and Perkins, W. (Eds.) *Nature and treatment of stuttering! New Directions*. San Diego : College-Hill Press.
- Mahananda, P. (1970). A case of stuttering treated successfully with aversive noise technique. *Journal of All India Institute of Speech and Hearing*, 1, 132 - 133.
- Mahapatra, S.N. (1983). Effect of highlighting fluency and dysfluency in stutterers. M.Sc. Dissertation, University of Mysore.
- Mahoney, M.J., and Arnkoff, D. (1973). Cognitive and self-control therapies. In Garfield, S.L. and Bergin, A.E. (Eds.) . *Handbook of Psychotherapy of Behavior Change*. 2nd Edn. N.Y. : Wiley.

- Mallard, A.R., and Kelley, J.S. (1982). The precision fluency shaping programme : replication and evaluation. *Journal of Fluency Disorders*. 7, 287- 294.
- Manohar, P.D., Jayarara,M., Rangasayee, R., and Narendiran, K. (1973) . Correspondence therapy for stuttering. *Journal of All Indla Institute of Speech and Hearing*. 4, 113 - 122.
- Maraist,J.A., and Hutton,C. (1957), Effect of auditory masking on the speech of stutterers. *Journal of Speech and Hearing Disorders* 22, 385- 389.
- Marston,L.R. (1923). The emotions of young children. *Iowa Studies in Child Welfare*, No.3.
- Martin,R.R., and Haroldson,s.K. (1982). Contingent self-stimulation for stuttering. *Journal of Speech and Hearing Disorders*, 47, 407- 413.
- Martin,R.R., Kuhl,P., and Haroldson, S. (1972). An experimental treatment with two pre-school stuttering children. *Journal of Speech and Hearing Research*, 15, 743 - 752.
- Martin,R.R., and Slegel,G.M. (1966 a). The effects of response contingent shock on stuttering. *Journal of Speech and Hearing Research*, 9, 340- 352.

Martin,R.R., and Siegel,G.M,(1966 b) . The effects of simultaneously punishing stuttering and rewarding fluency. Journal of Speech and Hearing Research, 9, 466 - 475.

Martin.R.R., St.Louis,K., Haroldson,S., and Hasbrouck,J. (1975). Punishment and negative reinforcement of stuttering using electric shock. Journal of Speech and Hearing Research, 18, 478- 490.

Mast, V.R, (1952). Level of aspiration as method of studying the personality of adult stutterers. Speech Monographs, 19, 196.

Mathur, M.L. (1960) . Causes and cures of stammering. Stammering Clinic, Jodhpur.

May,A.E., and Hackwood,A.(1968). Some effects of masking and eliminating low frequency feedback on the speech of stutterers. Behavior Research and Therapy, 6, 219- 224.

Meltzer,H. (1944). Personality differences between stuttering and non-stuttering children as indicated by Rorschach test. Journal of Psychology, 17,39- 59.

Mendelsshon, M. (1783). Psychologische Betrachtungen auf Veranlassura einer Von Spalding. Mag.Erfahrungsseelen Kuit Citerd in Rieber,R.W., and Brubaker,R.S. (Eds.) 1966. Speech Pathology. Amsterdam : North Holland.

Meyer, V., and Comley, J. (1969) . A preliminary report on the treatment of stammer by the use of rhythmic stimulation, . In Gray, B.B. and England, G. (Eds.) The conditioning therapies. Monterey, Calif, : Monterey Institute of Speech and Hearing.

Meyer, V. and Mair, J.M.M. (1963). A new technique to control stammering : A preliminary report. Behaviour Research and Therapy, 1, 251- 254.

Minifie, F.D., and Cooker, H.S. (1964). A disfluency index. Journal of Speech and Hearing Disorders, 29, 189- 193.

Mitchell, B.A. (1955) . An analysis of the effect of Resperine on adult stutterers. Master's Thesis, Western Michigan University. Cited by Van Riper, C. 1973. In 'The treatment of stuttering'. N.J.: Prentice-Hall.

Moleski, R., and Tossi, D.J. (1976). Comparative psychotherapies Rational-emotive therapy versus systematic desensitization in the treatment of stuttering. Journal of Consulting Clinical Psychology, 44, 309-311.

Moor®, W.E. (1946). Hypnosis in a system of therapy for stutterers. Journal of Speech Disorders, 11, 117-122.

- Moore, W.H., and Ritterman, 8.1. (1973), The effects of response contingent reinforcement and response contingent punishment upon the frequency of stuttered verbal behavior. *Behaviour Research and Therapy*, 11, 43- 48.
- Morley, D.E. and Berlinsky, S.(1953). The use of motion pictures in effecting group adjustment changes in speech handicapped adolescents. *Journal of Speech and Hearing Disorders*, 18, 38- 42.
- Mowrer, D. (1975). An instructional program to Increase fluent speech of stutterers. *Journal of Fluency Disorders*, 1, 25- 35.
- Murray,P.P. (1969) . An Investigation of variably induced white noise upon moments of stuttering. *Journal of Communication Disorders*, 2, 109- 114.
- Nammalvar,N., and Venkoba Rao, A. (1983) * Identity disturbance among adult stammers. *Indian Journal of Clinical Psychology*, 10, 491- 496.
- Nandur,v.u. (1982). Effect of binaural masking noise on stuttering - A spectrographic analysis *Journal of All India institute of Speech and Hearing*, 12, 164- 169.

- Nao,C. (1964). The Result of Hypnosis as a Stuttering Therapy . Mental and Physical Medicine(Japan) , 4, 176- 177. Cited by Van Riper, C. 1973. In'The treatment of stuttering'. N.J.: Prentice- Hall.
- Nelson.L. (1955) . An investigation of the changes in the self-concept of stutterers. Master' s Thesis, western Michigan University, cited by Van Riper, C. 1971. In 'The Nature of Stuttering'. Englewood Cliffs. N.J. : prentice - Hall.
- Newman,P.w. (1963). Adaptation performances of individual stutterers s Implications for research. Journal of Speech and Hearing, 6, 293- 294.
- Newman,P.w. (1968). An explanation of the distraction effect in stuttering. Convention Address, American Speech and Hearing Association, Denver.
- Neymann,C.A., and Kohlstadt, K.D. (1929). A new diagnostic test for introversion-extraversion. Journal of Abnormal Psychology, 23, 482- 487.
- Ojha, K.N., and Bettagere, R.N. (1982) . Group psycho-therapy with stutterers. Indian Journal of Clinical Psychology, 9, 125- 129.
- Okasha, A., Moneim,S.A., Kamel, D.M., and Moustafa, H. (1974). Electroencephalographic study of stammering. British Journal of Psychology, 124, 533- 535.

- Ost, L.G., Gotestam, K.G., and Melin, L. (1976). A controlled study of two behavioral methods in the treatment of stuttering. *Behavior Therapy*, 7, 587-592.
- Oxtoby, E.T. (1955) Frequency of stuttering in relation to induced modifications following expectancy of stuttering. In Johnson, H., and Leutenegger, R.R. (Eds.) *Stuttering in children and adults*. Minneapolis: University of Minnesota Press.
- Overall, J.E. , and Klett, C.J. (1972). *Applied multivariate' , analysis*. N.Y. : McGraw Hill.
- Palasek, J.R., and Cutris, W.S. (1960). Sugar placebos and stuttering. *Journal of Speech and Hearing Research*, 3, 223- 226.
- Parker, C.S. , and Christopherson, F. (1963). Electronic aid in treatment of stuttering. *Medical Electronics and Biological Engineering*, 1, 121, 125.
- Patty, J. , and Quarrington, B. (1974). The effect of reward on types of stuttering. *Journal of Communication Disorders*, 7, 65- 77.
- Pellman, C. (1947). *Overcoming stammering*. N.Y.: Beachurst Press.
- Penson, E.M. (1952). An exploratory study of methods of estimating the severity of stuttering. *Journal of Speech and Hearing Disorders*, 18, 30- 37.

- Perkins,D. (1947). A Item by item compilation and comparison of the scores of 75 young adult stutterers on the California Test of Personality. Speech Monographs , 14, 211. Abstract.
- Perkins,W,H. (1967). Modification of stuttering by rate control. Final Report, VRA, Research Grant RD-2180-S Washington ,D.C.: Department of Health education and Welfare.
- Perkins,w.H. (1973 a). Replacement of stuttering with normal speech : I Rationale. Journal of Speech and Hearing Disorders, 38,283 - 294.
- Perkins, W.H. (1973b) . Replacement of stuttering with normal speech:II Clinical Procedures. Journal of Speech and Hearing Disorders, 38, 295- 303.
- Perkins,W.H. (1981) . Measurement and maintenance of fluency. In Boberg,E, (Ed.) The maintenance of fluency. N.Y. : Elsevier.
- Perkins,w.H., and Curlee,R.F. (1969). Clinical impressions of portable masking unit effects In stuttering,. Journal of Speech and Hearing Disorders, 34, 360- 362.
- Perkins, W.H., Rudas,J., Johnson,L., and Bell,J. (1976) . Stuttering : Discoordination of phonation with articulation and respiration. Journal of Speech and Hearing Research, 19, 509- 522

- Perkins, W.H., Rudas, J., Johnson, L, Michael, w.B., and Curlee, R.F. (1974). Replacement of stuttering with normal speech : III Clinical effectiveness. *Journal of Speech and Hearing Disorders*, 39, 416 - 428.
- Perozzi, J.A. (1970). Phonetic skill (sound mindedness) of stuttering children. *Journal of Communication Disorders*, 3, 207 - 210.
- Pike, K.L. (1947). *Phonemes*. Ann Arbor : university of Michigan Press.
- Pike, K.L. (1972). *Phonetics*. Ann Arbor : University of Michigan Press.
- Pitrelli, F.R. (1948). Psychosomatic and Rorschach aspects of stuttering. *Psychiatric Quarterly*, 22, 175- 194.
- Pizzat, F.J. (1951). A personality study of college stutterers. *Speech Monographs* , 18, 240- 241. Abstract.
- Potter, S.O.L.. (1882). *Speech and Its defects*. Cited by van Riper, C. 1973. In ' *The treatment of stuttering* '. Englewood Cliffs, N.J.: Prentice-Hall.
- Powers, M.R. (1944). Personality traits of junior high school stutterers as measured by the California Test of Personality. M.A. Thesis, University of Illinois. Cited by Sheehan, J.G. 1970. In ' *Stuttering : Research*

- Prins,D. (1963). Pre-therapy adaptation of stuttering and its relation to speech measures of therapy progress. *Journal of Speech and Hearing Research*, 11, 740-745.
- Prins,D.(1972). Personality, stuttering severity, and age. *Journal of Speech and Hearing Research*, 15, 148- 154.
- Prins, D., and Lohr,F. (1972). Behavioural dimension of stuttered speech. *Journal of Speech and Hearing Research*, 15, 61- 71.
- Quarrington,B., and Douglass,E. (1960). Audibility avoidance in nonvocalized stutterers. *Journal of Speech and Hearing Disorders*, 25, 385 - 365.
- Quist,R.W., and Martin,R.R. (1967). The effect of response contingent verbal punishment on stuttering. *Journal of Speech and Hearing Research*, 10, 795- 800.
- Rahman,P.(1956). The self-concept and ideal self-concept of stutterers as compared with non-stutterers. Master's Thesis , Brooklyn College. Cited by Van Riper,C. 1982. In ' The Nature of Stuttering'. Englewood Cliffs, H.J.: Prentice-Hall Inc.
- Raven,J.C. (1965). Advance progressive matrices Set I and Set II. London : H.K.Lewis and Co. Ltd.
- Reed,C.G., and Godden,A.L. (1977). An experimental treatment using verbal punishment with two preschool stutterers. *Journal of Fluency Disorders*, 2, 225- 233.

Reed,c,G., and Lingual,J.B. (1976), Some relationships between punishment, stuttering and galvanic skin responses. Journal of Speech and Hearing Research, 19, 197- 205.

Resick,P.A., Wendiggensen,P., Sean,A., and Meyer, V. (1979). Systematic slowed speech : a new treatment for stuttering Behavior Research and Therapy, 16, 161- 163.

Richardson,L.H. (1944a)• A personality study of stutterers and non-stutterers. Journal of Speech Disorders, 9, 152- 160.

Richardson,L.H. (1944b). The personality of stutterers, Psychological Monographs, 56, 1 - 41.

Rieber,R.W. (1962). An investigation of dependent and independent characteristics of stutterers and clutterers, Paper presented at the International Convention of the Association of Logopedics and Phonlatrics,Vlenna,

Rlley,G., and ley,J. (1979)• A component model for diagnosing and treating children who stutter. Journal of Fluency Disorders, 4, 279- 293.

Robbins,S,D. (1964). 1000 stutterers: A personal report of clinical experience and research with recommendations for therapy. Journal of Speech and Hearing Disorders, 29, 178- 186.

Rosen,H. (1953). Hypnotherapy in clinical psychiatry. Englewood Cliffs, N.J.: Prentice-Hall.

- Rustin,L., Ryan,B.P.,and Ryan,B,V. (1987). Use of the Montexey Programmed Stuttering Therapy in Great Britain. British Journal of Disorders of Communication, 22, 151- 162.
- Ryan,B.P.(1967). The effects of positive reinforcement on the frequency of stuttered behaviors. Paper presented at the Annual Convention of ASHA.
- Ryan,B.P.(1971a). Operant principles applied to stuttering therapy for children. Journal of Speech and Hearing Disorders, 36, 264- 280.
- Ryan,B.P. (1971b). Transfer of fluency in adult stutterers. Paper presented at the Annual Convention of the ASHA.
- Ryan,B.p.(1974) . Programmed therapy for stuttering in children and adults. Springfield ,Illinois: Charles C. Thomas.
- Ryan,B.p. (1977). Programmed therapy for stuttering in children and adults. Journal of Fluency Disorders, 2, 225 - 233.
- Ryan,B.P., and Van Kirk,B.(1974). Establishment,transfer and maintenance of fluent speech in 50 stutterers using delayed auditory feedback and operant procedures. Journal of Speech and Hearing Disorders, 39, 3-10.

- Sackett, G.P. {1978) . Measurement in observational research. In Sackett, G.P. (Ed.), observing behavior : Vol. 2. Data collection and analysis methods. Baltimore: University of Park Press.
- Saint-Laurent,L., and Ladouceur,R. (1987) . Massed versus distributed application of the regulated- breathing method for stutterers and its long-term effect. Behavior Therapy, 18, 38- 50.
- Salter,J.M. (1949). Conditioned reflex therapies. N.Y.: Creative Age Press.
- Santostefano,S, (1960). Anxiety and hostility in stuttering. Journal of Speech and Hearing Research, 3, 337- 347.
- Sayles, D.G. (1971). Cortical excitability,perseveration and stuttering. Journal of Speech and Hearing Research, 14, 462- 475.
- Schaubel,H.J., and Street, R.F. (1949). Prostigmin and the chronic stutterer. Journal of Speech and Hearing Disorders, 14, 143- 146.
- Schmoigl,V.s., and Ladisich,W. (1967), EEG - understanding the stutterer. Folia Phoniatrica , 19, 359- 367.
- Schneck,J.M. (1959) . Hypnosis in modern medicine. Springfield, Ill.: Charles C. Thomas.

- Schulthess, R. (1830) . Das stammein und stotern. Zurich :
Schulthess. Cited by Van Riper, C. 1973. In 'The treatment
of stuttering' • tnglewood Cliffs, N.J.: Prentiee-all.
- Schultz, D,A. (1949) . A study of nondirective counselling
as applied to adult stutterers. Journal of Speech
Disorders, 12, 421 - 427
- scliwartz, M.F. (1976), Stuttering solved. Philadelphia:
Lippin Cot.
- Schwartz, D., and Webster, L.M. (1977 a) • A clinical adaptation
of the Hollins Precision fluency Shaping Program through
de -intensification. Journal of Fluency Disorders, 2, 3-10
- Sehwartz, D., and Webster, L.M. (1977b) . More on the efficacy
of protsacted precision fluency shaping program. Journal
of Fluency Disorders, 2, 205- 215.
- Scripture, M.K., and Kittredge, W.B. (1923). An attempt
. to determine another etiological factor of stuttering
through objective measurement. Journal of Educational
Psychology, 14, 162- 173. Cited by Bloodstain, O. 1975.
In 'A handbook on stuttering'. Chicago : National Easter
Seal society for Crippled children and adults.
- Seeman, M. (1970). Relations between motorics of speech and
general motor ability in stutterers. Folia Phoniatria, e,
22, 376- 380.

- Sen, M.M., and Bharath Raj, J. (1978). Surface trait inventory. An unpublished test. All India Institute of Speech and Hearing, Mysore.
- Sergeant, R.L. (1962). An investigation of response of speech defective adults on personality inventories. Doctoral Thesis, Ohio state university.
- Semas, E.C., and CQX, D.M. (1982). The stutterer and stuttering : personality correlate. Journal of Fluency Disorders, 7, 141- 158.
- Shames, G.H., Egolf, D.B., and Rhodes, R.C. (1969), Experimental programm in stuttering therapy. Journal of Speech and Hearing Disorders, 34, 30- 47.
- Shane, M.L.S, (1955). Effect on stuttering of alteration in auditory feedback. In Johnson, W. (Ed.) Stuttering in children and adults. Minneapolis t University of Minnesota Press.
- Shearer, W.M., and Williams, J.D. (1965). Self-recovery from stuttering. Journal of Speech and Hearing Disorders, 30, 288 - 290.
- Sheehan, J.G. (1951). Modification of stuttering through non-reinforcement. Journal of Abnormal and Social Psychology, 46, 51-53.

- Sheehan, J.G. (1954) . An integration of psychotherapy and speech therapy through a conflict theory of stuttering. *Journal of Speech and Hearing Disorders*, 19, 474-482.
- Sheehan, J.G. (1958). Conflict , theory of stuttering. In Eisenson, J. (Ed.). *Stuttering : A Symposium* N.Y. : Harper and Brothers.
- Sheehan, J.G. (1963), The effect of role commitment on stuttering. Paper presented to International Society for Rehabilitation, Copenhagen.
- Sheehan, J.G. (1970) , Personality approaches. In 'Stuttering: Research and Therapy' , N.Y. : Harper and Row Pub, Inc.
- Sheehan, J.G. (1975). Conflict theory and avoidance reduction therapy. In Eisenson, J. (Ed.) . *Stuttering : A second symposium*, N.Y. : Harper and Row,
- Sheehan, J.G., and Lyon, M. (1974). Role perception in stuttering. *Journal of Communication Disorders*, 7, 113-125.
- Sheehan, J.O., and Martyn, M.M. (1966), Spontaneous recovery from stuttering. *Journal of Speech and Hearing Research*, 9, 121-135.
- Sheehan, J.G., and Zelen, S.L. (1951) . A level of aspiration study of stutterers. *American Psychologist*, 6500, Abstract.

Sheehan, J.G., and Zelen, S.L. (1955). Level of aspiration in stutterers and non-stutterers. *Journal of Abnormal and Social Psychology*, 51, 83- 86.

Shelton, J.J. (1975). The elimination of persistent stuttering by the use of home work assignments involving speech shadowing : A case report. *Behavior Therapy*, 6, 392- 393.

Sherman, D., and Trotter, W.D. (1956). Correlation between two measures of the severity of stuttering. *Journal of Speech- and Hearing Disorders*, 21, 426- 429.

Siegel, G.M., and Martin, R.R. (1965), Verbal punishment of disfluencies in normal speakers. *Journal of Speech and Hearing Research*, 8, 245- 251.

Silverman, F.H. (1976). Long-term impact of a miniature metronome on stuttering: An interim report.

perceptual and Motor skills, 42, 1322.

Silverman, F.H., and Goodban, M.T. (1972). The effect of auditory masking on the fluency of normal speakers.

Journal of Speech and Hearing Research, 15, 543- 546.

Silverman, L. (1952). The factor of maternal dominance in

- snyder,M.A., Henderson,D., Murphy,M., and o'Brien,R.(1958).
**She personality structure of stutterers as compared to
 that of parents of stutterers. Logos, 2, 97 - 105.**
 Cited by Sheehan, J.G. 1970. In 'Stuttering i Research
 and Therapy'. N.Y. : Harper and Row pub. Inc.
- Soderberg, G.A (1967). **Linguistic factors in stuttering.**
Journal of Speech and Bearing Research, 10, 801 - 810.
- Soderberg,G.A. (1968). **Delayed auditory feedback and
 stuttering. Journal of Speech and Hearing Disorders,**
33, 260 - 266.
- Solomon, I.L. (1963). **Aggression and stuttering : An
 experimental study of the psychoanalytic model of
 stuttering. Ph.D. Dissertation, Yeahiva university.**
- Sommers, R.K., and Brady, W.A., and More, W.H. (1975).
**Dichotic ear preferences of stuttering children and
 adults, percept.Motor Skills, 41, 931 - 938.**
- Speidel, L.M. (1963). **A Rorschach experiment with
 stutterers and a control group, praxis der Kinderpsy-
 chologie und Kinderpsychiatze, 12, 241 - 245. (German)**
 Cited by Sheehan J.G. (1970). *In* 'Stuttering;Research
 and Therapy'. H.Y. s Harper and Row pub.
- Spielberger, C D . (1966). **theory and research on anxiety.**
 In Spielberger, c.D. (Ed.). **Anxiety and Behavior.**
 N.Y. : Academic Press.

- SpriestbaCh, D.C.(1951) . Objective approach to Investigation of social adjustment of male stutterers. Journal of Speech and Hearing Disorders, 16, 250- 257.
- Sriitivas,P.S. (1982) . Highlighting of fluency in stutterers, M.Sc.Dissertation , University of Mysore.
- Staats, L.C. (1955). Sense of humour in stutterers and Holt -stutterers. In Johnson,w. and Leutenegger,R. (Eds.) . Stuttering in children and adults. Minneapopolis : University of Minnesota Press.
- Starkweather,C.W. (1970) . The simple, main, and integrative effects of contingent and non-contingent shock of high and low intensities on stuttering repetition. Doctoral Dissertation, Southern Illinois University. Dissertation Abstracts International, 31, 7, 4386-4387-B.
- Starkweather,C.w. (1973) . A behavioral analysis of Van Riperlajn therapy for stuttering. Journal of Communication Disorders, 6, 273- 291 .
- Starkweather,c.w., and Lucker,J. (1978). Tokens for stuttering. Journal of Fluency Disorders, 3, 167-180.
- Stevens,M.M. (1963) . The effect of positive and negative reinforcement on specific disfluency responses of normal speaking college males. Doctoral Dissertation, State University of Iowa.

- Stilson,D.W.(1966). Probability and statistics in psychological research and theory, San Francisco : Holden-Day.
- Stromsta, C. (1958). The affects of altering the fundamental frequency of masking on the speech performance of stutterers. Technical Report, National Institute of Health, Project B - 1331.
- Suinn,R., and Richardson,P. (1971). Anxiety management training : A nonspecific behavior therapy program for anxiety control. Behavior Therapy, 2, 498- 510.
- Sutton,S.A. and Chase, A, (1961). white noise and stuttering. Journal of Speech and Hearing Research, 4. 72.
- Thomas,L. (1951) . A personality study of group of stutterers based on the MMPI. M.A. Dissertation, University of Oregon,Portland. Cited by Sheeham,J.G. 1970. In 'Stuttering Research and Therapy'. N.Y.: Harper and Row.
- Thorn,K.F. (1949) . A study of the personality of stutterers as measured by the MMPI, Ph.D. Dissertation. University of Minnesota. Cited by Bloodstein,0. 1975. In 'A handbook of stuttering'. Chicago : The National Easter Seal Society for Crippled Children and Adults.
- Timmons,B.A. (1974). Delayed auditory feedback as a major factor of retention. Perceptual and Motor Skills, 38, 399- 402.

- Timmons,R.J. (1966) . A study of adaptation and consistency in a response contingent punishment situation. Doctoral Dissertation, University of Kansas.
- Toomey,M.F. (1968). Clinical application of the Goldiamond procedure for the modification of stuttering. Paper presented at Annual Convention of the American Speech and Hearing Association, Denver.
- Travis,L.E (1931) . Speech pathology, N.Y.: Appleton-Century.
- Trotter,w.D., and Leach,M.M. (1967) . Personal experiences with a stutter-aid. Journal of Speech and Hearing Disorders, 32, 270- 272,
- Trotter,W.D., and Silverman,F.H. (1974) . Does the effect of pacing speech with a miniature metronome on stuttering wear off ? Perceptual and Motor Skills, 39,429-430.
- Tsunoda,T., and Mariyama,H. (1972) . Specific patterns of cerebral dominance for various sounds in adult stutterers. Journal of Auditory Research, 12, 216-227.
- Tumer,R.M., Ditormasso,R.A., and Murray ,M.R.(1980). Psychometric analysis of willoughby Personality Schedule. Journal of Behavior Therapy and Experimental Psychiatry, 11, 185- 194.

Tyre, T.E., Maisto, S.A., and Companik, P.J. (1973).

The use of systematic desensitization in the treatment of chronic stuttering behavior. *Journal of Speech and Hearing Disorders*, 38, 514- 519.

Umberger, F.G. (1971) . The effect of Rhythmic Auditory Stimulation on selected parameters of the stuttering problem. *Dissertation Abstracts International*, 32, 10, 6106B.

Upadhyaya S., Moudgil, V, X., and Murthy, N.M. (1968) .

Treatment of stuttering. In Rathna, N. (Ed*) . *Behavior therapy and speech disorders*. Seminar held by All India Institute of Speech and Hearing, Mysore.

Van Dantzig, C. (1940). syllable-tapping : A new method for the help of stammerers. *Journal of Speech Disorders*, 5, 127- 132.

Van Riper, C. (1937). The effect of penalty upon the frequency of stuttering. *Journal of Genetic Psychology*, 50, 193- 195.

Van Riper, C, (1939), *Speech correction*. N.Y.: Prentice-Hall

Van Riper, C. (1957) . *Symptomatic therapy for stuttering*. In Travis, L.E. (Ed,) . *Handbook of speech pathology*, N,Y.: Appleton.

Van Riper, C. (1958)• *Adventures in stuttering therapy*. In Sisenson, J. (Ed.) . *Stuttering : A symposium*. N.Y.: Harper and Row.

- Van Riper, C, (1963) . Speech correction: Principles and methods, 4th Ed. Englewood Cliffs, N.J.: prentice-Hall.
- Van Riper,C. (1965). Clinical use of Intermittent masking noise in stuttering therapy. ASHA, 7, 381.
- Van Riper, C. (1970). The use of BAF in stuttering therapy. British Journal of Disorders of Communication, 5,40.. 45.
- Van Riper, C. (1971) . The nature of stuttering, Englewood Cl: N.J.: prentice-Hall.
- Van Riper, C, (1973) . The treatment of stuttering, Englewood Cliffs, N.J.: Prentice- Hall.
- Van Riper, C (1982). The nature of stuttering, 2nd Ed. Englewood Cliffs, N.J. : Prentice-Hall.
- Van Riper,C., and Emerick,L. (1984). Speech correction : Principles and methods, Englewood Cliffs,N.J.: Prentice-Hall.
- Vijayalakshmi,A.R, (1973). Effect of three verbal stimuli on fluency in stutterers, M.Sc. Dissertation, Unlversity of Mysore,
- Viswanath.N.S. (1971). Experimental aversion therapy for stuttering. Journal of All India Institute of Speech and Hearing, 2, 69- 71.
- Viswanath,N.S.(1972), Effects of response contingent negative stimulation on selected responses in a moment of stuttering. M.Sc. Dissertation, University of Mysore

- Vogel,V.H. (1934). Stuttering cured, by hypnotism.
Scientific American, 151, 311- 313.
- Wahler, R.G., Sperlling,K.A., Thomas.M.R., Teeter,X.C., and Luper, H.L. (1970) . The modification of childhood stuttering some response- response relationships.
Journal of Experimental Child Psychology, 9, 411-426.
- Waiker,C., and Blade.J, (1950) . The intrinsic intensity of oral, phrases (Joint Project report No.2).Pensacola, Fla : Naval Air Station, U.S. Naval School of Aviation Medicine.
- Wallen,V, (1959) . A Q-technique study of the self-concept of adolescent stutterers and non-stutterers. Doctoral Dissertation, Boston University School of Education, Boston, Mass, Cited by Fransella,F, 1968. In 'Personal change and reconstruction : Research on a treatment of stuttering'.London : Academic Press Inc.
- Wallen,V. (1973). A study of the self-concept of adolescent stutterers. Psychologia, 16, 191- 200.
- Walnut,F. (1954)• A personality inventory item analysis of individual who stutter and individual who have other handicaps. Journal of Speech and Hearing Disorders, 19, 220- 227.
- Waiton,D., and Black,D.A. (1958). The application of learning theory to the treatment of stammering. Journal of Psychosomatic Research, 3, 170- 179.

- Walton,D., and Mather,M.D. (1963), The relevance of generalization techniques to the treatment of stammering and phobic symptoms. Behavior Research mad Therapy,1, 121- 125.
- watkins,J.G. (1949) . Hypnotherapy of war neuroses. N.Y. : Ronald Press.
- Watson, P.J., and Worksnian,E.A. (1981). The non-concurrent multiple baseline across-individual designs : an extension of traditional multiple baseline design. Journal of Behavior Therapy and Experimental Psychiatry. 12, 257 - 259.
- Watson,P.J., and Workman, E.A. (1982). Response to Mansellt Further clarification of the non concurrent multiple baseline across-individuals design. Journal of Applied Blshavior Analysis. 13, 261- 262.
- Webster,L.M. (1968). A methodological investigation of the contingent stimulation of stuttering moments. Convention Address ASHA.
- Webster, R.k. (1970). Stuttering t A way to eliminate it and a way to explain it, In Ulrich,R.,Stachniks,T, and Malory, J. (Eds.). Control of Human Behavior(Vol.2), Glenview, Ill. : Scott, Poresraan.
- Webster, R.L. (1971) . Successive approximations to fluency: Operant response shaping procedures for use with stutterers. Paper presented at the Seventeenth International Congress of Applied Psychology.Liege.

- Webster, R.L. (1974). A behavioral analysis of stuttering: Treatment and theory . In 'calhoun,et al.(Eds.) . Innovative Treatment Methods in Psychopathology, N.Y. : John Wiley and Sons, Inc.
- Webster, R.L. (1975). New computers and learning techniques applied to stuttering therapy. Hollins Bulletin.
- Webster, R.L. (1980), Evolution of a Target-teased behavioral therapy for stuttering. Journal of Fluency Disorders, 5, 303- 320.
- Webster, R.L., and Dorraan, M.F. (1970). Decrease in stuttering frequency as a function of continuous and contingent forms of auditory masking. Journal of Speech and Hearing Research, 13, 32- 36.
- Webster, R.L., and Lubker,B.B. (1968), Interrelationship among fluency producing variables in stuttered speech. Journal of Speech and Hearing Research, 11, 754- 766.
- Webster, R.L., Schumacher,S.J., and Lubker,B.B. (1970) . Changes in stuttering frequency as a function of various Intervals of delayed auditory feedback. Journal of Abnormal Psychology, 75, 45- 49.
- Weiner, A.E. (1981) . A case of adult onset of stuttering. Journal of Fluency Disorders, 6, 181- 186.

- Wells, P.G., and Malcolm, M.T. (1971), Controlled trial of the treatment of 36 stutterers. *British Journal of Psychiatry*, 119, 603- 604.
- Williams, A., and Marks, C. (1972). A comparative analysis of ITPA and *PPUT* performance of young stutterers. *Journal of Speech and Hearing Research*, 15, 323-329.
- Williamson, D.A., Epstein, L.H., and Chris Coburn (1981). Multiple baseline analysis of the regulated breathing procedure for the treatment of stuttering. *Journal of Fluency Disorders*, 6, 327- 339.
- Williams, J.D., and Martin, R.D. (1974). Immediate versus delayed consequences of stuttering responses. *Journal of Speech and Hearing Research*, 17, 569- 575.
- Willoughby, R.R. (1932) . Some properties of the Thurstone Personality Schedule and a suggested revision. *Journal of Social Psychology*, 3, 401- 423.
- Willoughby, R.R. (1934). Norms for the Clark -Thurstone Inventory. *Journal of Social Psychology*, 5, 91-97.
- Wingate, M.E. (1959). Galling attention to stuttering. *Journal of Speech and Hearing Research*, 2, 326- 335.
- wingate, M.E. (1962). Personality needs of stutterers. *Logos : Bulletin of the National Hospital for Speech Disorders (New York)* , 5 , 35- 38.

- Wingate , M.E. (1964). Recovery from stuttering.
Journal of Speech and Hearing Disorders, 29, 312-321.
- wingate,M.E. (1966). Behavioral rigidity in stutterers.
Journal of Speech and Hearing Research, 9, 626-623.
- wingate, M.E. (1967). Slurvian Skills of stutterers.
Journal of Speech and Hearing Research, 10, 844- 348.
- wingate, M.E. (1970). Effect on stuttering of changes in audition. Journal of Speech and Hearing Research, 13, 861- 873.
- Wingate, M.E. (1971). Phonetic ability in stuttering.
Journal of Speech and Hearing Research, 14, 199-194.
- Wingate, M.E. (1976)• Stuttering : Theory and Treatment.
N.Y.: irvington.
- Wingate, M.E. (1977). Criteria for stuttering. Journal of Speech and Hearing Research, 20, 596- 607.
- Winkelman,N.W.,Jr., (1954). Chlorpromazine in the treatment of neuropsychiatric disorders. Journal of American Medical Association, 155, 18-21.
- Wohl, M.T, (1968). The electronic metronome - an evaluative study. British Journal of Disorders of Communication, 5, 66- 76.
- Wolpe,J. (1954). Reciprocal Inhibition as the raainbasis of psychotherapeutic effects. Archives of Neurology and Psychiatry, 72, 205-226.

- Wolpe, J. (1958) . Psychotherapy by reciprocal inhibition.
Stanford : Stanford University Press.
- Wolpe, J. (1963.) . The systematic desensitization and
treatment of neurosis. *Journal of Nervous and Mental
Diseases*, 132, 189- 203.
- Wolpe, J. (1969). Behavior therapy of stuttering :
Deconditioning the emotional factor • In Gray. B.B.
and England G. (Eds.). *Stuttering and conditioning
therapies*. Monterey, Calif. : Monterey Institute for
speech and Hearing.
- Wolpe, J. (1982) . The practice of behavior therapy.
N.Y.: Pergamon Press.
- Wyneken, C. (1368). Ueber das stottern und dessen
heilung. *Zeitschrift fur rationelle Medizin*, 31,1-29.
Cited by Van Riper. 1973. In 'The Treatment of stuttering
Englewood Cliffs, N.J.: Prentice-Hall.
- Yairi, E. (1972). Disfluency rates and pattern of stutterers
and non-stutterers. *Journal of Communication Disorders*,
5, 225- 231.
- Yairi, E. (1976). Effect of binaural and monaural noise on
stuttering. *Journal of Auditory Research*,, 16,114-119.

- Young, M.A. (1961) . Predicted ratings of severity of stuttering. Journal of Speech and Hearing Disorders, Monograph Supplement, 7, 31- 54.
- Zener,A.A,and Webster, L.M. (1975) . The molar and molecular effects of contingently stimulating the stuttering moment. In Eisenson,J. (Ed.). Stuttering : A second symposium. N.Y.: Harper and Row.
- Zimmerman,G . , and Knott, J. (1974). Slow potentials of of the brain related to speech processing in normal speakers and stutterers. Electroenceph. Clin. Neurophysiol. 37, 599- 607.
- Zimmerman,G. (1985), Articulatory dynamics of stutterers. In Curlee,R., and Perkins,W.H. (Eds.) . Nature and treatment of stuttering t Mew directions. San Diego : College- Hill Press

APPENDIX - I
EYSENCK PERSONALITY INVENTORY
By H.J. EYSENCK AND SYBIL B.G. EYSENCK
PERSONALITY QUESTIONNAIRE
FORM 'A'

Name _____ Age :

Occupations: _____ Sex :

N = _____ E = L = _____

Here are some questions regarding the way you behave, feel and act. After each question is a space for answering YES or NO.

Try to decide whether YES or NO represents your usual way of acting or feeling. Then put a cross in the circle under the column headed US or NO. Work quickly, and do not spend too much time over any questions. We want your first reaction, not a long drawn out thought process* The whole questionnaire shouldn't take more than a few minutes. Be sure not to omit any questions.

Now turn page over and go ahead. Work quickly, and remember to answer every question. There are no right or wrong answers, and this is not a test of intelligence or ability, but simply a measure of the way you behave.

	<u>FORM A</u>	YES	NO
*1.	Do you often long for excitement ?	()	()
2.	Do you often need understanding friend* to cheer you up ?	()	()
3.	Are you usually care free ?	()	()
4.	Do you find it very hard to take no for an answer ?	()	()
5.	Do you stop and think things over before doing anything ?	()	()
6.	If you say you will do something, do you always keep your promise, no matter how inconvenient it might be to do so ?	()	()
7.	Does your mood often go up and down?	()	()
8.	Do you generally do and say things quickly without stopping to think?	()	()
9.	Do you ever feel "Just Miserable" for no good reason ?	()	()
10.	Would you do almost anything for a dare ?	()	()
11.	Do you suddenly feel shy when you want to talk to an attractive stranger?	()	()
12.	Once in a while do you loose your temper and get angry ?	()	()
13.	Do you often do things on the spur of the moment ?	()	()
14.	Do you often worry about things you should not have dona or said ?	()	()
15.	Generally, do you prefer reading to meeting people ?	()	()
16.	Are your feelings rather easily hurt?	()	()
17.	Do you like going out a lot ?	()	()
18.	Do you occasionally have thoughts and Ideas that you would not like other people to know about ?	()	()
19.	Are you sometimes bubbling over with energy and sometimes very sluggish ?	()	()
20.	Do you prefer to have few but special friends ?	()	()
21.	Do you day dream a lot ?	()	()

- | | <u>YES</u> | <u>NO</u> |
|--|------------|-----------|
| 22. When people shout at you, do you shout back ? | () | () |
| 23. Are you often troubled about feelings of guilt ? | () | () |
| 24. Are all your habits good and desirable ones ? | () | () |
| 25. Can you usually let yourself go and enjoy? | () | () |
| 26. Would you call yourself tense of "highly-strung" ? | () | () |
| 27. Do other people think of you as being vary lively ? | () | () |
| 28. After you have done something important, do you often come away feeling you could have done better ? | () | () |
| 29. Are you mostly quite When you are with other people ? | () | () |
| 30. Do you sometimes gossip ? | () | () |
| 31. Do ideas run through your head so that you cannot sleep ? | () | () |
| 32. If there is something you want to know about, would you rather look it up in a book than talk to some-one about it ? | () | () |
| 33. Do you get palpitations or thumping in your heart ? | () | () |
| 34. Do you like the kind of work that you need to pay close attention to ? | () | () |
| 35. Do you get attacks of shaking or trembling? | () | () |
| 36. Would you always declare everything at the customs, even if you knew that you could never be found out ? | () | () |
| 37. Do you hate being with a crowd who play jokes on one another ? | () | () |
| 38. Are you irritable person ? | () | () |
| 39. Do you like doing things in which you have to act quickly ? | () | () |
| 40. Do you worry about awful things that might happen ? | () | () |

- | | <u>Yes</u> | <u>NO</u> |
|--|------------|-----------|
| 41. Are you slow and unhurried in the way you move ? | () | () |
| 42. Have you even been late for an appointment or work ? | () | () |
| 43. Do you have many nightmares ? | () | () |
| 44. Do you like talking to people so much that you never miss a chance of talking to a stranger? | () | () |
| 45. Are you troubled by aches and pains ? | () | () |
| 46. Would you be very unhappy if you could not see lots of people most of the time ? | () | () |
| 47. Would you call yourself a nervous person ? | () | () |
| 48. Of all the people you know, are there some whom you definitely do not like ? | () | () |
| 49. Would you say that you were fairly self-confident ? | () | () |
| 50. Are you easily hurt when people find fault with you or your work ? | () | () |
| 51. Do you find it hard to really enjoy yourself at a lively party ? | () | () |
| 52. Are you troubled with feeling of inferiority? | () | () |
| 53. Can you easily get some life into a rather dull party ? | () | () |
| 54. Do you sometimes talk about things you know nothing about ? | () | () |
| 55. Do you worry about your health ? | () | () |
| 56. Do you like playing pranks on others ? | () | () |
| 57. Do you suffer from sleeplessness ? | () | () |

PLEASE CHECK TO SEE THAT YOU HAVE ANSWERED ALL THE QUESTIONS.

APPENDIX - II
THE S.C. INVENTORY - M, Baaavaima

1. It Is rather difficult for me to make new friends.
2. I can foenatural while at a party.
3. I am never at conflict with myself.
4. I enjoy mixing with people.
5. In social conversation I am usually a listener than a talker.
6. I can usually find a ready answer for remarks made to me
7. When things go wrong I pity or blame myself.
8. I have a horror of failing in anything l want to accomplish.
9. I often cross the street to avoid meeting some people know to me.
10. I find it very difficult to speak in public.
11. I feel insecure within myself.
12. I find it hard to doraybest when people are watching.
13. I can recover easily and quickly from social blunders.
14. I do not care much for what others think of me.
15. I have difficulty in talking to most people.
16. I stay in the background in social gatherings.
17. I feel embarrassed to enter Into assembly when all are already seated*
18. I have difficulty in saying the right thing at the right time,
19. I tend to worry over possible troubles.
20. I frequently feel thwarted because I am unable to do as I desire.
21. I think of myself as a successful person.
22. I am much affected by the praise or blame of many people.
23. My feeling are rather easily hurt.
24. I can face a difficult situation without worry.
25. I am hesitant about forming decisions.
26. I feel bored much of the time.
27. I can tackle new situations with a reasonable degree of assurance.
23. I am often unable to decide until it is too late for action.
- 29, I tend to be quick and certain in my actions.
30. I always feel that X can achieve the things I wish.

31. I feel no obstacle can atop me from achieving my final goal,
32. I am generally confident of ray own ability.
- 33.. I often feel that in life's competition I am generally the loser.
34. I frequently feel unworthy.
35. I worry over humiliating situations more than most persons.
36. I feel physically inferior of ray friends.
37. I find it hard to continue work when I do not get enough encouragement•
38. I am bothered by inferiority feelings.
39. My people believe that I am as much a success as 2 could be.
40. I can playray best in a game or contest against an opponent who is much superior to me.
41. I am always ready to decide what my next step should be.
42. I can adjust readily to new situations.
43. I often feel rather awkward.
44. I am afraid that other people will dislike me.
45. My friends have made better life adjustment than myself.
46. I am happy go lucky person.
47. I can relax myself easily.
48. I blush very often.
49. When upset emotionally. I take much time to recover.
50. I day dream very often.
51. I am readily moved to tears.
52. When a critical situation is past, I often think what I should have done but didn't•
53. I often feel that ray movements are clumsy.
54. I don't have initiative.
55. 2usually work things out for myself rather than get some one to show me.
56. I am a dominant person.
57. I am usually discouraged when the opinion of others differ from my own.
58. I am often confused.
59. People frequently blame me for things unjustly.
60. I feel that my parents are disappointed in me.

61. I envy the happiness that others seem to enjoy.
62. Criticism disturbs me greatly.
63. I get discouraged easily.
64. I can get a job any day,
65. I seem to make friends about as quickly as others do.
66. I shrink from facing crisis or difficulty.
67. If given chance I could do something that would be of great benefit to the world.
68. If given a chance I would make a good leader of people.
69. I have several times given up doing a thing because I thought too little of my ability.
70. No one seems to understand me.
71. I need some one to push me through the things.
72. Life is a strain for me much of the time.
73. I have had blank spells in which my activities were interrupted and did not know what was going around me.
74. I am worried about sex matters
75. I have periods of such great restlessness that I cannot sit long in a chair.
76. I refuse to play some games because I am not good at them.
77. I find it hard to keep my mind on a task or job.
78. I seem to be about as smart as most others around me.
79. I usually feel well and strong.
80. I think too much over everything.
81. My daily life is full of things that keep me interested.
82. I am certainly lacking in self-confidence.
83. Almost always I find myself worrying about something or the other.
84. I have often lost good chances because I would not make up my mind soon enough.
85. I spend much of the time worrying over the future,
86. I do not tire quickly.
87. I think I have an attractive personality.
88. I don't think too long over my problems.
89. I have feeling of helplessness.
90. I cannot express my emotions freely.

91. When my friends criticize me I take it well.
92. X am a responsible person.
93. Generally I am quite sure of myself.
94. Usually X am dissatisfied with myself.
95. I have the feeling that I am just not facing things.
96. I have enough faith in myself.
97. I am often in low spirits.
98. I often feel helpless.
99. I am often disorganised.
100. I can usually make up my mind and stick to it.

THE S.C INVENTORY - ANSWER SHEET

1. True	False	26. True	False	51. True	False	76. True	False
2. True	False	27. True	False	52. True	False	77. True	False
3. True	False	28. True	False	53. True	False	73. True	False
4. True	False	29. True	False	54. True	False	79. True	False
5. True	False	30. True	False	55. True	False	80. True	False
6. True	False	31. True	False	56. True	False	81. True	False
7. True	False	32. True	False	57. True	False	82. True	False
8. True	False	33. True	False	53. True	False	83. True	False
9. True	False	34. True	False	59. True	False	84. True	False
10. True	False	35. True	False	60. True	False	85. True	False
11. True	False	36. True	False	61. True	False	86. True	False
12. True	False	37* True	False	62. True	False	87. True	False
13. True	False	33. True	False	63. True	False	83. True	False
14. True	False	39. True	False	64. True	False	89. True	False
15. True	False	40. True	False	65. True	False	90. True	False
16. True	False	41. True	False	66. True	False	91. True	False
17. True	False	42. True	False	67. True	False	92. True	False
IS. True	False	43. True	False	63. True	False	93. True	False
19. True	False	44. True	False	69. True	False	94. True	False
20. True	False	45. True	False	70. True	False	95. True	False
21. True	False	46. True	False	71. True	False	96. True	False
22. True	False	47. True	False	72. True	False	97. True	False
23. True	False	48. True	False	73. True	False	93. True	False
24. True	False	49. True	False	74. True	False	99. True	False
25. True	False	50. True	False	75. True	False	100. True	False

APPENDIX - III

REVISED WILLOUGHBY QUESTIONNAIRE FOR SELF - ADMINISTRATIONInstructions:

The questions In this schedule are intended to Indicate various emotional personality traits. It is not a test in any sense because there are no right or wrong answers to any of the questions.

After each question you will find a row of numbers whose meaning is given below. All you have to do is to draw a ring around the number that describe you best.

0 - means 'NO', 'Never', 'Not at all' etc,

1 - means 'Somewhat', 'Sometimes' , 'a little' etc.

2 - means 'About as often as not', 'an average amount' etc,

3 - means ' Practically always', 'Entirely' etc.

- | | | | | | | |
|-----|---|---|---|---|---|---|
| 1. | Do you get anxious if you have to speak or perform in any way in front of a group of strangers? | 0 | 1 | 2 | 3 | 4 |
| 2. | Do you worry if you make a fool of yourself. or feel you have been made to look foolish ? | 0 | 1 | 2 | 2 | 4 |
| 3. | Are you afraid of falling when you are on a high place from which there is no real danger of falling - for example , looking down from a balcony on the tenth floor ? | 0 | 1 | 2 | 3 | 4 |
| 4. | Are you easily hurt by what other people do or say to you ? | 0 | 1 | 2 | 3 | 4 |
| 5. | Do you keep In the background on social occasions ? | 0 | 1 | 2 | 3 | 4 |
| 6. | Do you have changes of mood that you cannot explain ? | 0 | 1 | 2 | 3 | 4 |
| 7. | Do you feel uncomfortable when you meet new people ? | 0 | 1 | 2 | 3 | 4 |
| 8. | Do you day-dream frequently, i.e. indulge in fantasies not Involving concrete situations ? | 0 | 1 | 2 | 3 | 4 |
| 9. | Do you get discouraged easily, eg., by failure or criticism ? | 0 | 1 | 2 | 3 | 4 |
| 10. | Do you say things in haste and then regret them? | 0 | 1 | 2 | 3 | 4 |
| 11. | Are you ever distibued by the mere presence of other people ? | 0 | 1 | 2 | 3 | 4 |

- | | | | | | | |
|-----|--|---|---|---|---|---|
| 12. | Do you cry easily ? | 0 | 1 | 2 | 3 | 4 |
| 13. | Does it bother you to have people watch you work even when you do it well ? | 0 | 1 | 2 | 3 | 4 |
| 14. | Does criticism hurt you badly ? | 0 | 1 | 2 | 3 | 4 |
| 15. | At a reception or tea do you go out of your way to avoid meeting the important person present? | 0 | 1 | 2 | 3 | 4 |
| 16. | Do you cross the street to avoid meeting someone? | 0 | 1 | 2 | 3 | 4 |
| 17. | Do you often feel Just miserable ? | 0 | 1 | 2 | 3 | 4 |
| 18. | Do you hesitate to volunteer in a discussion or debate with a group of people whom you know more or less ? | 0 | 1 | 2 | 3 | 4 |
| 19. | Do you have a sense of isolation, either when alone or among people ? | 0 | 1 | 2 | 3 | 4 |
| 20. | Are you self-conscious before 'superiors' (teachers, employers, authorities) ? | 0 | 1 | 2 | 3 | 4 |
| 21. | Do you lack confidence in your general ability to do things and to cope with situations ? | 0 | 1 | 2 | 3 | 4 |
| 22. | Are you self-conscious about your appearance even when you are well-dressed and groomed ? | 0 | 1 | 2 | 3 | 4 |
| 23. | Are you scared at the sight of blood, Injuries and destruction even though there is no danger to you ? | 0 | 1 | 2 | 3 | 4 |
| 24. | Do you feel that other people are better than you? | 0 | 1 | 2 | 3 | 4 |
| 25. | Is it hard for you to make up your mind ? | 0 | 1 | 2 | 3 | 4 |

APPENDIX - IV

SURFACE TRAITS INVENTORY (SEN AND BHARATH RAJ)

Please read through those directions carefully. This inventory consists of 120 items or statements relating to your attitudes, interests, feelings, habits and ways of behaving in every day life. As such there is no right or wrong answer for any statement. Some of these qualities may be applicable in your case and some may not.

Please read through each statement carefully and if it is usually or generally true for yourself encircle 'YES', if it is not true or rarely true encircle 'NO' against it. If you fail to decide, encircle (?). But you should try to answer 'YES' or 'NO' as far as possible.

In answering these statements 'Honesty should be the best policy', as this is meant to reveal your true personality and to discover the general trends of personality qualities in people at large. Your answers will be kept absolutely confidential and will be used only for scientific purposes. If you desire, you may not mention your name but give a specific code against it. Do not spend too much of time on any question.

Name : Sex : M/F

Approximate Income p.m.

Occupation (Specify) eg. Bank Manager
Clerk
Doctor etc..

Educational Qualifications;

State to which you belong :

Date of Testing :

SURFACE TRAIT* A

ItemNo.	Statement	Yes	No	?
1.	I am active most of the time		Yes	Ho ?
2.	I keep up ray appointments with others mostly.		Yes	No ?
3.	Mostly I do not get behind in ray work.		Yes	No ?
4.	I work faster than most people.		Yes	No ?
5.	I try to finhish a work to ray entire satisfac- tion.		Yes	No ?
6.	I do not give up a problem because it is difficult.		Yes	Ho ?
7.	I can work inspite of physical discomfort.		Yes	No ?
8.	When X do some work, X put my heart and soul into it.		Yes	No ?
9.	I feel bored when X do not have much work to do.	Yes	No	?
10.	I would like to be busy with some work all the time.		Yes	No ?
11.	I generally work with full energy.		Yes	No ?
12.	I can concentrate on a problem for a long time.	Yes	No	?
13.	I like work requiring patience and carefulness.	Yes	No	?
14.	I am regular and punctual in my work.	Yes	No	?
15.	I can work for long hours without feeling tired or bored*		Yes	No ?

Item No.	Statement	Yes	No	?
1.	My Interests change rapidly.	Yes	No	?
2.	I let myself go and enjoy fully at a party.	Yes	No	?
3.	I am happy most of the time.	Yes	No	?
4.	I often make people laugh.	Yes	No	?
5.	At times I become so enthusiastic as to arouse enthusiasm in others.	Yes	No	?
6.	I like work that has lot of excitement.	Yes	No	?
7.	I am often in a hurry.	Yes	No	?
8.	I speak loudly and often gesture with hands.	Yes	No	?
9.	I am quick to say what I feel like saying.	Yes	No	?
10.	I am usually carefree and easy going.	Yes	No	?
11.	I take an active part in conversations going around me.	Yes	No	?
12.	I want to be well dressed and popular.	Y@s	No	?
13.	I do not stop to consider the full consequences of my action and remarks on others.	Yes	No	?
14.	At times X feel very happy without any reason.	Yes	No	?
15.	I can, .easily make friendship with strangers*	Yes	NO	?

SURFACE TRAIT * EItem No. Statement Yes No ?

- | | | | | | |
|-----|---|------------------|-----|----|---|
| 1. | I feel that X am Inferior to | others. | Yes | No | ? |
| 2. | I often think that I may not be successful in | life, | Yes | No | ? |
| 3. | I do not have much enthusiasm in my work. | | Yes | No | ? |
| 4. | Sometimes I feel that life is not worth living. | | Yes | No | ? |
| 5. | I do not feel confident of my ability. | | Yes | No | ? |
| 6. | I worry too much when some one in the family | becomes ill. | Yes | No | ? |
| 7. | I feel unhappy most of the | time. | Yes | No | ? |
| 8. | I am easily upset by small | disappointments. | Y#s | No | ? |
| 9. | When X see some one sad I also feel sad. | | Yes | No | ? |
| 10. | I feel very unhappy about the mistakes I made | in the past. | Yes | No | ? |
| 11. | I often fear that others may dislike me. | | Yes | No | ? |
| 12. | I work slowly and leisurely. | | Yes | No | ? |
| 13. | I talk more slowly than most people. | | Yes | No | ? |
| 14. | I am easily moved to | tears. | Yes | No | ? |
| 15. | I do not get pleasure In things which make | other happy. | Yes | No | ? |

S U R F A C E T R A I T * FItem No. Statement Yes No ?

- | | | | | | |
|-----|---|--|-----|----|---|
| 1. | My mood often changes without apparent causes. | | Yes | No | ? |
| 2. | I am a quick tempered person(i.e. loose temper | easily) | Yes | No | ? |
| 3. | I usually take much time to recover from a strong | emotion or feeling (like anger, sadness etc.) | Yes | No | ? |
| 4. | I usually have disturbed | sleep. | Yes | No | ? |
| 5. | I cannot tolerate people who are unreasonable. | | Yes | No | ? |
| 6. | I often wanted to run away from home or from ray | present circumstances. | Yes | No | ? |
| 7. | My feelings are easily hurt by the remarks and | action of | Yes | No | ? |
| 8. | I frequently worry about possible misfortunes. | | Yes | No | ? |
| 9. | I often feel impatient if some one makes me wait. | | Yes | No | ? |
| 10. | I am afraid to live | alone. | Yes | No | ? |
| 11. | Some times I get so angry that I cannot say | anything. | Yes | No | ? |
| 12. | I easily become discouraged and give up plans. | | Yes | No | ? |
| 13. | My feelings often undergoes change | at times. | Yes | No | ? |

SURFACE TRAIT* G

<u>Item</u>	<u>No.</u>	<u>Statement</u>	<u>YES</u>	<u>NO</u>	<u>?</u>
1.		I can live alone far from any one else.	Yes	No	?
2.		I hesistate to meet Important persons.	Yes	No	?
3.		It Is hard for me to make new friends.	Yes	No	?
4.		I do not tell ray troubles to others.	Yes	No	?
5.		I frequently feel self-conscious about ray appearance and manner of talking	Yes	No	?
6.		I frequently enjoy the evenings alone.	Yes	No	?
7.		I am troubled by shyness.	Yes	No	?
8.		I can usually express myself better In writing than in speech.	Yes	No	?
9.		I avoid trouble rather than face it.	Yes	No	?
10.		I keep myself In the background on social occasions.	Yes	No	?
11.		I can concentrate on any problem for a long time.	Yes	No	?
12.		I am often bored with people.	Yes	No	?
13.		I like to work alone.	Yes	No	?
14.		It is difficult for me to speak before an audience.	Yes	No	?
15.		I feel alone when I ara in a group of people.	Yes	No	?

SURFACE TRAIT* H

<u>Item</u>	<u>No.</u>	<u>Statement</u>	<u>Yes</u>	<u>No</u>	<u>?</u>
1.		I feel that I have little to be proud of.	Yes	No	?
2.		I often think of myself as a failure.	Yes	No	?
3.		I often feel that I ara inadequate to meet life situations.	Yes	No	?
4.		I have a lot of things about myself to be changed for better.	Yes	No	?
5.		I think I am not quite popular with people in general.	Yes	No	?
6.		As I lack in confidence, I cannot decide things easily.	Yes	No	?
7.		Some members of my faially make me feel I am not good enough.	Yes	No	?
8.		I get very upsat if some one criticises me.	Yes	No	?
9.		People do not regard me as useful to have around.	Yes	No	?
10.		I am often inclined to question my worth as a person.	Yes	No	?
11.		When people pay compliments to me. I find it difficult to believe.	Yes	No	?
12.		I some times withhold my opinions for the fear that people may laugh and criticise me.	Yes	No	?
13.		I am shy and self conscious in social situations.	Yes	No	?
14.		I often catch myself pretending to be a better person than I am.	Yes	No	?
15.		I find it difficult to do things to win the attention and approval of others.	Yes	No	?

SURFACE TRAIT . IItem No. Statement Yes No ?

1.	I often suffer from poor appetite.	Yes	No ?
2.	I often have fainting spells.	Yes	No ?
3.	I have more headaches than most people.	Yes	No ?
4.	I some times feel a twitching of the face, head or shoulders.	Yes	No ?
5.	I worry a lot about catching disease.	Yes	No ?
6.	I suffer a great deal from nervous exhaustion.	Yes	No ?
7.	I ara generally a sickly person.	Yes	No ?
8.	I worry a great deal about my health.	Yes	No ?
9.	Severe aches and pains make it impossible for me to concentrate on work.	Yes	No ?
10.	I often have stomach troubles.	Yes	No ?
11.	I constantly suffer from constipation.	Yes	No ?
12.	I am often bothered by palpitation of the heart.	Yes	No ?
13.	I am troubled by cold hands and feet even in warm weather.	Yes	No ?
14.	I often have difficulty in breathing.	Yes	No ?
15.	I have hot or cold spells.	Yes	No ?

<u>Item</u>	<u>No.</u>	<u>statement</u>	<u>Yes</u>	<u>No ?</u>
1.		I am generally distrustful or suspicious of others.	Yes	No ?
2.		I have a poor self-image of myself.	Yes	No ?
3.		I sometimes assume awkward and clumsy postures while I speak.	Yes	No ?
4.		I have a hesitation to start to speak to others.	Yes	No ?
5.		I avoid direct looks at people I am speaking to.	Yes	No ?
6.		I feel tense and uneasy while speaking to others.	Yes	No ?
7.		I generally feel I am superior to the other person X ara speaking to.	Yes	No ?
8.		I feel artificial while talking to others.	Yes	No ?
9.		I have difficulty in keeping a conversation sustained.	Yes	No ?
10.		I am generally ineffective in presenting ideas and ray views to others.	Yes	No ?
11.		I generally hold negative attitudes towards other persons.	Yes	No ?
12.		I generally keep away from people.	Yes	No ?
13.		I feel uneasy to be amidst a group of people.	Yes	No ?
14.		I do experience fear in speaking situations.	Yes	No ?
15.		I feel uncomfortable to enter a room after all are seated.	Yes	No ?

APPENDIX VI

ADVANCED PROGRESSIVE MATRICES SET I

(Raven, 1965)

Instructions :

This is a test of observation and clear thinking. The test, you have in front of you, is quite short. Open your green book at the first page. You see this is No.1, and that under the heading Set I, on your record form there is a column of numbers 1, 2, 3, 4 to 12. The top part of the problem 1, is a pattern with a piece cut out of it. There are eight choices for solving the problem or filling the space. But all of them are not correct. Only one of them is the pattern which came out of the space. Look along each row and decide what the missing pattern is like. Look down each column and decide again, and choose the figure you find it right both ways. When you have found it , enter it against the number of problem under Set I on your scoring form, now turnover and do No.2,3,4 to 12 by yourself. Attempt each problem in turn and be sure to find out the correct pattern to complete it before going on to next problem, Don't mark the green booklet in any way.

APPENDIX - VI A
ADVANCED PROGRESSIVE MATRICES SET I
SCORING FORM

SET I	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
Total	

APPENDIX - VII

P.M.R. HAND OUT

Relaxation is one of several available methods for combating anxiety. It is a skill that will be taught to you and like other skills improves with practice - to which you are expected to devote 45 minutes every day.

Relaxation works by producing emotional calmness.

Even the ordinary relaxing when one lies down often has quite a noticeable calming effect. There is a definite relationship between the extent of muscle relaxation and the production of calmness to oppose to anxiety. I am going to teach you how to relax for beyond the usual level, and with practice you will be able to 'switch on' at will.

(Wolpe, 1982)

1. Grip the arm of the chair with one hand to see whether you can distinguish any qualitative differences between the sensations produced in your fore-arm and those in the hand. Take note of the quality of the fore-arm sensation as it is caused by muscle tension In contrast to the touch and pressure sensation in the hand. Also locate the exact location of the tension. Next try to bend your arm against resistance and make yourself aware of the tension in biceps. Then straighten your bent arm in the opposite direction, by doing so the extensor muscles at the back of the arm are tensed.

Now you will learn the essential activity that is involved in obtaining deep relaxation. Make your biceps tight, by bending your arm against the resistance. Notice very carefully the sensation in that muscle. Let go gradually by diminishing the amount of force exerted against resistance. Notice, as your fore-arm descends, that there is decreasing sensation in biceps muscle. Notice also that letting go is an activity, but of negative kind - it is an "uncontracting" of muscle. In due course, your forearm will come to rest, (on the arm of chair/bed) and you may think that you have gone as far as possible - that relaxation is complete. But although the biceps will indeed be partly and largely relaxed, a certain number of its fibres will still, in fact, be contracted. Then say to yourself, "Go on letting go. Try to extend the activity that went on in biceps while your forearm was coming down." The act of relaxing these additional fibres will bring about the emotional effects we want.

Now tense your biceps and gradually relax them. "Go on letting go," "Keep trying to go further and further in the negative direction", "and try to go beyond what seems to be the furthest point."^w Put both hands comfortably on your lap and try to relax the muscles of both arms for a few minutes.

2. By contracting tense the muscles of the forehead (Eye brow raising and frowning muscles) , relax your forehead

slowly, until it is quite smooth. Wrinkle your nose and then slowly relax the muscles in the region of your nose. Purse your lips and then smile to relax muscles around the mouth.

3. Bite on your teeth and slowly ease the tension to relax the muscles of mastication. To tense the muscles of your tongue, press the tip of the tongue firmly against the back of the lower incisor teeth. Slowly relax these muscles by easing the tension/ pressure on the tip of the tongue.

4. Close your eyes tightly, and slowly open them. Turn the eyes sharply to the right, left, up and down in turn and then relax the eye muscles.

5. Relax the neck muscles, by slowly bringing the head forward so that your chin is resting on the sternum. There might be some discomfort and perhaps pain in the beginning, but persistent practice, despite the discomfort, shall result in relaxation of these muscles in few days,

6. Shoulder muscles can be tensed by the following routine: Move your arm to the horizontal, continue this movement to the ear, bring the arm back to the horizontal and move it backwards, and later swing it forward across the chest, Afterwards slowly relax these muscles in turn.

7. Contract the back muscles by backward arching of the spine, and then let them go as far as you can. Tense your abdominal muscles as if in anticipation of a punch in the belly. Slowly relax these muscles. For relaxing the muscles of respiration, take a deep breath and then slowly let it go.

3. Bend your toes and slowly relax them. Tense and relax *the* muscles at the back of your leg below the knee by bending your foot in either direction and then slowly let them go. Straighten your knee, for tensing the muscles of your thigh, and slowly relax them. Muscles at the back of the thigh can be tensed by bending the knee against resistance and slowly release the tension to relax.

APPENDIX - VIII

The list and addresses of the organisations are provided below to which a brief research note , describing the research work was sent for circulation and display to get cases, for the study.

The Principal,
Regional Collage of Education,
Mysore - 6 .

The Principal,
Sri Jayachamarajendra College of Engineering,
Mysore -6.

**The Principal,
St.Philomene's College,
Mysore - 8 .**

The Principal,
National Institute of Engineering,Industrial
Suburb, Mysore- 8.

The Principal,
V.V.Law College,
Mysore -1.

The Principal,
Govt. Medical College,
Mysore-1.

The Principal,
Institute of Education,
Mysore.

The Librarian,
Mysore University Library,
Mysore-6.

The Principal,
Maharaja's College,
J.L.Bai Road,
Mysore-1.

The Librarian,
City Central Library,
Sayaji Rao Road,
Mysore - 1.

The Principal,
B.Banumaiah's College of Commerce,
Sayaji Rao Road,
Mysore-10.

The Principal,
Teresian College, T.Narsi Pur Road,
Mysore-10.

The Principal,
sarada vilas Law College,
Mysore-4.

The Principal,
University College of Fine Arts,
Mysore-6.

The Director,
Central Institute of Indian Languages,
Mysore-6.

APPENDIX - IX

CASE HISTORY OF GAK

Age : 21 yrs Sex : Male
Urban/Rural : Urban Marital status : Single
Education : B.E. Occupation : Student
Mother tongue : Tulu Other languages : English, Kannada
and Hindi known
Referred from : He contacted himself after seeing the research
note in his college.

1. Complaints : Stuttering since childhood.

2. Brief History of the problem : He reported that onset of
stuttering was gradual and it began at about 5 years of age.
Parents were the first to notice it.

3. Variations in the stuttering : He reported more stuttering
When he was excited, angry or after physical exercises. It
was less when he talked calmly and not specific to any
individual. He had more difficulty on words beginning with
'u', 'i', 'a', 'x' and 'k' sounds in English and in the beginning of sentences
He was able to anticipate stuttering and escaped from it by
avoiding words, sentences or topic. He did not avoid any
speaking situation. He was very much concerned about his
problem.

4. family History : He had one brother and one sister.
His maternal uncle had the problem, with whom he had inter-
mittent contact from childhood to adulthood.

5. Questionnaire Scores :

<u>Scale/Trait</u>	<u>Pre-therapy</u>	<u>Post-therapy</u>
Extroversion	7	12
Neuroticism	11	10
Self-confidence	20	27
Social Anxiety	38	32
Activity	18	16
Cyclothymia	19	22
Depression Tendencies	20	22
Emotional Instability	20	8
Introversion	17	18
Feelings of Inferiority	23	20
Psychosomatic Disorders	4	2
Interpersonal Communication Disorders	15	14
Raven's Progressive Matrices Set I	10	

APPENDIX - X
CASE HISTORY OF MCD

Age	:	31 yrs	Sex	:	Male
Urban/Rural	:	Urban	Marital status	:	Single
Education	:	P.U,C,	Occupation	:	Service
Mother tongue	:	English	Other languages known	:	Tamil and Hindi

Referred from : He was referred by a staff member of All India Institute of Speech and Hearing, Mysore.

1. Complaints: Stuttering since childhood.
2. Brief History of the problem : He reported a gradual onset from the age of 3-4 years. Parents noticed it first.
3. Variations in the stuttering : He reported more stuttering with officers and strangers. He also experienced more difficulty at the beginning of the sentences and 's' sound. He anticipated stuttering and avoided it by stopping in the middle of sentences and continuing. He closed his eyes when he spoke. He refrained from speaking and discussing in a group. He was self-conscious and felt awkward about the problem.
4. Family History : He had five brothers and one sister. Two of his brothers also had stuttering problem. They are elder to him and have not taken treatment so far.

5. Questionnaire Scores :

<u>Scale/Trait</u>	<u>Pre- therapy</u>	<u>Post- therapy</u>
Extroversion	11	12
Neuroticism	18	15
Self-confidence	25	43
Social Anxiety	63	43
Activity	28	25
Cyclothymia	14	15
Depression Tendencies	20	14
Emotional Instability	24	16
Introversion	28	28
Feelings of Inferiority	20	21
Psychosomatic Disorders	2	2
Interpersonal Communication Disorders	20	16
Raven's Progressive Matrices Set I	10	

APPENDIX - XI

CASE HISTORY OP KCH

Age	:	28 yrs	Sex	:	Male
Urban/Rural	:	Rural	Marital status	:	Single
Education	:	B.E.	Occupation	:	Service
Mother tongue	:	Kannada	Other languages known	:	English

Referred from : He was referred by the Principal of an Engineering College.

1. Complaints : Stuttering since childhood.

2. Brief History of the Problem : He reported a gradual onset of stuttering. He did not know how did it start. Parents noticed it first, but they were not concerned about it. He felt shy while speaking with others.

3. Variation in the stuttering : He stuttered more during meetings and while taking classes. Stuttering was also more when he spoke to his superiors or strangers. It was less when he spoke to his family members or close friends. He stuttered more at the beginning of the sentences. He did not stutter more on specific sound /word/language. He wanted to overcome his problem.

4. Family History : He had two brothers and two sisters and they were reported to be normal.

5. Questionnaire Scores :

<u>Scale / Trait</u>	<u>Pre - therapy</u>	<u>Post - therapy</u> *
Extroversion	15	
Neuroticism	14	
Self-confidence	59	
Social Anxiety	59	
Activity	17	
Cyclothymia	23	
Depression Tendencies	22	
Emotional Instability	25	
Introversion	20	
Feelings of Inferiority	27	
Psychosomatic Disorders	8	
Interpersonal Communication Disorders	25	
Raven's Progressive Matrices Set I	9	

* Post-therapy data is not available as the case left without giving any reasons, after attending therapy for 3 sessions.

APPENDIX - XII

CASE HISTORY OF JAY

Age : 25 1/2 yrs Sex : Male
Urban/Rural : Rural Marital status : Single
Education : B.Sc. Occupation : Service
Mother tongue : Kannada Other languages : English
known

Referred from : He saw the research note and contacted himself.

1. Complaints : Stuttering since childhood,

2. Brief History of the Problem : The stuttering began at the age of 10 years, when he was studying in 4th class. At that time some elders asked him to say the alphabets and numbers, he stuttered when he said the word "hundred " • Later on he became seriously ill for about a month. This problem continued afterwards. He had contacted at A.I.I.S.H. earlier and was given " Prolongation Therapy " but he discontinued after a week.

3. Variations in stuttering : His stuttering was more in the market and with strangers. It was less with the known persons. He feels that it also depends on his mood. He stuttered more on the words beginning with 'hu', 'b', 'm' and 'pu' sounds. He was able to anticipate stuttering and avoided it by substituting or adding other words. He avoided speaking in the situations where more people were present. During stuttering block, his neck became tense, he thumped his feet on the ground and pressed his hand against the thigh. He was very much concerned about his problem.

4. Family History : He had two younger sisters and they were reported to be normal.

5. Questionnaire Scores:

<u>Scale / Trait</u>	<u>Pre-therapy</u>	<u>Post-therapy</u>
Esetroversion	14	15
Neuroticism	19	18
Self-confidence	18	29
Social Anxiety	31	30
Activity	27	26
Cyclothymia	26	26
Depression Tendencies	26	24
Emotional Instability	22	22
Introversion	20	16
Feelings of Inferiority	24	24
Psychosomatic Disorders	10	8
Interpersonal Communication Disorders	22	20
Raven's Progressive Matrices Set I	8	

APPENDIX - XIII

VPD

5. Questionnaire Scores :

<u>Scale / trait</u>	<u>Pre-therapy</u>	<u>Post-therapy</u>
Extroversion	10	8
Neuroticism	20	15
Self-confidence	20	22
Social Anxiety	42	38
Activity	14	12
Cyclothymia	16	2?
Depression Tendencies	17	17
Emotional Instability	16	16
Introversion	25	21
Feelings of Inferiority	20	18
Psychosomatic Disorders	12	12
Interpersonal Communication Disorders	22	21
Raven'a Progressive Matrices Set I	10	

APPENDIX - XIV

CASE HISTORY OF SCS

Age	:	20 yrs	Sex	:	Male
Vrban/Rural	:	Rural	Marital status	:	Single
Education	:	D.Pharm.	Occupation	:	Student
Mother tongue	:	Kannada	Other languages	:	Telgu, and English
			known		

Referred from : He contacted himself at All India Institute of Speech and Hearing, Mysore.

1. Complaints : Stuttering since the age of 5 years.

2. Brief History of the Problem : The onset of the stuttering was gradual • Parents noticed it first. He stated that the problem started when he imitated another stutterer. He had a history of contact with two stutterers, one uncle and another was a friend for about 8 years from the age of five years,

3. Variations in stuttering : He had more stuttering when *he* spoke to his father or teachers. It Increased during quarrel or fights. He stuttered more on the sounds 'K','g','m','ch','p','ph','r'. He reported less stuttering in English than in Telgu or Kannada. He avoided it by speaking slowly • He refrained from speaking with his father and teachers. His parents were concerned about his stuttering and felt bad about it. They advised him to speak slowly . He too was concerned about the problem and afraid of talking to people.

4. family History : His uncle had stuttering which was not treated. Other members of his family were reported to be normal.

5. Questionnaire Scores :

<u>Scale /Trait</u>	<u>Pre-therapy</u>	<u>Post-therapy</u>
Extroversion	13	12
Neuroticism	16	2
Self-confidence	33	68
Social Anxiety	39	16
Activity	17	24
Cyclothymia	18	17
Depression Tendencies	17	16
Emotional Instability	14	12
Introversion	28	23
Feelings of Inferiority	22	16
Psychosomatic Disorders	13	7
Interpersonal Communication Disorders	24	4
Raven's Progressive Matrices Set I	8	

APPENDIX - XV

CASE HISTORY OF DSR

Age	:	23 yrs	Sex	:	Male
Urban/Rural	:	Urban	Marital Status	:	Slnlge
Education	:	B.V.Sc.	Occupation	:	Service
Mother Tongue	:	Telgu	Other languages	:	English
			Known		

Referred from : He contacted himself at All India Institute of
of Speech and Hearing, Mysore.

1. Complaintsi Stuttering since childhood,

2. Brief History of the Problem : The stuttering started at
the age of 7 years and the onset was gradual. Parents noticed
the problem first. He felt dizzy at times when he was unable to
speak. He also reported discomfort in the throat region -
feeling of tightness - eye blinking and tremor of lips.

3. Variations in stuttering : He had more stuttering during
group discussions, shopping , at reservation counters, and when
he spoke over telephone. It was less at home. His stuttering
was more with teachers, strangers and superiors. He had more
stuttering at the beginning of the sentences and words beginning
with 'c', 'k', 'h' and 'a' sounds. He reported more difficulty
in English. He was able to anticipate stuttering and avoided
it by substituting words or slowing down the rate of speech.
He avoided meeting new persons or discussing in the group.
He was concerned about his stuttering and felt depressed when
he was not able to speak well.

4. family History : He had one elder brother, who was reported to be a deaf.

5. Questionnaire Scores :

<u>Scale/</u>	<u>Trait</u>	<u>Pre-therapy</u>	<u>Post-therapy</u>
Extroversion		7	7
Neuroticism		10	3
self-confidence		37	74
Social Anxiety		30	5
Activity		11	20
Cyclothymia		15	23
Depression Tendencies		10	2
Emotional Instability		7	4
Introversion		19	12
feelings of Inferiority		15	11
Psychosomatic Disorders		2	2
Interpersonal Communication Disorders		17	8
Raven's Progressive Matrices Set	I	9	

APPENDIX - XVI

CASE HISTORY OF IND

Age	: 26 yrs	Sex	:	Male
UrbanAural	: urban	Marital status	:	Married
Education	: Dip.C.E.	Occupation	:	Service
Mother Tongue	: Kannada	Other languages	:	English
		known		

Referred from : He contacted himself at All India Institute of Speech and Hearing, Mysore.

1. Complaints : Stuttering since the age of 5 years.
2. Brief History of the Problem : He says that according to his mother stuttering started after the typhoid fever. It developed gradually.
3. Variations in stuttering : He had severe stuttering while talking to strangers and his superior officers. At times, while buying drugs and other materials from the market; he used to write on a slip of paper and get them, because of the severity of the problem. He did not stutter on specific sounds or words. He reported less stuttering in English than Kannada. He was able to anticipate stuttering and avoided it by speaking slowly • Other coping mechanisms observed were :
 - a) Lip retraction
 - b) Tongue protrusion
 - c) Eye blinking.
 He did not avoid any speaking situations. His parents felt that stuttering is due to bad luck and nothing can be done about it. He himself felt frustrated because of it.
4. Family History : He has two brothers and two sisters, they were reported to be free from stuttering.

5. Questionnaire Scores :

<u>Scale / Trait</u>	<u>Pre-therapy</u>	<u>Post-therapy</u>
Extroversion	12	12
Neuroticism	9	2
Self-confidence	34	77
Social Anxiety	39	14
Activity	26	18
Cyclothymia	18	16
Depression Tendencies	14	14
Emotional Instability	14	10
Introversion	24	6
Feelings of Inferiority	24	8
Psychosomatic Disorders	4	2
Interpersonal Communication Disorders	16	2
Raven's Progressive Matrices Set I	10	

APPENDIX - XVII

CASE HISTORY OF CHR

Age : 19 yrs Sex : Male
Urban/Rural : Urban Marital status : Single
Education : B.A. Occupation : Student
Mother Tongue : Kannada Other languages : English, Tamil
and Hindi known

Referred from : He reported on when follow up card was sent,

1. Complaints : Stuttering since the age of 5 years.

2. Brief History of the Problem : He reported that stuttering developed gradually from the age of 5 years after he copied a teacher who had stuttering problem. It has become more severe since three years, after he joined the hostel for his studies. He took treatment from a clinical psychologist which consisted of P.M.R. and Modelling for few days but discontinued later.

3. Variations in stuttering : He reported more stuttering with strangers and superiors as well as while speaking in front of a group. Stuttering was less when he spoke with his borthers and sisters. He stuttered more on 'o', 'f', and 'a' sounds.

Stuttering was also more in English less in Tamil and occasionally in Kannada. He stated that he could anticipate stuttering and avoided It either by prolonging or substituting words. Other coping mechanisms observed were :

a) Addition of 'h' sound to words.

b) Making noisy 'f.f.f.f.f' sounds.

He felt that problem has become too severe and was very much concerned about it.

4. Family History t He had two brothers ana sisters , they were reported to be normal.

5, Questionnaire Scores t

<u>Scale / Trait</u>	<u>Pre-theraicrsr</u>	<u>Post-therapy</u>
Extroversion	8	7
Neuroticism	20	15
Self-confidence	10	26
Social Anxiety	80	49
Activity	10	12
Cyclothymia	6	18
Depression Tendencies	26	24
Emotional Instability	21	20
Introversion	29	22
Feelings of Inferiority	24	11
Psycho soraatic Disorders	10	7
Interpersonal Communication Disorders	30	26
Raven's Progressive Matrices Set I	8	

ANXIETY HIERARCHY IN DESCENDING ORDER OF REACTION INTENSITY
 { suds In parenthesis)

1. a) Speaking or reading aloud in front of a group. (100)
 b) Meeting the authority figures, such as Principal or Warden.
2. a) Acting in a drama. (80)
 b) Setting blocked on the feared sounds.
3. Speaking over telephone. (70)
4. Talking to a teacher outside the class. When other students are watching. (60)
5. a) Introducing himself to others.
 b) During roll call in the class. (50)
 c) Talking to a stranger/female classmate:
6. Speaking to room mate/close friend in the class. (40)
7. Talking alone to the teacher outside the class. (35)
8. Talking to a close friend /room mate in the hostel. (30)
- 9* Reading alone or talking to the parents. { 20)
10. Speaking to the brothers and sisters at home. { 10)

APPENDIX - XVIII

CASE HISTORY OF RDS

Age	:	26 yrs	Sex	:	Male
Urban/Rural	:	Rural	Marital status	:	Married
Education	:	B.Sc.(Ag)	Occupation	:	Service
Mother tongue	:	Rajasthani	Other language known	:	English and Hindi

Referred from : He contacted himself at All India Institute of Speech and Hearing, Mysore.

1. Complaints : Stuttering from the age of 12 years.

2. Brief History of the Problem : He stated that stuttering began when he was in 5th Class. Initially the problem was only on few words , later it generalized. The onset was gradual and parents noticed first.

3. Variation in stuttering : He had more stuttering while talking to strangers, introducing himself and facing the group or his superiors. It did not vary with friends and was less at home. He experienced more difficulty when he used to talk over phone and on the 'b', 'h' , 'm' , 'p' , 'c' , 'tr' and 'r' sounds. He avoided situations or substituted words when he anticipated stuttering. This included social situations or where more number of people were present. He had difficulty while speaking on phone or at reception counters. His parents were not anxious but grand-parents were concerned about his stuttering. He said that during school days his grand-parents and teachers had been over-correcting him and that had

aggravated the problem. He was deeply concerned about his problem and had consulted a physician earlier.

4. Family History t He had two younger brothers and one younger sister. They were reported to be normal.

5. Questionnaire Scores :

<u>Scale / Trait</u>	<u>Pre-therapy</u>	<u>Post-therapy</u>
Extroversion	18	15
Neuroticism	12	10
Self-confidence	19	39
Social Anxiety	77	46
Activity	18	21
Cyclothymia	21	22
Depression Tendencies	16	12
Emotional Instability	16	10
Introversion	22	16
Feelings of Inferiority	7	7
Psychosomatic Disorders	8	10
Interpersonal Communication Disorders	22	12
Raven's Progressive Matrices Set I	10	

ANXIETY HIERARCHY IN DESCENDING ORDER OF REACTION INTENSITY
(suds in parenthesis)

1. Speaking in front of the group:
 - i) During training camps of S.B.I.
 - ii) During distribution of loans when superior officers are present. (100)
 - iii) Welcome or farewell address.
2. a) Puts a question in the meeting but other people do not agree with his view. (90)
- b) Boss criticises him in front of people and he wants to reply back.
3. Decides to ask a question in the meeting. (80)
4. Calling a person in authority, such as his boss, regional manager etc. on telephone. (70)
5. Hearing the phone ring and he is the only one around to answer. (60)
6. Talking to a person in authority at the regional office. (50)
7. a) Socialising with a group of people.
- b) Reading from the prepared text in front of a group. (40)
- c) Getting blocked on the words beginning with the feared sounds while speaking.
8. Making enquiries at railway station, bus stand or airlines office for reservation etc. (30)
9. Feeling of getting blocked while talking. (25)
10. Booking a ticket at the reservation counter. (20)
11. Asking for a bill in a hotel. (15)
12. Shopping in the market. (10)

APPENDIX - XIX

CASE HISTORY OF VEG

Age	:	22 yrs.	Sex	:	Male
Urban/Rural	:	Urban	Marital status	:	Single
Education	:	Dip.EE	Occupation	:	Student
Mother tongue	:	Kannada	Other language known	:	English and Hindi

Referred from : He reported on when follow up card was sent,

1. Complaints : Stuttering from the age of 12 years.

2. Brief History of the Problem : He reported that stuttering developed at the age of 12 years, but did not know how it started*

He felt that the problem has reduced now. He had consulted at All India Institute of Speech and Hearing, Mysore, earlier and took treatment ('slow-reading') for two weeks.

3. Variations in stuttering : He stuttered more when he had to speak, read or answer questions in the class room and also in front of a group. He also had more difficulty in speaking with parents, teachers and strangers. He could anticipate stuttering and in such situations, avoided talking or substituted other words. He refrained from speaking in front of a group. He had more difficulty at the beginning of a sentence and it did not vary with specific sounds/words/language.

His parents felt that problem will go after some time, but he wanted to get it treated immediately.

4. Family History : He had one brother and two sisters and they were reported to be normal.

5. Questionnaire Scores :

<u>Scale/ Trait</u>	<u>Pre-therapy</u>	<u>Post-therapy</u>
Extroversion	14	10
Neuroticism	18	11
Self-confidence	51	59
Social Anxiety	22	11
Activity	25	24
Cyclothymia	22	22
Depression Tendencies	15	14
Emotional Instability	23	18
Introversion	16	12
Feelings of Inferiority	16	11
Psychosomatic Disorders	2	2
Interpersonal Communication Disorders	8	10
Raven's Progressive Matrices Set I	10	

ANXIETY HIERARCHY IN DESCENDING ORDER OF REACTION INTENSITY

(suds in parenthesis)

1. Speaking aloud in front of a group • (95)
2. Acting in a drama or telling a joke on the stage. (80)
3. a) Reading aloud a problem in the class. (70 }
b) Talking when he is angry.
4. a) Participating in a quiz competition. (60)
b) Speaking loudly to any one.
5. a) Calling a member of his family on a trunk call. (50)
b) People looking at him when he speaks.
6. a) Conveying an important message to someone. (40)
b) Calling a stranger for information.
7. During an argument with friends or other persons. (35)
8. Making enquiries at the reservation counter. (30)
9. Calling a friend. (20)
- 10, Asking for directions from a stranger . (15)
11. Speaking to a stranger. (10)

APPENDIX - XX
CASE HISTORY OF NBS

Age	:	30 yrs	Sex	:	Male
Urban/Rural	:	Urban	Marital status	:	Single
Education	:	D.H.M.C.T.	Occupation	:	Business
Mother tongue	:	Hindi	Other language	:	Kannada and English
			known		

Referred from : He reported on when follow up card was sent.

1. Complaints : Stuttering since the age of 11 years.
2. Brief History of the Problem : He first noticed the problem during speaking in front of the class in 6th standard, Later it generalized to other situations and people. He feels that it was aggravated by the criticism from his father's friend.
3. Variations In stuttering : After he left the school, stammering disappeared, Later a relapse took place. He had considerable difficulty during campus interviews with the managerial staff. He was left -handed and had a history of contact with a stutterer for about 6 years, who was his friend. He had more difficulty with his father and elder brother as well as in outside situations and with strangers. Stuttering was less at home and with friends. He stuttered more on 't', 'b', 'c', and 'd' sounds and blends like *tr' 'cr' . He felt that he had more difficulty in Kannada and less in English and Hindi. He was able to anticipate stuttering and avoided it by substituting words. He was concerned about his problem and felt bad and guilty* He was previously treated by a clinical psychologist. The treatment consisted of Metronome Conditioned

Speech Retraining Programme plus Assertion Training for 20 days about 15-20 minutes dally. He was also demonstrated P.M.R. and asked to do it himself at home. Later he attended another therapy programme for a month but reported Immediate relapse after treatment.

4. Family History s He had an elder brother, and he was reported to be normal,

5. Questionnaire Scores :

<u>Scale/Trait</u>	<u>Pre-therapy</u>	<u>Post-therapy</u>
Extroversion	15	15
Neuroticism	14	6
Self-confidence	37	79
Social Anxiety	26	15
Activity	26	28
Cyclothymia	24	24
Depression Tendencies	12	2
Emotional Instability	14	4
Introversion	12	4
Feelings of Inferiority	8	2
Psychosomatic Disorders	2	4
Interpersonal Communication Disorders	14	2
Raven's Progressive Matrices Set 1	12	

ANXIETY HEIRARCHY IN DESCENDING ORDER OP REACTION INTENSITY
 (suds in parenthesis)

1. Buying a ticket for the place, the name beginning
 with a word on which he anticipates stuttering, (100)
2. Placing a long distance call with the operator, (90)
3. Speaking on a long distance call to the members
 of the family. (80)
4. a) Meeting authority figures.
 b) Reading from a newspaper and telling or discus-
 ssing the news with others.
5. Talking to a group of people who are not known. (60)
6. Making enquiries about routine matters at railway
 station , post-office, bank etc. (50)
7. Speaking to the clerks etc. In a bank or office. (40)
8. Talking to the brother or father. (30)
9. Having conversation with known friends. (20)
10. Talking to mother and sister at home. (15)
11. Making purchases in the market. (10)
12. Reading alone. (5 }

APPENDIX - XXI

CASE HISTORY OF NPR

Age	:	25 yrs	Sex	:	Male
Urban/Rural	:	urban	Marital status	:	Single
Education	:	B.E.	Occupation	:	Student
Mother tongue	:	Kannada	Other language known	:	Hindi, Tamil and English

Referred from : He reported on when follow up card was sent.

1. Complaints : Stuttering since childhood.

2. Brief History of the Problem : Stuttering began at the age of 5 - 6 years. The onset was gradual. He feels that it started because his father was strict. Stuttering was very severe in the beginning, but decreased gradually. His father used to tease him, but mother never said anything, There was no history of contact with a stutterer.

3. Variations in stuttering : His stuttering was very severe when he had to speak in front of a group or ask a question in the class. His stuttering Increased when he had to introduce himself in a group . It was less when he made enquiries at reservation counter and other offices or spoke over telephone. He had a little stuttering when he spoke to his family members. It was also less when he went to market for purchases or during class room discussions. He stated that previously he used to have more stuttering on 'p', 'm' 'b' and 'kh' sounds, now it occurred on any sound or position. He was able to anticipate stuttering and avoided it by substituting words or saying the words in Kannada. He avoided speaking in group situations.

He was very much concerned about his problem. He had been previously treated by four speech pathologists and a clinical psychologist . Three treatments. Shadowing and Rhythmic Syllable Timed Speech, Prolongation and Modelling were tried independently at different times but the effects were *not* lasting.

4. Family History : He had one younger brother who was reported to be normal.

5. Questionnaire Scores :

<u>Scale / Trait</u>	<u>Pre-therapy</u>	<u>Post-therapy</u>
Extroversion	5	7
Neuroticism	5	5
Self-confidence	13	39
Social Anxiety	42	30
Activity	21	20
Cyclothymia	2	4
Depression Tendencies	9	4
Emotional Instability	2	2
Introversion	14	17
Feelings of Inferiority	13	1
Psychosomatic Disorders	4	4
Interpersonal Communication Disorders	11	*
Raven's Progressive Matrices Set I	12	

APPENDIX - XXII

CASE HISTORY OF NMK

Age	:	20 yrs	Sex	:	Male
Urban/Rural	:	Urban	Marital status	:	Single
Education	:	B.E.	Occupation	:	Student
Mother tongue	:	Kannada	Other language known	:	Tamil, Hindi and English

Referred from : He saw the research note in his college.

1. Complaints: Stuttering for the past 10 years.
2. Brief History of the Problem : Stuttering started at the age of 9 or 10 years toy copying a classmate. He had a history of contact with a stutterer who was his classmate from 2nd to 12th standard. The onset was gradual and it was noticed by himself and his parents. His parents asked him to talk calmly. He was not very much concerned about his problem, though he felt Irritated and annoyed sometimes.
3. Variations in stuttering : His stuttering was more in the college or class and with the teachers. It was less with his peers and people who were known closely. He had more stuttering on 'a', 'e' and 'i' sounds and words containing these sounds in any position. He was able to anticipate stuttering and avoided it by substituting words. His other coping mechanism observed was to change the position of words.
4. Family History i Family history was reported to be negative.

5. Questionnaire Scores :

<u>Scale / Trait</u>	<u>Pre-therapy</u>	<u>Post-therapy</u>
Extroversion	15	18
Neuroticism	3	1
Self-confidence	79	79
Social Anxiety	14	3
Activity	24	26
Cyclothymia	16	22
Depression Tendencies	6	2
Emotional Instability	4	4
Introversion	4	4
Feelings of Inferiority	1	1
Psychosomatic Disorders	5	2
Interpersonal Communication Disorders	2	1
Raven's Progressive Matrices Set I	10	

APPENDIX - XIII
CASE HISTORY OF VPD

Age	:	24 yrs	Sex	:	Male
Urban/Rural	:	Rural	Marital status	:	Single
Education	:	B.E.	Occupation	:	Student
Mother tongue	:	Konkani	Other languages	:	English known

Referred from : He contacted himself at All India Institute of Speech and Hearing, Mysore.

1. Complaints : Stuttering from the age of 8 years.
2. Brief History of the Problem : Stuttering started gradually from the age of 8 years. His parents were concerned about the problem and they asked him to seek professional help.
3. Variations in stuttering : He reported more stuttering with strangers or when some one suddenly asked him a question. Stuttering was also more when he wanted to tell interesting news to known persons. It was less with family members. He stuttered more on the sounds 'p', 'b', 'm', 'n', 'd', 'k', and 'q'. Most of the times he stuttered at the beginning of the sentences but sometimes in the middle. He was able to anticipate stuttering and avoided it either by substituting or skipping a word. He did not participate in classroom discussions or group activities.
4. Family History : His grand-father had stuttering problem, but it disappeared during his adulthood. VPD had a younger brother who was reported to be normal.

APPENDIX - XXIII

CASE HISTORY Of SAK

Age	:	28 yrs	Sex	:	Male
Urban/Rural	:	Urban	Marital status	:	Single
Education	:	D.M,E,	Occupation	:	Service
Mother tongue	:	Kannada	Other language	:	Hindi and English
			known		

Referred from : He reported on when follow up card was sent*

1. Complaints : Stuttering for the past 15 years.
2. Brief History of the Problem : Stuttering started at the age of 13 years. The onset was sudden and the parents noticed it first, They thought It will become all right gradually. But he found it difficult to minimize as he felt that "words were not coming out" He did not have any history of contact with a stutterer.
3. Variations in stuttering : His stuttering was more when he faced strangers or superiors and during interviews. It was less at home and with friends. He reported more lack of fluency in English. He did not stutter more on some specific sounds or words* He was unable to anticipate stuttering and did not avoid any speaking situations. No coping mechanisms were reported or observed* He was very much concerned about his problem.
4. Family History : He had two sisters and one brother, they were reported to be normal.

5. Questionnaire Scores :

<u>Scale / Trait</u>	<u>Pre-therapy</u>	<u>Post-therapy</u>
Extroversion	17	16
Neuroticism	10	10
Self-confidence	35	51
Social Anxiety	25	16
Activity	26	20
Cyclothymia	20	16
Depression Tendencies	20	13
Emotional Instability	12	14
Introversion	20	16
Feelings of Inferiority	18	14
Psychosomatic Disorders	10	4
Interpersonal Communication Disorders	12	12
Raven's Progressive Matrices Set I	11	

APPENDIX - XXIV

CASE HISTORY OF HBC

Age	:	25 yrs	Sex	:	Male
Urban/Rural	:	Urban	Marital status	:	Single
Education	:	B.A.	Occupation	:	Service
Mother tongue	:	Kannada	Other language	:	English
			known		

Referred from : He contacted himself at All India Institute of Speech and Hearing, Mysore,

1. Complaints : Stuttering since the age of 5 yrs.

2. Brief History of the Problem : He did not know exactly how he developed stuttering. The onset was sudden, and the parents noticed it first. His parents felt bad about it. He was concerned about the problem and wanted to get it cured.

3. Variations in stuttering : His stuttering was more in the office and with his superiors. It was less with the people, who were closely known. The severity of the stuttering did not vary much with his family members. He stuttered more at the beginning of the sentences / phrases. He said that he was unable to anticipate stuttering. He tried to avoid stuttering by striking repeatedly his hand against the thigh.

4. Family History : He had three brothers and three sisters. they were reported to be normal.

5. Questionnaire Scores :

<u>Scale / Trait</u>	<u>Pre-therapy</u>	<u>Posts-therapy</u>
Extroversion	15	16
Neuroticism	14	14
Self -confidence	13	48
Social Anxiety	75	19
Activity	20	26
Cyclothymia	17	22
Depression Tendencies	13	4
Emotional Instability	24	12
Introversion	22	12
Feelings of Inferiority	26	12
Psychosomatic Disorders	12	10
Interpersonal Communication Disorders	28	2
Raven ¹ s Progressive Matrices Set I	7	