

The Effectiveness of  
The Precision Fluency Shaping Program  
Controlling Stuttering Behaviour in Adults

Trudy Barnard, B.A., B.Ed.

Department of Graduate and Undergraduate Studies in Education

(Submitted in partial fulfillment of  
the requirements for the degree of  
Master of Education)

COLLEGE OF EDUCATION  
B R O C K U N I V E R S I T Y  
St. Catharines, Ontario

© June, 1987

## Acknowledgements

I would like to acknowledge the help that has been afforded to me by the Faculty and Staff of the College of Education, Brock University. Particular thanks must go to Dean Peter J. Atherton, Ph.D., for encouraging and advising me in my school years. Special thanks must go to Dr. Merle Richards, for all her help, encouragement and advice as my Chairperson; Dr. Jim Wagner (Reader), and Dr. Allan Kroll (Reader), for their help and encouragement.

I would also like to thank Speech Pathologists, Dr. Allan Kroll and Dr. Robert Kroll, of the two Clinics, for allowing me to use their clients' video-tapes, and giving me assistance and guidance in my thesis.

Particular thanks to my two judges, Mrs. Shirley Love and Miss Linda Baty, for doing an excellent job.

Finally, special appreciation is extended to my family - to my mother, Mrs. Rita Barnard, for her continual help, encouragement and sacrifice in attaining my goals, and her typing skills; my brother, Mark, who provided the interest in my topic; and my aunt and uncle, Dene and George Staynor, for their help and encouragement along the way.

## Abstract

This study was done to test the effectiveness of the Precision Fluency Shaping Program in controlling stuttering behaviour in adults.

Two sites were chosen, each using the Precision Fluency Shaping Program to treat stuttering. At each clinic, a Speech Pathologist made a random selection of the subjects' pre- and post-therapy video-taped interviews, totalling 20 in all. During the interviews, the clients were asked questions and read a short passage to determine the frequency of stuttering in natural conversation and in reading. Perceptions of Stuttering Inventory questionnaires were also filled in before and after therapy.

Two judges were trained to identify stuttering behaviour, and were given an inter-rater reliability test at selected intervals throughout the study. Protocols, made of each interview tape, were scored for (a) stuttering behaviour and (b) words spoken or read.

An Analysis of Variance Repeated Measures Test was used to compare before and after scores of conversations, readings, and Perceptions of Stuttering Inventory to determine whether the Precision Fluency Shaping Program controlled stuttering behaviour significantly. A Pearson R Correlation Test was also administered to determine if a relationship existed between Perceptions of Stuttering Inventory and (i) conversation and (ii) reading scores.

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## CHAPTER ONE

### INTRODUCTION

#### BACKGROUND TO THE STUDY:

Stuttering seems to have posed problems since man first began speaking. Efforts have been made, since ancient Greek and Roman times, to identify the causes of stuttering and to find methods of "curing" the dysfluency.

Stuttering is a world-wide phenomenon, found in almost all cultures (Ainsworth, 1975; Brajovic, 1974). Hieroglyphics, dated about the twentieth century B.C., contain references to stuttering. Historical references of stutterers have survived from earliest times. For example, Moses described himself as "slow of speech and tongue" (Exodus, 4:10). This statement is interpreted to mean he was a stutterer. Hippocrates (460-377 B.C.) provides the first written considerations of the cause of stuttering (Brajovic, 1974). His belief emphasized a disturbance of the periferal organs (the lips and the tongue) and other vocal organs (the respiratory system). His "cure" was to blister the tongue with poultices before removing the black bile which supposedly caused the dysfluency. Aristotle

Note: The masculine terms will be used as the majority of stutterers is male.

(384-322 B.C.) concurred with Hippocrates but did not suggest a "cure". Demosthenes (384-322 B.C.), a brilliant orator, is said to have stuttered from early childhood and "cured" himself by placing pebbles in his mouth and walking up and down hills while orating. Celsus, in the first century B.C., believed that breathing exercises, washing the head in cold water, eating horse-radish, and vomiting were solutions to stuttering. Other techniques included cutting the lingual frenum (which holds the tongue to the bottom of the mouth) to allow more freedom of movement; surgically removing a triangular patch of the tongue so it would not cleave to the roof of the mouth; and other surgery on the tonsils and the palate, all of which did not "cure" the dysfluency for long periods of time, if they ever did.

Today, there are no definitive descriptions of the etiology of stuttering, although most children go through a stage of non-fluency. Cooper (1979) wrote:

We know that children between the ages of two and five are never totally fluent as they begin to put sounds, words, and sentences together. A small number of children, however, speak with less fluency than others and seem to continue to have trouble even as they grow older. (p. 8)

Generally speaking, stuttering usually begins about the

age of three, with boys seeming to have a higher risk of stuttering to girls. The ratios range between 3:1 and 6:1 (Byrne, 1984).

Importance of Finding a Method to Reduce Stuttering:

Ainsworth (1975) stated that people search for a "cure" because stutterers seem to believe that this dysfluency is a handicap and has warped their whole life.

Clinical histories accumulate to achieve enormous impact. The desperation of stutterers for help is epitomized by the plight of many during the 1840's. (Ainsworth, 1975, p. 14)

At this period, many stutterers underwent surgical operations to remove parts of their tongue to effect a "cure"; the method was discontinued when it was found not to produce lasting fluency.

The requisite for fluent speech, according to Ainsworth, is the desire to communicate basic needs. Speaking brings people into contact with others. It can also reduce the sense of loneliness and bring emotional satisfaction from meeting and conversing with other people. It also helps people explore the world around them. Because a stutterer does not know when he may stutter, he may feel embarrassed, irritated, and thwarted in his attempts to communicate.

For such reasons, theorists seek the causes and

search for methods to reduce stuttering behaviour. Brajovic (1974) claimed that two hundred or more theories and therapies exist today.

Some theories of stuttering are thought to include a combination of factors, not just one. For example, parents may be the primary cause of stuttering behaviour through their reactions to normal dysfluencies (Cooper, 1979). If the parent or parents become emotionally upset, i.e., show signs of tension, fear, etc., due to the child's non-fluent speech, then the child may have some difficulty. If, on the other hand, the parent or parents do not show these emotions, then the child may develop fluent speech. This last reason may be why parents are also credited with "curing" their child's dysfluency, according to Cooper. Muscle co-ordination, a physical factor, must be synchronized in three areas for fluent speech (Cooper, 1979). The three areas are: the breathing apparatus; the vocal chords; and the muscles controlling the lips, the tongue, and the jaw. Stutterers may have a lack of co-ordination among these three muscle groups. Emotional factors may also contribute to stuttering, depending on the degree of stress and how it affects the co-ordination of the muscles.

**STATEMENT OF THE PROBLEM:**

Of the many theories and therapies which try to reduce stuttering, some may work well for certain people but not for others. One therapy, the Precision Fluency Shaping Program developed by Ronald Webster in 1974 (Bloodstein, 1981) and based on the behaviourists' point of view, appears to have had considerable success. The programme uses a sequence of empirically defined target behaviours which have specific motor speech responses. Some of these responses deal with respiration, voicing, and articulation. Establishing the target behaviours and transferring them to outside situations are systematically introduced in the course of therapy.

The purpose of this investigation was to determine the effectiveness of the Precision Fluency Shaping Program (P.F.S.P.) in reducing stuttering in adults. The Null Hypothesis was: The Precision Fluency Shaping Program does not control stuttering behaviour in adults.

**ASSUMPTIONS:**

Three assumptions were basic to the study. The first one is derived from the behaviourists' standpoint:

1. Stuttering is a learned behaviour. This expresses the idea that stuttering is acquired from the environment around the stutterer. This does not mean that the stutterer must

observe another stutterer; rather it means that parents might stress fluency when the child stutters. Children might associate speech with negative responses or fears, so that stuttering increases.

The second assumption follows Cooper's (1979) view that:

2. Stuttering occurs because the person does not use his speech apparatus correctly.

The third is that:

3. Stuttering has not been reduced in childhood and it therefore continues into adulthood. This means that stuttering persists in the person.

#### DEFINITIONS:

Of the many definitions of stuttering, none seems to be adequate, according to Webster (1974). Most definitions are incomplete and most stutterers do not show all the same behaviours. Stutterers know what they want to say; however, their speech is interrupted by blocks, etc. Wingate's (1964) definition, according to Webster (1974), is the best starting point for trying to comprehend stuttering. Wingate stated that stuttering is:

1. (a) Disruption in fluency of verbal expression which is (b) characterized by

involuntary, audible or silent repetitions of prolongations in the utterance of short speech elements, namely, sounds, syllables, and words of one syllable. These disruptions (c) usually occur frequently or are marked in character and (d) are not readily controllable.

2. Sometimes the disruptions are (e) accompanied by accessory activities involving the speech apparatus, related or unrelated body structures, or stereotyped speech utterances. These activities give the appearance of being speech-related struggles.
3. Also, there are not infrequently (f) indications or reports of the presence of an emotional state, ranging from a general condition of "excitement" or "tension" to more specific emotions of a negative nature such as fear, embarrassment, irritation, or the like. (g) The immediate source of stuttering is some inco-ordination expressed in the periferal speech mechanism; the ultimate cause is presently unknown and may be complex or compound. (p. 488)

Frequency is the number of words stuttered or blocked within a 100-word segment (Bloodstein, 1984).

#### SUMMARY:

Stuttering has existed for a long time, and various methods and theories have been proposed to reduce stuttering. The Precision Fluency Shaping Program is one of the methods, based upon the Behavioural theory, which has had some success. It is based on the assumptions that stuttering is a learned behaviour; that stutterers lack muscle co-ordination in their speech tract; and that their past therapies (if any) have not reduced their stuttering behaviour.

## CHAPTER TWO

### REVIEW OF THE LITERATURE

#### INTRODUCTION:

Today, 200 or more theories and therapies exist to help stutterers control their stutter (Brajovic, 1974). These theories and therapies are generally placed into three categories: physiological (implying that stuttering is mainly organic in nature); psychological (suggesting that it is emotional or neurotic in nature); or behavioural (purporting that dysfluencies are learned behaviours).

This chapter will briefly review methods which have some similarity to the Precision Fluency Shaping Program, with the exception of one of the psychological methods which is based solely on the psychological aspect.

#### PHYSIOLOGICAL APPROACHES:

As in the past, some theories still view the causes of stuttering as physiological in nature. One such view is the theory of Cerebral Dominance, based on the idea that stutterers do not have a dominant hemisphere. Travis (1978) believed that as a result of forcing the stutterer to use one hand, in the Cerebral Dominance Therapy, a dominant side would prevail,



thus controlling stuttering. (Research had indicated that cerebral dominance was reflected in handedness.) Ainsworth (1975), however, stated that no compelling evidence appeared to substantiate the claim that a transfer in handedness could alter cerebral dominance.

Van Riper (1971) believed that some stutterers might have a perceptual problem. For example, stutterers might have a disturbance in their feedback system, and this might contribute to timing difficulties of speech musculature. Two therapies which reflect the theory of perceptual difficulties are Delayed Auditory Feedback (DAF) and masking.

DAF is produced by an instrument which emits the stutterer's own voice shortly after he has spoken. The delay in hearing the voice can be adjusted to various lengths of milliseconds after speaking starts.

Goldiamond (1965) first used DAF as a punishment whenever a stutterer stuttered, and found that stuttering was greatly reduced. He then used DAF as negative reinforcement to establish fluency in oral reading which was then to be transferred to other speaking situations. The DAF became disruptive when speaking rate increased, so stutterers were forced to slow their speech. Goldiamond instructed his subjects to decrease their speech rates in reading while experi-

encing a 250-msec delay in auditory feedback. Once the slower speech became habit, the DAF was faded to 50-msec. To transfer the pattern of spontaneous speech, the reading material was presented on a screen while the speed of the words increased. If previous patterns recurred, the condition and DAF were reinstated.

Adamczyk (1959, 1965) used DAF to train stutterers in fluency production in Poland by timing the production of syllables spoken. His results showed that 13 out of 15 subjects (87%) (1959) and 36 out of 60 subjects (60%) (1965) showed significant or complete improvement.

Perkins (1973 a,b) and Perkins et al. (1974) concurred with Goldiamond (1965) and Adamczyk (1959, 1965) in using DAF and prolonged speech. However, Perkins believed that breath management skills, initiation of easy vocal attack, and blending syllables smoothly in a phrase, were essential to the acceptance of increased fluency. Perkins stated that learning to speak normally is a highly conscious process when a stutter is anticipated, at least at first. This was similar to Webster's (1974) approach, which will be discussed later.

The Edinburgh Masker was designed to control stuttering. The Masker is a small black box with a micro-

phone attached to a neckband and earphones. The microphone picks up the vibrations of the vocal chords and returns them to the black box to emit a hum which is heard through the earphones.

Dewar, Dewar and Barnes (1976) assessed stutterers under masking and non-masking conditions during reading, recitation of nursery rhymes, and speaking. The masking conditions were associated with a 95% mean reduction of "vocal errors" which occurred under non-masking conditions. Another study done by Dewar, Dewar, Austin, and Brash (1979) reviewed the results of treatment using the Edinburgh Masker and its long-term effects. They tested 195 stutterers, 144 of whom were classed as severe, 43 as moderate, and 8 as slight. All but two were adults and all but one had previous therapy. The stutterer was required to read a short passage, unaided, and to converse. Dewar et al. found that 174 (89%) responded well to the device, while the remaining 21 (11%) were classified under (a) diaphragmatic and glottal initial block stutterers; (9 people were unable to break the initial unvoiced block); (b) resistant patients (6 raised their voices above the masking noise); (c) deaf patients (3 wore hearing aids); and (d) stutterers having other disorders. The follow-up involved 67 cases who used the device for a period of 6 to 28 months. A questionnaire was

given to the stutterers to check their progress; telephone conversations, correspondence, relatives (where possible), and direct contact were included in the follow-up. Twenty-eight (42%) reported that the device was of "extremely good" benefit; twenty-seven (40%) reported "average" benefit; and twelve (18%) reported "slight" benefit. The results seemed to indicate positive effects from using the Edinburgh Masker.

However, Ingham, Southwood and Horsburgh (1981) stated that the results of their study on the Edinburgh Masker, using four stutterers, were inconsistent with Dewar et al.'s (1976) findings. Dewar et al.'s experiment showed a 93.3-95.2% reduction in vocal errors across the subjects. Ingham et al.'s (1981) subjects showed marginal or brief reductions in stuttering during oral reading and spontaneous speech. Ingham et al. also pointed out that the Edinburgh Masker was extremely annoying to the user and that the four subjects found the masking conditions unpleasant and distressing. Dewar et al. (1976), as cited in Ingham et al. (1981), did not appear to address this problem.

Perkins and Curlee (1969) stated that the use of masking noise works well with some stutterers, but good results and long-term benefits were not obtained

consistently. Byrne (1984) agreed with Perkins and Curlee (1969) that the Masker did not work for everyone, and added that it worked for those who felt their speech-rate was part of the stutter. She concurred with Ingham et al.(1981) that people found it difficult to tolerate the loud tone in their ears every time they conversed. She also stated that the speaker was dependent on the Masker for his fluency.

Jock Carlisle (1985), a long-time stutterer, has written of his experiences with various treatments. He felt that the Edinburgh Masker might have some benefit but still needed to be improved as the machine had several flaws. He thought that some grounds were set for cautious optimism.

#### Other Treatments:

Treatments involving rhythmic or metronome-timed speech were based on the theory that speech timing had somehow become malfunctional. This type of therapy has decreased in popularity over the last decade. The stutterer was taught to use a form of speech where all syllables had the same stress and each syllable was said in a timed rhythm. The rate of speech increased slowly, as well as the normal stress of syllables, and speech situations were brought into therapy.

Brady (1971) used a metronome to pace the syllables (60 beats per minute) and gradually increased the rate of the metronome (100-120 beats per minute) so speech became more normal. Twenty-one of the twenty-six (81%) stutterers showed a substantial increase in the amount of fluency. A follow-up of twenty subjects sixteen months to four-and-a-half years later showed that only three had partial relapses.

Trotter and Silverman (1974) tested the effectiveness of a miniature metronome. One of their three studies proved successful in attaining some measure of fluency in reading; and a second one proved to be successful in reading and speaking; but the third study showed no apparent decrease in stuttering. Silverman (1976 b), in another study, further examined the use of the miniature metronome over three years and found that the effectiveness diminished gradually until the final half of the third year, where the benefit was negligible.

Byrne (1984) reported that both syllable and metronome-timed speech were effective in some stutterers' cases; however, the transfer and maintenance were often unsatisfactory as the clients felt that it was an unnatural way of speaking, and tended not to use it outside the clinic.

## PSYCHOLOGICAL APPROACHES:

Some theorists adopted Sigmund Freud's idea that stuttering was caused by a neurotic symptom rooted in unconscious conflicts. Brill (1962), as cited in Bloodstein (1984), psychoanalyzed 69 patients over a period of a few months to a year. He found that the greater majority appeared to develop normal speech; however, after 11 years, only five retained their fluency.

Sheehan (1954 b) added speech therapy to psychotherapy to develop his theory of Approach-Avoidance Conflict. He believed that stuttering, in its simplest form, was a momentary block from which the stutterer inevitably recovered. Therefore, his theory had two main concepts: (a) a stutterer stopped whenever approach and avoidance conflict tendencies were equal; and (b) the occurrences of stuttering reduced the fear which caused stuttering and permitted the word to be released. The latter point is expressed in Sheehan's belief that a stutterer plays the part of a fluent speaker and refuses to accept himself as a stutterer. He does this by avoiding certain sounds, words, and situations to create an illusion of fluency. This non-acceptance of himself as a stutterer causes fear and anxiety which in turn create more pressure

to be fluent and so a vicious cycle occurs. However, Sheehan continued, the more he accepts himself as a stutterer, the more fluent he will become because the pressure will have lifted and he will then be free to be himself. Sheehan stated that five conflicts showed the approach-avoidance aspect of his theory: word-level conflict (the urge to speak and the urge not to say a particular word); situational level (parallel conflict of entering or not entering a feared situation); emotional conflict (whenever emotions like fear, anger, guilt were spoken or read); relationship conflict (was the stutterer a superior figure or an inferior figure to the listener?); and ego-protective level (a conflict which threatened either failure or success so that safety margins were set to protect the ego).

Sheehan named his therapy Role Therapy. Its basic goal was to reduce the avoidance aspect and allow the stutterer to attack each communication as freely as possible. The therapy was designed to explore the stutterer's dysfluency, monitor his speech, stutter openly and easily, pause and phrase, resist time pressures, and stutter voluntarily. The therapy also allowed the client to change roles of speaker and



listener to bring about changes in self-concept. Sheehan taught "a tolerance of silence, a confidence in being able to stop talking and start again" (Gregory, 1984, p. 4).

Van Riper (1978) concurred with Sheehan (1954 b) that the stutterer needed to be taught how to cope with his feelings about stuttering. This enabled the client to take charge of his speech instead of being helpless as he either anticipated or experienced his stutter. Van Riper's therapy was an acronym called MIDVAS or Motivation, Identification, Desensitization, Variation, Approximation, and Stabilization. The motivational aspect of his therapy consisted of sharing and experiencing the stutter with the client. This allowed the client to feel he was not being penalized and thus reduced his fear. Identification implied deciding what kind of stutter the client had. For example, did the client repeat the initial sounds, insert "helper" words, repeat the last few words or phrase? The client's fear was reduced by breaking his stutter down into smaller portions. The Desensitization phase worked to "toughen" the client. This was done by instructing the client to make several phone calls, fake a stutter and time the call until one of the people hung up; to pre-write everything

he wanted to say, etc. Variation consisted of the client's changing some aspect of himself before he attempted a variation of his speech. This enabled him to become aware of the choices he could make, and to understand that if choice was possible with his clothes, style, etc., then it should be possible with his speech. The Approximation stage had three components. The first was the Post-Block or Cancellation. The client was instructed to pause for a few seconds after every stutter and calm down before attempting to continue, to pause after each stutter and pantomime the words to locate the problem, and to pause after a stutter and repeat the words in the new easy style of speaking. The components of the Post-Block helped to eliminate the negative reinforcement effects of stuttering. The next component was the In-Block Correction or Pull-Outs, which helped to control the duration of the stutter and was useful when the stutter was unexpected. Instead of struggling with a block, the client tried to change the course of the stutter. As soon as was possible after the onset of the stutter, the subject would attempt to release the sound slowly, evenly and smoothly, and to continue on into the word. The last part of this stage was the Pre-Block. This immediately assumed that the client anticipated the

stutter, and moved to correct the block before it began. He attempted to slide through the phoneme with relaxed vocal chords and planned the sequence of movements necessary to effect the word. The last stage of MIDVAS was Stabilization, which stabilized the fluency in the client. This consisted of monitoring others' speech and his own; practicing his old type of blocks and subsequent cancellations; taking a daily inventory of stuttering; and resisting stuttering.

Bloodstein (1984) stated that Charles Van Riper's (1978) MIDVAS Therapy had limitations. These were that the therapy made heavy demands on time, patience, skill and insight of the stutterer and the clinician. He stated further that if the clinician were not well-trained, the therapy might just teach the stutterer to accept his impediment, and recovery might then become impossible (p. 391).

Bloodstein (1958, 1975 a) believed that tension and fragmentation caused stuttering. In this approach the stutterer was shown how to analyze his speech to see how he constricted his vocal apparatus when he stuttered. This was similar to Van Riper's (1978) Identification phase. Following this, the client was given diagrams of his speech mechanisms to see the "maladaptive behaviours". The next phase was

to adapt and adopt a "milder, simpler" mode of speaking. To do this, Bloodstein seemed to follow Van Riper's (1978) treatment.

Carlisle (1985) stated that psychiatrists and psychologists have a role in stuttering therapy. The role he chose was for those stutterers who had severe fears, anxieties and frustrations in their speech every day. He argued that stutterers needed some help to combat these powerful emotions. Byrne (1984) concurred with Carlisle (1985) about the need for psychotherapy, but felt that much depended on the client, the nature of the dysfluency, and the skill of the therapist involved.

The last phases of MIDVAS show some behavioural tones. For example, Desensitization uses penalties to reduce the fear of phone calls; Variation and Approximation teach new responses to old pressures; and Stabilization reinforces new habits by taking daily inventory and restructuring old responses to new responses.

#### BEHAVIOURAL APPROACHES:

Behaviour therapists tend to theorize that stuttering, like any maladaptive behaviour, is learned, and hence, that changing the behaviour can be accomplished

by re-learning. Early experiments used electric shocks to punish the stutterer for each dysfluency. This worked while the electrodes were attached to the client, but as soon as they were removed, stuttering returned (Martin and Seigel, 1966).

Today, however, behaviourists tend to use more benign forms of reward-punishment conditioning, like fluency shaping. Ryan (1974, 1979) devised a therapy programme called Monterey, which used two different methods of treating stuttering. One was DAF (which has been examined previously), and the other is GILCU - Gradual Increase in the Length and Complexity of Utterances - which incorporated reinforcement. The stutterer was instructed to read one word fluently for ten consecutive trials, and then two words (in pairs), and so on. Each fluent word was positively reinforced. If, on the other hand, the client stuttered on a word, he was stopped and told how to repeat the word fluently. The clinician, if he/she felt it was necessary, would show how to say the word fluently in a slow, prolonged manner. The words were then put into sentences, where the steps were repeated. The stutterer now had to read fluently for thirty seconds, with several increases occurring up to a limit of five minutes. The subject was constantly

reinforced after reading fluently for the selected amount of time. This whole process was repeated for monologues and conversations. Concurrently with these programmes, the stutterer was taught how to transfer this fluency to other situations, i.e., home, office, socials, etc. Ryan also had a maintenance programme at selected intervals where the client was reassessed and, if necessary, retrained in certain areas.

Another type of fluency shaping technique was the Slow/Prolonged Speech method (Byrne, 1984). This treatment consisted of slowing the speech rate, similar to the kind of slowing produced by the DAF-type method, allowing pauses to take place within the conversation, and teaching the client to make light contacts (two articulators coming together to produce a particular sound, i.e. /p/, /b/, /t/, /d/, etc.). The prolonging of sounds, especially vowels, made it easier to pass smoothly from one sound to another. As the techniques were learned, fluent speech and natural tempo increased, and the clients were taught to transfer this control and fluency to outside situations. This was done by telephone calls, etc. Boberg's (1976) therapy of Prolonged Speech, using 21 adult stutterers in a three-week intensive course, showed that stuttering decreased from a mean of 21% of stuttered syllables

to 1.3% of stuttered syllables. However, in his long-term follow-up of six months to two years, a mean of 22% syllable relapse occurred in 13 subjects.

Helps and Dalton (1979) used Prolonged Speech as their treatment of stuttering therapy. Forty-four adults were enrolled in a four-week intensive therapy course. The results showed a decrease in the mean of stuttered words from 24.3% to 7.8% in conversation. The follow-up a year later showed a further decrease (though slight) to a mean of 7.1% of stuttered words.

The above therapies appear to develop the practices of their predecessors and culminate in the Precision Fluency Shaping Program (P.F.S.P.) designed by Ronald Webster (1974). The P.F.S.P. evolved from a series of experimental programmes using gentle onset of initial phonemes, prolonged speech, full breath, re-teaching speech sounds and parallel transfer targets. The therapy consisted of a six-hour day for three consecutive weeks. The stutterer, once he was enrolled in the programme, had a pre-treatment interview with a clinician, which was video-taped. During this interview several questions were asked and a short paragraph read (see Appendices A and B). The client also completed a questionnaire designed by Woolf (1967) called the Perceptions of Stuttering Inventory (P.S.I.),

which asked the stutterer how he perceived his stutter. The P.S.I. was comprised of three categories, each containing twenty statements reflecting either struggle, avoidance, or expectancy.

The clients were given manuals which instructed them on the necessary behaviours for fluent speech. The manuals gave in-depth information about the target behaviours. Questions after each lesson checked the stutterers' understanding of the concept. The first targeted behaviour was the Stretched Syllable, where clients timed their speech-rate. They were instructed to say one syllable every two seconds, which increased to almost normal speed by the end of therapy. This helped eliminate breaks between and within syllables and helped the subjects avoid running out of breath. The exercises started with one-syllable words before building upwards. Clinicians checked the progress of the stutterer after every step. Once the targeted behaviour was learned, transfer targets were taught. Diagrams were presented to show how speech sounds were made, and to aid comprehension. The Full Breath technique instructed the stutterers in breathing correctly because, according to Webster (1974), most stutterers do not have sufficient air in their lungs before initiating speech. The Gentle Onset was taught



after three days of prolonged speech (Stretched Syllable). A voice monitor was used to aid the clients in initiating all voiced phonemes softly, at first, until normal decibals were attained.

The second week continued the pattern of the first week.

In the third and final week, transfer activities were done to ensure that clinical fluency was transferred to outside situations. Clients made telephone calls, and went to shopping centres and other places to try their newly-gained fluency.

After therapy, another interview was video-taped, again with questions and a short reading text (see Appendices C and D). A maintenance programme was scheduled for several weeks after therapy.

Ronald Webster (1974) randomly selected 20 adults (17 male and 3 female) who had completed the programme two years earlier. The findings showed that 13 out of 20 (65%) subjects had attained 1% or lower in dysfluency rate in oral reading and 9 out of 20 (45%) subjects scored 1% or lower in dysfluency rate in conversation. The changes in stuttering behaviour were significant at the 0.05 level.

Mallard and Kelley (1982) replicated Webster's (1974) study using 50 stutterers. The group was divided

into two to four people per treatment group. The results showed the mean rate of dysfluency was reduced from 21.09% to 2.06% during reading and 20.05% to 2.92% for conversation. The P.S.I. score decreased from pre- to post-therapy for each category. Follow-up, approximately six months later, showed that more dysfluency appeared in conversation (9.74%) than in reading (4.71%). The P.S.I. scores also reflected an increase in struggle and avoidance scores, although these did not approach the pre-treatment level. Mallard and Kelley (1982) found that some clients were more fluent during the follow-up testing than in the follow-up group meetings. However, when the clients were reminded to "return to the targets", fluent speech was attained, so it appeared that the clients were capable of fluent speech but were not using it in all situations (p.293).

Liebovitz and Kroll (1980) did a study using pre- and post-treatment, video-taped data of 100 stutterers enrolled in the Precision Fluency Shaping Program. They also used Woolf's (1967) P.S.I. form to identify the clients' perceptions of stuttering. Liebovitz and Kroll reported that 90% of the subjects had significantly improved speech patterns and the P.S.I. scores were significantly reduced.

Andrew, Guitar and Howie (1980) did a meta-analysis of the effects of stuttering therapy. Their study involved 42 therapies which included Biofeedback, Desensitization, Rhythm, Gentle Onset, and Prolonged Speech. Prolonged Speech ranked the highest as a principal therapy (29%) with Rhythm (21%) next, Gentle Onset (10%), and Desensitization (7%). Psychotherapy, Masking, etc., were used as support therapies. The results showed that Prolonged Speech and Gentle Onset were significantly more effective than any other therapy except Rhythm. "Prolonged speech and gentle onset techniques appear the strongest in the short and the long term" (p. 297).

Andrews, Guitar and Howie (1980) appear to support the Precision Fluency Shaping Program as an effective method for fluency as it contains both prolonged speech and gentle onset. Therefore, it would appear that the Precision Fluency Shaping Program should have positive results for achieving and maintaining fluency.

## CHAPTER THREE

### METHODOLOGY

#### INTRODUCTION:

Two facilities in Southern Ontario were selected for this study on the Precision Fluency Shaping Program and its effectiveness in controlling stuttering behaviour. These sites were chosen for three reasons. The first was to guard against a possible clinician effect on the outcome of the treatment. That is, if the method succeeded or failed at both sites, then the therapy programme could be considered to be a success or a failure. If, on the other hand, the treatment reduced stuttering behaviour at one facility but not at the other, then the result might have been affected by the Speech Clinician administering the therapy. The second reason was to ascertain whether the method was transportable, i.e., usable in other locations by clinicians trained in this method. The last reason for the selection of two sites was the consequent availability of a larger sample.

#### SAMPLE:

The sample consisted of twenty adult stutterers who had been referred to the clinics by their physicians.

A resident Speech Pathologist at each clinic made a random selection of subjects. The nine subjects from Clinic A were all male stutterers with ages ranging from 16 years to 47 years, with a mean age of 27.77 years. (Note that stuttering occurs more frequently in men than in women; the ratios range between 3 men to 1 woman to 6 men to 1 woman.) Three subjects out of nine (33%) had no previous therapy. Those from Clinic B were ten men ranging from 20 to 53 years, with a mean age of 36.66 years, and one woman aged 18. Five subjects out of eleven (46%) had no previous therapy.

Each client signed a consent form allowing his/her interview video-tapes and Perceptions of Stuttering Inventory forms to be used in research. The clients were given either a number (Clinic A) or a letter (Clinic B) to maintain confidentiality.

#### TREATMENT:

Each subject was enrolled in a three-week intensive programme consisting of at least five hours daily. The first two weeks involved controlling the rate of speaking, breathing, and voice onset. The final week stressed the transfer of behaviours learned in the laboratory to the outside world. This included

making telephone calls to different people, visiting stores and asking questions, etc.

#### APPARATUS:

Video-tapes were made of each client during a pre- and post-treatment interview with a Speech Pathologist. The interview consisted of directed conversation, consisting of questions posed by the Pathologist and the clients' answers, and a reading passage of approximately 500 words. The pre- and post-tests were different, in accordance with Webster's (1975) manual (see Appendices A, B, C, and D). The questions varied depending on the amount of talking the client did. The readings also varied in length, because the clinician sometimes interrupted the reading. The conversations and the readings allowed the clinician to monitor stuttering frequency in natural discourse and reading.

Woolf's (1967) Perceptions of Stuttering Inventory was administered before and after therapy to observe whether the client perceived a difference in his stuttering behaviour. The Perceptions of Stuttering Inventory (P.S.I.) is a sixty-item questionnaire divided equally into three categories of Struggle, Avoidance, and Expectancy (see Appendices E and F).

**PROCEDURES:**

Twenty-one protocols were made of the subjects' video-taped interviews (twenty for the study and one for the training session for the judges). The judges were to mark the protocols each time the subject stuttered.

Two unsophisticated judges were trained to identify stuttering occurrences using guidelines that reflected Wingate's (1964) definition of stuttering behaviour (see Appendix G). During the training sessions, the judges read the protocols first, then viewed the tape before attempting to score the protocol. They were allowed to observe the tape as many times as necessary (usually two or three times by the end of the sessions). This enabled them to know what the client would say and what to expect. All procedures and guidelines were agreed upon during the training sessions.

An inter-rater reliability test was given during the training sessions, before the study, mid-way into the study, and after the study. The inter-rater reliability test showed an increase from 85% during the training sessions to 93% after the study.

Once the inter-rater reliability test assured that the judges were agreeing on what constituted stuttering behaviour, they selected ten tapes each from the twenty

spread randomly on a table. The protocols matching the tapes were given to the judges. This ensured that the judges had a random sample from both groups.

The judges viewed all the pre-therapy tapes before the post-therapy ones so no bias would affect the outcome of the study.

The judges tabulated the number of stuttering occurrences at the end of each line and a total was recorded. The number of words spoken or read was also tabulated to determine the frequency of stuttering. According to the frequencies, the subjects were placed in categories of normal speech, mild, moderate, or severe stuttering, based on Webster's (1975) divisions of dysfluency, for both pre- and post-therapy.

The P.S.I. forms were tabulated as a whole and in sections to observe whether the subjects perceived a change in stuttering behaviour, and if so, where, specifically, did the change occur.

An Analysis of Variance Repeated Measures Statistical Test was used to determine if stuttering decreased significantly after therapy and hence if the Null Hypothesis could be rejected. This test was used for all measures.

To determine if a correlation existed between the P.S.I. and the conversation scores and the P.S.I.



and the reading scores, a Pearson r Correlation Statistical Test was administered.

SUMMARY:

Two sites were chosen for this study. At each clinic, a Speech Pathologist made a random selection of subjects' video-taped interviews, totalling twenty in all. During the interviews (pre- and post-therapy), the clients were asked questions and read a short passage to determine the frequency of stuttering in natural conversation and in reading. Protocols were made from the tapes and were given to the judges after they had randomly selected ten tapes each. The judges were trained and an inter-rater reliability test was given. All the pre-therapy tapes were viewed first to eliminate the possibility of biasing the study by knowing the outcome of the client's therapy. The protocols were marked and the totals recorded for both stuttering behaviour and the number of words spoken or read. These were used to determine the frequency of stuttering before placing the frequency scores in Webster's (1975) categories of normal speech (if any), mild, moderate, or severe stuttering occurrences.

P.S.I. scores were checked to observe whether the subjects perceived a decrease in their stuttering

behaviour. A Pearson r Correlation Statistical Test was administered to determine if a relationship existed between the P.S.I. scores and the conversation and reading scores.

An Analysis of Variance Repeated Measures Statistical Test was used to compare before and after scores of the conversations, readings, and the P.S.I.'s to determine if the Precision Fluency Shaping Program controlled stuttering behaviour.

## CHAPTER FOUR

### RESULTS

#### INTRODUCTION:

The discourse, reading and P.S.I. scores were analyzed using an Analysis of Variance Repeated Measures Statistical Test. This was used to determine whether the Precision Fluency Shaping Program controlled stuttering behaviour. A Pearson r Correlation Statistical Test was administered on both the conversation and the reading scores with the P.S.I. results to determine whether a correlation existed between the client's perception of stuttering and the decrease in stuttering behaviour.

#### CONVERSATION:

The length of conversation increased, though not significantly, from pre- to post-therapy sessions for 50% of the subjects. Despite the increase in the number of words spoken, stuttering behaviour decreased significantly in both groups (Group A -  $F = 13.41$ ,  $df = 1,8$ ,  $p < 0.01$ ; Group B -  $F = 29.79$ ,  $df = 1,10$ ,  $p < 0.01$ ). (See Tables 4.1 and 4.2.)

Following Webster's (1975) practice, the subjects

Table 4.1

Dysfluencies Per One Hundred Words in Conversation.

---

Group A ( <u>N</u> = 9)		
	Pre-Test	Post-Test
Means	29.44	5.78

---

Table 4.2

Dysfluencies Per One Hundred Words in Conversation.

---

Group B ( <u>N</u> = 11)		
	Pre-Test	Post-Test
Means	20.64	5.73

---

were classified in categories of normal speech (0-4%); mild (5-11%); moderate (12-22%); and severe (23% upwards), according to the frequency of their stuttering. The clients were re-classified after therapy to show any differences in the rate of dysfluency before and after treatment. A further refinement of Webster's (1975) categories, supplied by Liebovitz and Kroll (1980), subdivided the categories into normal speech (0-2%, 2-4%); mild (4-7%, 7-10%); moderate (10-16%, 16-25%); moderately severe (25-41%, 41-50%); and severe (50% +) stuttering. This scale was used to increase the precision of the results. Tables 4.3 and 4.4 indicate that 17 out of 20 subjects (85%) exhibited normal and mild dysfluencies after therapy while the remaining 3 clients (15%) exhibited a moderate rate of stuttering (see Tables 4.3, 4.4, 4.5 and 4.6.).

#### READING:

The initial reading scores ranged from one to seventy-seven percent for Group A and from zero to fifty-nine percent for Group B. The means were 12.82 and 23.78 respectively. Eighteen of the twenty subjects (90%) increased their fluency from pre- to post-test.

Using the Repeated Measures of the Analysis of

Table 4.3

Classification of Subjects by Severity of Stuttering  
in Conversation.

---

Group A (N = 9)

---

Severity (Webster, 1975)	Pre-Test	Post-Test
Normal	0 (0%)	4 (44%)
Mild	0 (0%)	5 (55%)
Moderate	5 (55%)	0 (0%)
Severe	4 (44%)	0 (0%)

---

Table 4.4

Classification of Subjects by Severity of Stuttering  
in Conversation.

---

Group B (N = 11)

---

Severity (Webster, 1975)	Pre-Test	Post-Test
Normal	0 (0%)	6 (54%)
Mild	1 (9%)	3 (27%)
Moderate	5 (45%)	2 (18%)
Severe	5 (45%)	0 (0%)

---

Table 4.5

Classification of Subjects by Severity of Stuttering in  
Conversation.

---

Group A (N = 9)

---

Severity (Liebovitz & Kroll, 1980)	Pre-Test		Post-Test	
Normal	0 ( 0%)		1 (11%)	
	0 ( 0%)	( 0%)	3 (33%)	(44%)
Mild	0 ( 0%)		3 (33%)	
	0 ( 0%)	( 0%)	1 (11%)	(44%)
Moderate	1 (11%)		1 (11%)	
	55 (55%)	(66%)	0 ( 0%)	(11%)
Moderately Severe	1 (11%)		0 ( 0%)	
	0 ( 0%)	(11%)	0 ( 0%)	( 0%)
Severe	2 (22%)	(22%)	0 ( 0%)	( 0%)

---



Table 4.6

Classification of Subjects by Severity of Stuttering in  
Conversation.

Group B ( <u>N</u> = 11)				
Severity (Liebovitz & Kroll, 1980)	Pre-Test		Post-Test	
Normal	0 ( 0%)		4 (36%)	
	0 ( 0%)	( 0%)	2 (18%)	(54%)
Mild	0 ( 0%)		1 ( 9%)	
	0 ( 0%)	( 0%)	1 ( 9%)	(18%)
Moderate	5 (45%)		3 (27%)	
	4 (36%)	(81%)	0 ( 0%)	(27%)
Moderately Severe	2 (18%)		0 ( 0%)	
	0 ( 0%)	(18%)	0 ( 0%)	( 0%)
Severe	0 ( 0%)	( 0%)	0 ( 0%)	( 0%)

Variance Test, the pre- and post-treatment scores indicated that stuttering behaviour decreased significantly after therapy ( $F = 5.35$ ,  $df = 1,8$ ,  $p < 0.05$  for Group A;  $F = 5.48$ ,  $df = 1,10$ ,  $p < 0.05$  for Group B). (See Tables 4.7 and 4.8.)

Following Webster's (1975) practice of placing stuttering frequencies into categories of normal speech (0-4%); mild (5-11%); moderate (12-22%); and severe (23% upwards), the subjects were classified according to their dysfluency. The frequency scores from pre- to post-readings showed that subjects moved into normal speech and mild range of stuttering after therapy. Liebovitz and Kroll (1980) subdivided Webster's (1975) categories into normal speech (0-2%, 2-4%); mild (4-7%, 7-10%); moderate (10-16%, 16-25%); moderately severe (25-41%, 41-50%); and severe (50% upwards) to increase the precision of the results. The results showed that 19 out of 20 clients (95%) were below two percent of stuttered words and one subject (5%) stuttered approximately 4.7 times in one hundred words. (See Tables 4.9, 4.10, 4.11, and 4.12.)

#### PERCEPTIONS OF STUTTERING INVENTORY:

The total scores of the P.S.I. forms were analyzed to examine whether the clients perceived an overall

Table 4.7

Dysfluencies Per One Hundred Words in Reading.

---

Group A ( <u>N</u> = 9)		
	Pre-Test	Post-Test
Means	23.78	1.11

---

Table 4.8

Dysfluencies Per One Hundred Words in Reading.

---

Group B ( <u>N</u> = 11)		
	Pre-Test	Post-Test
Means	12.82	0.91

---

Table 4.9

Classification of Subjects by Severity of Stuttering in Reading

---

Group A (N = 9)

---

Severity (Webster, 1975)	Pre-Test	Post-Test
Normal	5 (55%)	8 (88%)
Mild	0 ( 0%)	1 (11%)
Moderate	0 ( 0%)	0 ( 0%)
Severe	4 (44%)	0 ( 0%)

---

Table 4.10

Classification of Subjects by Severity of Stuttering in Reading.

---

Group B (N) = 11)

---

Severity (Webster, 1975)	Pre-Test	Post-Test
Normal	3 (27%)	11 (100%)
Mild	3 (27%)	0 ( 0%)
Moderate	4 (36%)	0 ( 0%)
Severe	1 ( 9%)	0 ( 0%)

---

Table 4.11

Classification of Subjects by Severity of Stuttering in Reading.

---

Group A (N = 9)

---

Severity (Liebovitz & Kroll, 1980)	Pre-Test		Post-Test	
Normal	4 (44%)		8 (88%)	
	1 (11%)	(55%)	0 (0%)	(88%)
Mild	0 (0%)		1 (11%)	
	0 (0%)	(0%)	0 (0%)	(11%)
Moderate	0 (0%)		0 (0%)	
	1 (11%)	(11%)	0 (0%)	(0%)
Moderately Severe	1 (11%)		0 (0%)	
	0 (0%)	(11%)	0 (0%)	(0%)
Severe	2 (22%)		0 (0%)	
		(22%)	0 (0%)	(0%)

---

Table 4.12

Classification of Subjects by Severity of Stuttering in Reading.

Group B (N = 11)				
Severity (Liebovitz & Kroll, 1980)	Pre-Test		Post-Test	
Normal	3 (27%)		10 (90%)	
	0 ( 0%)	(27%)	1 (10%)	(100%)
Mild	2 (18%)		0 ( 0%)	
	1 ( 9%)	(27%)	0 ( 0%)	( 0%)
Moderate	3 (27%)		0 ( 0%)	
	1 ( 9%)	(36%)	0 ( 0%)	( 0%)
Moderately Severe	0 ( 0%)		0 ( 0%)	
	0 ( 0%)	( 0%)	0 ( 0%)	( 0%)
Severe	1 ( 9%)		0 ( 0%)	
		( 9%)	0 ( 0%)	( 0%)

reduction of their stuttering behaviour. The results from an Analysis of Variance Repeated Measures Test showed the subjects did perceive a difference in their dysfluency, which proved to be significant at the 0.01 level ( $F = 24.38$ ,  $df = 1,8$ ; and  $F = 44.59$ ,  $df = 1,10$  for Groups A and B respectively). (See Tables 4.13 and 4.14.)

The individual categories of Struggle, Avoidance, and Expectancy that make up the Perceptions of Stuttering Inventory were also analyzed using an Analysis of Variance Repeated Measures Test. This was used to ascertain whether the subjects perceived a reduction of stuttering behaviour in any particular category. Both groups' subjects perceived the greatest reduction in the Struggle category (Group A -  $F = 30.45$ ,  $df = 1,8$ ,  $p < 0.01$ ; Group B -  $F = 56.56$ ,  $df = 1,10$ ,  $p < 0.01$ ). Expectancy ranked second and Avoidance last for Group A, while the reverse was true for Group B. Despite the reversals of the last two categories, both sections proved to be significant at the 0.01 level ( $F = 10.79$  [Avoidance],  $F = 14.79$  [Expectancy],  $df = 1,8$ ;  $F = 23.04$  [Avoidance],  $F = 11.47$  [Expectancy],  $df = 1,10$ , for Groups A and B respectively). (See Tables 4.15 and 4.16.)

A Pearson r Correlation Statistical Test was



Table 4.13

Results of The Perceptions of Stuttering Inventory.

---

Group A ( <u>N</u> = 9)		
	Pre-Test	Post-Test
Means	27.78	7.33

---

Table 4.14

Results of The Perceptions of Stuttering Inventory.

---

Group B ( <u>N</u> = 11)		
	Pre-Test	Post-Test
Means	27.55	4.81

---

Table 4.15

Results of the Categories of the Perceptions of Stuttering Inventory.

---

Group A ( <u>N</u> = 9)			
	Struggle	Avoidance	Expectancy
Pre-Test Means	10.44	8.56	8.78
Post-Test Means	1.11	2.11	4.11

---

Table 4.16

Results of the Categories of the Perceptions of Stuttering Inventory.

---

Group B ( <u>N</u> = 11)			
	Struggle	Avoidance	Expectancy
Pre-Test Means	11.0	8.91	7.64
Post-Test Means	0.82	0.73	3.27

---

administered to determine whether a decrease in the P.S.I. scores and the decrease of stuttering behaviour in conversation and reading scores were related. Both of Group A's results showed a strong positive correlation (  $r = 0.79$  for the P.S.I. and the conversation scores; and  $r = 0.64$  for the P.S.I. and the reading scores). However, Group B's results showed a weak correlation between the P.S.I. and the conversation scores ( $r = 0.20$ ); and between the P.S.I. and the reading scores ( $r = 0.28$ ). Only the correlation between Group A's P.S.I. and conversation scores proved to be significant at the 0.01 level.

#### SUMMARY:

An Analysis of Variance Repeated Measures Test was used to determine if the pre- and post-therapy measures of discourse, reading and the P.S.I. scores were significant in rejecting the Null Hypothesis that the Precision Fluency Shaping Program does not control stuttering behaviour in adults. The changes in conversation scores were significant at the 0.01 level; the changes in the reading scores were significant at the 0.05 level; and the P.S.I. scores were significant at the 0.01 level.

A Pearson  $r$  Correlation Test was also used to

determine if any relationship existed between the P.S.I. scores and the conversation and the reading scores. Group A's scores showed strong relationships between the P.S.I. and the conversation and reading scores, while Group B's results indicated a weak relationship.

## CHAPTER FIVE

### DISCUSSION AND CONCLUSION

#### INTRODUCTION:

This chapter will review and discuss the results of the study. It will also present some suggestions for further research, the limitations of the study, before drawing conclusions and rejecting the Null Hypothesis: The Precision Fluency Shaping Program does not control stuttering behaviour in adults.

#### RESULTS AND DISCUSSION:

The results from the conversation and reading scores were significant at the 0.01 and 0.05 levels, respectively. Both groups exhibited increased fluency in conversation and oral reading. These findings showed the clients moving towards normal speech to moderate degrees of stuttering after therapy. The length of conversation increased, though not significantly, for half of the stutterers. Therefore, the Precision Fluency Shaping Program could be considered to be successful in controlling stuttering in these patients. Hence, this study supports the findings of previous studies (Webster, 1974; Mallard and Kelley, 1982;

Liebovitz and Kroll, 1980) in demonstrating increased fluency in conversation after completion of the therapy. Given these repeated successes, other stutterers may find the long-sought-for fluency with this treatment. Implicit in this therapy is the theory that stuttering is a learned behaviour and can, therefore, be modified to produce fluency. The success of the treatment would tend to support this position. Follow-ups of other treatment studies (Webster, 1974; Mallard and Kelley, 1982) show that fluency can be maintained months after therapy finishes. Knowing this might help adult stutterers to feel more secure in their newly-gained fluency and the long-term effects of it.

Though not as significant as the conversation results, the oral reading performance also suggests increased fluency. Because the initial reading scores were higher than the conversation scores, there was less likelihood of large gains in increased fluency in reading. Moreover, for people who read aloud, such as ministers, lay readers, teachers, and parents, the results show that even reading out loud benefits from the therapy. This further seems to indicate that the Precision Fluency Shaping Program does control stuttering behaviour in adults.

The Perceptions of Stuttering Inventory results proved to be significant at the 0.01 level both as total and individual scores. This showed that after treatment, the stutterers' perceptions of themselves as stutterers decreased while their perceptions of fluent speakers increased. This indicates that the Precision Fluency Shaping Program seems to reflect the stutterers' perceptions of their speech performance.

The correlations between the P.S.I. and the discourse and reading results were positive. However, Group A's results of the P.S.I. and conversation results were strong and significant, while the other three (P.S.I. and reading scores [strong] and Group B's results [weak]) were not significant. This would seem to indicate that this was a chance occurrence or that the clients' self-perceptions were not a simple function of their performance.

#### SUGGESTIONS FOR FURTHER RESEARCH:

Although the correlation test did not prove to be conclusive, a further study, using a larger sample size might indicate a relationship between the P.S.I. and conversation and reading results. The correlation between the P.S.I. and the discourse scores might show how changed perceptions of stuttering reflect

the increased fluency in conversation. On the other hand, one would not expect reading scores to have much influence on the clients' self-perceptions. Because reading aloud is not a frequent or important activity for most adults, and because most adults perform better in reading than in conversation, changes in conversational ability should have a stronger effect on self-perception. This expectation was confirmed in this study.

The analysis of the Perceptions of Stuttering Inventory could also be researched. It was interesting to note that while both groups perceived the greatest reduction in the category of Struggle, the other two categories of Avoidance and Expectancy ranked second and third for Group B, while the reverse was true for Group A. Does this discrepancy in the ranking order reflect a chance occurrence or some unseen influence of the locations?

Because the Precision Fluency Shaping Program worked well in this study, it should be determined if this treatment works well with child stutterers. If the therapy proved to be successful with children, it could be used as a preventive measure when stuttering behaviour is first noticed, and could, therefore, prevent the pains and avoidances associated with stut-



tering. Teachers could then feel confident that an effective method could be made available to school-age stutterers and would not hesitate to refer them for therapy. Because the programme requires a Precision Fluency Shaping Program Therapist to work daily with a stutterer, the Boards of Education would require the services of such personnel.

However, some problems arise from providing this therapy to children under the age of eight. The first problem is that young children cannot read; therefore, the instructions would have to be given orally and in easily understandable language. Another important factor is that children may not be able to keep their attention focussed for the length of time needed for the treatment. This would mean that the length of training per day would have to be decreased, while increasing the number of days of intensive training. These two factors would modify the method somewhat. However, therapy should be easier because stuttering patterns are not long established in six- or seven-year-olds and they are still at a stage where language learning is continuing. Another factor which needs some thought is that of motivating or reinforcing the young children, if need be, to attain fluency. On the other hand, because behavioural changes are

often easier to induce in young children, therapy may also be more successful. All this suggests a modified programme for young children, although the older children may well benefit from the standard Precision Fluency Shaping Program.

The Perceptions of Stuttering Inventory questionnaire would probably not be given to a young stutterer (a) because the child could not read it and (b) the ideas or concepts have not been long entrenched in the young stutterer's mind. Also, young children have not built up inhibitions as have their adult counterparts and probably would not be afflicted with most of the concepts on the form. Although, if the P.S.I. were given (orally and the concepts explained), it would be purely for research to identify whether the child perceives any of the behaviours associated with stuttering. And, if so, then at what age would be the onset of these behaviours, and which concepts appear first?

#### LIMITATIONS:

This study had three limitations. First, there was no follow-up to observe whether the subjects maintained their increased fluency. Second, due to an insufficient amount of time, and an unavailability

of subjects, a follow-up interview was not feasible to complete this study. This follow-up would have further indicated whether the Precision Fluency Shaping Program controlled stuttering behaviour and maintained the increased fluency over a period of time. However, previously cited references showed that fluency could be maintained months after therapy. A third limitation was that no control group was used during this study to see if fluency gains occurred without this therapy. Again due to lack of time and subjects, this was not feasible for the study. However, since most of the subjects had already gone through a period of time and had no apparent decrease of stuttering occurring (since they sought therapeutic help), it would appear that even with a control group, the Precision Fluency Shaping Program would have controlled stuttering behaviour in adults.

#### CONCLUSIONS:

The above results indicated that the Null Hypothesis - the Precision Fluency Shaping Program does not control stuttering behaviour in adults - could be rejected. The significant results from both groups showed that no clinician effect marred the success of the treatment and that the method was transportable.

The results appear to indicate that the assumptions,

stuttering is a learned behaviour, and occurs because the person does not use his speech apparatus correctly, were accurate. This was shown when the clients were taught to slow their speech rate and were re-taught, using pictures in the manuals, how to place their speech organs for pronouncing and releasing speech sounds. This re-teaching indicated that it was possible to change existing behaviours in order to increase fluency.

Furthermore, if this method works so well with stuttering adults, then it may be used with other speech disorders in both children and adults. This method would then prove to be beneficial to more than one kind of speech impediment and may erase future speech problems. It is the hope that there is a method that can control stuttering and other speech disorders, and the Precision Fluency Shaping Program might be the way to control speech impediments.

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PAMPHLETS, LEAFLETS, ETC.:

- Digital Dafone. Aleph One Ltd., Cambridge, England.
- Edinburgh Masker. Findlay, Irvine Ltd., Penecuik, Scotland.
- Relaxometer. Aleph One Ltd., Cambridge, England.
- Speak Easy Association N.S.W. and Act. Branch. Parramatta,  
New South Wales, Australia.
- Summary of Therapy Techniques. Keeley House, London, Eng-  
land.
- The Association for Stammerers. The Finsbury Centre, London,  
England.
- The Hector Aid. The Association for Stammerers, The Fins-  
bury Centre, London, England.
- The P.F.S.P. Speech Reconstruction for Stutterers. Commu-  
nications Development Corporation, Roanoke, Virginia,  
U.S.A.
- Webster, R.L. New Computer and Learning Technologies Applied  
to Stuttering Therapy. Communications Development  
Corporation, Roanoke, Virginia, U.S.A.

## APPENDIX A

INTERVIEW\*BEFORE:

1. Would you begin by stating your name and today's date.
2. How did you hear about this program?
3. What specifically happens to your speech when you stutter?
4. Does anyone else in your family stutter?
5. What sort of professional treatment have you had - what specifically was done and what were the results?
6. In what specific situations do you stutter more?  
In what specific situations do you stutter less?
7. What has been the general course of your stuttering - has it become better or worse over the years?
8. What is your estimate of your present speech severity - is what I am hearing typical of your speech behavior?
9. Has the problem handicapped you educationally, vocationally or in any other ways?
10. What do you expect to get out of this program?

\*N.B. These are a sample of questions asked. Others may be asked, depending on the amount of response given.

## APPENDIX B

## READING PASSAGE I

The line, chain or cable used with an anchor is referred to by sailors as a rode. Small boats, that is boats under about thirty-five feet in length rarely use the heavy chains or wire cables seen on larger yachts. These boats rely on a fiber rope to hold them at anchor. Anchor rodes for small boats are usually constructed of vegetable or synthetic plastic fibers. Fiber ropes stretch when the boat surges as waves strike it. Stretchy fiber lines absorb shocks and relieve strain on anchors and mooring cleats. The traditional line used for years as anchor ropes on small boats was constructed of manila fiber. Manila rope has been replaced on most pleasure boats by nylon line. There are several good reasons why nylon line is preferred for anchor rodes. One of the big advantages of nylon over manila is the fact that a nylon rope can be stowed away while it is wet. If a manila line is stowed when wet, it is possible that rot or mildew will set in and destroy the fibers. Nylon is stronger than manila line of the same size and has much more elasticity to it. Modern nylon lines can stretch up to one third of their length without snapping. Nylon is also likely to be from two to three times as strong as manila line of the same size. Nylon is lighter than manila, is easier to handle on deck while pulling the anchor, and better resists chaffing. One of the potential difficulties with nylon is that prolonged exposure to sunlight, for example when lines remain coiled on boat decks, causes ultraviolet rays to weaken its fibers by producing chemical changes in the plastic.

Although nylon has many advantages for use in situations where elasticity is required, there are lines which have different special applications. Dacron filaments are used in the construction of ropes which serve other functions. For example, on sailboats, lines which are used to control movement of the boom should be made of dacron. When the sailor adjusts the position of sails on his boat, he does not care for changes in wind pressure to produce changes in the position of sails because his ropes stretch as wind pressure increases. Dacron lines are resistant to stretch, are easy to handle, and are relatively resistant to chaffing as they pass through blocks and over pulleys. The lack of give in dacron fibers makes this type of rope particularly unsuitable for use as an anchor rode. Special processing of plastic substances gives dacron its potential for resisting stretch.

Another kind of marine line is made from a plastic that floats. These lines are very useful when used as painters on small yacht tenders. The main problem with manila, nylon and dacron lines is that they do not float. In the event it becomes necessary to cause a yacht to go astern, nylon line may sink and tangle in the propeller. Floating plastic lines will remain on the surface.

## APPENDIX C

INTERVIEWAFTER:

1. Would you begin by stating your name and today's date.
2. Have you made any improvements in your speech fluency since you have been in this program?
3. In what way have you improved your speech fluency?
4. Describe the different transfer activities you have been practicing this past week.
5. How have you done in these speaking situations?
6. What are your plans for practicing when you get home?
7. What part of the program did you find the easiest to accomplish?
8. What part of the program was the most difficult for you to accomplish?
9. Do you feel you will have any problem maintaining your fluency when you go home?
10. On the basis of your experience, what advice would you give to someone just starting the Precision Fluency Shaping Program?

## APPENDIX D

## READING PASSAGE II

Horseback riding can be a very enjoyable activity. In order to become a knowledgeable rider, you should learn a great deal about your mount. For example, if you are planning to own a horse you must understand just what needs to be done to care for it. Perhaps you will never buy a horse. Nevertheless, most riding instructors like to teach their students about the care and feeding requirements of horses. Some of the relevant points are discussed below.

Horses are quite large. Because of this fact, many people think they are very expensive to keep. Actually, a horse can be maintained on a small budget. For example, the average horse can be fed for approximately five dollars a month during the summer and for about twenty dollars a month during the winter. Of course, this assumes that you have some place where the horse can be sheltered. Boarding stables near medium sized towns will charge about one hundred dollars a month to keep your horse. Of course, if you are fortunate and own suitable land, your costs for keeping a horse would be reduced over those already mentioned.

The recommended space for keeping a horse is about one acre. The acre of land should be pretty well covered with good grass. A source of running water, either naturally or artificially supplied, is necessary. The land should have a suitable fence around it. If the fence is wooden or stone, it should be high enough to keep the animal from jumping over. Many people prefer either barbed wire fences or electric fences in order to discourage the horse from trying to get to the fabled greener grass which is on the other side. One warning which should be heeded is to avoid placing a horse in any area which was previously an apple orchard. Horses get sick when they eat too many apples. When eaten in large quantities the apples will ferment in the horse's stomach and cause colic.

In order to care for the horse certain kinds of equipment are needed. The standard tools include various brushes which are used primarily to groom the horse. These are in order of their use, a curry comb, a hard brush, a dandy brush, a soft brush and a tail comb. While it is not necessary to groom the horse at regular intervals, those people who are proud of their horses are likely to groom them frequently. Regular grooming, for example at weekly intervals, will insure that the horse stays in good condition. Very often horses are a little bit like people; they act better when they are treated well.

Of course, if you plan to own a horse you must purchase the gear necessary for riding the animal. The items which are needed include a halter and rope, which are used to lead the horse around in the stable and pasture area. The lead rope should be soft rope about ten feet in length and should be tied and untied easily.

# PERCEPTIONS OF STUTTERING INVENTORY

FOR CLINIC USE

72

S \_\_\_\_\_

A \_\_\_\_\_ T \_\_\_\_\_

E \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

Date \_\_\_\_\_

### Directions

Here are sixty statements about stuttering. Some of these may be characteristic of **your** stuttering. Read each item carefully and respond as in the example below.

#### Characteristic of me

Repeating sounds.

Put a check mark (✓) under **characteristic of me** if "repeating sounds" is part of your stuttering; if it is **not characteristic**, leave the box blank.

**Characteristic of me** refers only to what you do **now**, not to what was true of your stuttering in the past and which you no longer do; and not what you think you should or should not be doing. Even if the behavior described occurs only occasionally or only in some speaking situations, if you regard it as characteristic of your stuttering, check the box under **characteristic of me**. Be accurate in your judgments.

#### Characteristic of me

- 1. Avoiding talking to people in authority (e.g., a teacher, employer, or clergyman).
- 2. Feeling that interruptions in your speech (e.g., pauses, hesitations, or repetitions) will lead to stuttering.
- 3. Making the pitch of your voice higher or lower when you expect to get "stuck" on words.
- 4. Having extra and unnecessary facial movements (e.g., flaring your nostrils during speech attempts).
- 5. Using gestures as a substitute for speaking (e.g., nodding your head instead of saying "yes" or smiling to acknowledge a greeting).
- 6. Avoiding asking for information (e.g., asking for directions or inquiring about a train schedule).
- 7. Whispering words to yourself before saying them or practicing what you are planning to say long before you speak.
- 8. Choosing a job or hobby because little speaking would be required.
- 9. Adding an extra and unnecessary sound, word, or phrase to your speech (e.g., "uh," "well," or "let me see") to help yourself get started.
- 10. Replying briefly using the fewest words possible.
- 11. Making sudden jerky or forceful movements with your head, arms, or body during speech attempts (e.g., clenching your fist, jerking your head to one side).
- 12. Repeating a sound or word with effort.
- 13. Acting in a manner intended to keep you out of a conversation or discussion (e.g., being a good listener, pretending not to hear what was said, acting bored, or pretending to be in deep thought).
- 14. Avoiding making a purchase (e.g., going into a store or buying stamps in the post office).
- 15. Breathing noisily or with great effort while trying to speak.
- 16. Making your voice louder or softer when stuttering is expected.
- 17. Prolonging a sound or word (e.g., m-m-m-m-my) while trying to push it out.
- 18. Helping yourself to get started talking by laughing, coughing, clearing your throat, gesturing, or some other body activity or movement.
- 19. Having general body tension during speech attempts (e.g., shaking, trembling, or feeling "knotted up" inside).
- 20. Paying particular attention to what you are going to say (e.g., the length of a word, or the position of a word in a sentence).
- 21. Feeling your face getting warm and red (as if you are blushing), as you are struggling to speak.
- 22. Saying words or phrases with force or effort.
- 23. Repeating a word or phrase preceding the word on which stuttering is expected.
- 24. Speaking so that no word or sound stands out (e.g., speaking in a singsong voice or in a monotone).
- 25. Avoiding making new acquaintances (e.g., not visiting with friends, not dating, or not joining social, civic, or church groups).
- 26. Making unusual noises with your teeth during speech attempts (e.g., grinding or clicking your teeth).
- 27. Avoiding introducing yourself, giving your name, or making introductions.
- 28. Expecting that certain sounds, letters, or words are going to be particularly "hard" to say (e.g., words beginning with the letter "s").
- 29. Giving excuses to avoid talking (e.g., pretending to be tired or pretending lack of interest in a topic).
- 30. "Running out of breath" while speaking.

(Please complete items on other side of page.)



- 31. Forcing out sounds.
- 32. Feeling that your fluent periods are unusual, that they cannot last, and that sooner or later you will stutter.
- 33. Concentrating on relaxing or not being tense before speaking.
- 34. Substituting a different word or phrase for the one you had intended to say.
- 35. Prolonging or emphasizing the sound preceding the one on which stuttering is expected.
- 36. Avoiding speaking before an audience.
- 37. Straining to talk without being able to make a sound.
- 38. Coordinating or timing your speech with a rhythmic movement (e.g., tapping your foot or swinging your arm).
- 39. Rearranging what you had planned to say to avoid a "hard" sound or word.
- 40. "Putting on an act" when speaking (e.g., adopting an attitude of confidence or pretending to be angry).
- 41. Avoiding the use of the telephone.
- 42. Making forceful and strained movements with your lips, tongue, jaw, or throat (e.g., moving your jaw in an uncoordinated manner).
- 43. Omitting a word, part of a word, or a phrase which you had planned to say (e.g., words with certain sounds or letters).
- 44. Making "uncontrollable" sounds while struggling to say a word.
- 45. Adopting a foreign accent, assuming a regional dialect, or imitating another person's speech.
- 46. Perspiring much more than usual while speaking (e.g., feeling the palms of your hands getting clammy).
- 47. Postponing speaking for a short time until certain you can be fluent (e.g., pausing before "hard" words).
- 48. Having extra and unnecessary eye movements while speaking (e.g., blinking your eyes or shutting your eyes tightly).
- 49. Breathing forcefully while struggling to speak.
- 50. Avoiding talking to others of your own age group (your own or the opposite sex).
- 51. Giving up the speech attempt completely after getting "stuck" or if stuttering is anticipated.
- 52. Straining the muscles of your chest or abdomen during speech attempts.
- 53. Wondering whether you will stutter or how you will speak if you do stutter.
- 54. Holding your lips, tongue, or jaw in a rigid position before speaking or when getting "stuck" on a word.
- 55. Avoiding talking to one or both of your parents.
- 56. Having another person speak for you in a difficult situation (e.g., having someone make a telephone call for you or order for you in a restaurant).
- 57. Holding your breath before speaking.
- 58. Saying words slowly or rapidly preceding the word on which stuttering is expected.
- 59. Concentrating on **how** you are going to speak (e.g., thinking about where to put your tongue or how to breathe).
- 60. Using your stuttering as the reason to avoid a speaking activity.

We thank Professor Gerald Woolf, Department of Communications Disorders, Montclair State College, Upper Montclair, New Jersey, and the *British Journal of Disorders of Communication* for permission to reprint the Perceptions of Stuttering Inventory which appeared in Woolf, G., The assessment of stuttering as struggle, avoidance and expectancy. *British Journal of Disorders of Communication*, 1967, 2, 158-177.

The Perceptions of Stuttering Inventory is published by:

Communications Development Corporation, Ltd.  
P. O. Box 9684  
Roanoke, Virginia 24020

## APPENDIX F

PERCEPTIONS OF STUTTERING INVENTORY  
DIVIDED INTO CATEGORIES OF  
STRUGGLE, AVOIDANCE, AND EXPECTANCY

## STRUGGLE

4. Having extra and unnecessary facial movements (e.g., flaring your nostrils during speech attempts).
11. Making sudden jerky or forceful movements with your head, arms, or body during speech attempts (e.g., clenching your fist, jerking your head to one side).
12. Repeating a sound or word with effort.
15. Breathing noisily or with great effort while trying to push it out.
17. Prolonging a sound or word (e.g., m-m-m-my) while trying to push it out.
19. Having general body tension during speech attempts (e.g., shaking, trembling, or feeling "knotted up" inside).
21. Feeling your face getting warm and red (as if you are blushing), as you are struggling to speak.
22. Saying words or phrases with force or effort.
26. Making unusual noises with your teeth during speech attempts (e.g., grinding or clicking your teeth).
30. "Running out of breath" while speaking.
31. Forcing out sounds.
37. Straining to talk without being able to make a sound.
42. Making forceful and strained movements with your lips,

## APPENDIX F Continued...

tongue, jaw, or throat (e.g., moving your jaw in an uncoordinated manner).

44. Making "uncontrollable" sounds while struggling to say a word.
46. Perspiring much more than usual while speaking (e.g., feeling the palms of your hands getting wet).
48. Having extra and unnecessary eye movements while speaking (e.g., blinking your eyes or shutting your eyes tightly).
49. Breathing forcefully while struggling to speak.
52. Straining the muscles of your chest or abdomen during speech attempts.
54. Holding your lips, tongue, or jaw in a rigid position before speaking or when getting "stuck" on a word.
57. Holding your breath before speaking.

## AVOIDANCE

1. Avoiding talking to people in authority (e.g., a teacher, employer, or clergyman).
5. Using gestures as a substitute for speaking (e.g., nodding your head instead of saying "yes" or smiling to acknowledge a greeting).
6. Avoiding asking for information (e.g., asking for directions or inquiring about a train schedule).
8. Choosing a job or hobby because little speaking would be required.

## APPENDIX F Continued...

10. Replying briefly using the fewest words possible.
13. Acting in a manner intended to keep you out of a conversation or discussion (e.g., being a good listener, pretending not to hear what was said, acting bored, or pretending to be in deep thought).
14. Avoiding making a purchase (e.g., going into a store or buying stamps in the post office).
25. Avoiding making new acquaintances (e.g., not visiting with friends, not dating, or joining social, civil, or church groups).
27. Avoiding introducing yourself, giving your name, or making introductions.
29. Giving excuses to avoid talking (e.g., pretending to be tired or pretending lack of interest in a topic).
34. Substituting a different word or phrase for the one you had intended to say.
36. Avoiding speaking before an audience.
39. Rearranging what you had planned to say to avoid a "hard" sound or word.
41. Avoiding the use of the telephone.
43. Omitting a word, part of a word, or a phrase which you had planned to say (e.g., words with certain sounds or letters).
50. Avoiding talking to others of your own age group (your own or the opposite sex).

## APPENDIX F Continued...

51. Giving up the speech attempt completely after getting "stuck" or if stuttering is anticipated.
55. Avoiding talking to one or both of your parents.
56. Having another person speak for you in a difficult situation (e.g., having someone make a telephone call for you or order for you in a restaurant).
60. Using your stuttering as the reason to avoid a speaking activity.

## EXPECTANCY

2. Feeling that interruptions in your speech (e.g., pauses, hesitations, or repetitions) will lead to stuttering.
3. Making the pitch of your voice higher or lower when you expect to get "stuck" on words.
7. Whispering words to yourself before saying them or practicing what you are planning to say long before you speak.
9. Adding an extra and unnecessary sound, word, or phrase to your speech (e.g., "uh," "well," or "let me see") to help yourself get started.
16. Making your voice louder or softer when stuttering is expected.
18. Helping yourself to get started talking by laughing, coughing, clearing your throat, gesturing, or some other body activity or movement.
20. Paying particular attention to what you are going to

## APPENDIX F Continued...

- say (e.g., the length of a word, or the position of a word in a sentence).
23. Repeating a word or phrase preceding the work on which stuttering is expected.
  24. Speaking so that no word or sound stands out (e.g., speaking in a singsong voice or in a monotone).
  28. Expecting that certain sounds, letters, or words are going to be particularly "hard" to say (e.g., words beginning with the letter "s").
  32. Feeling that your fluent periods are unusual, that they cannot last, and that sooner or later you will stutter.
  33. Concentrating on relaxing or not being tense before speaking.
  35. Prolonging or emphasizing the sound preceding the one on which stuttering is expected.
  38. Coordinating or timing your speech with a rhythmic movement (e.g., tapping your foot or swinging your arm).
  40. "Putting on an act" when speaking (e.g., adopting an attitude of confidence or pretending to be angry).
  45. Adopting a foreign accent, assuming a regional dialect, or imitating another person's speech.
  47. Postponing speaking for a short time until certain you can be fluent (e.g., pausing before "hard" words).
  53. Wondering whether you will stutter or how you will speak if you do stutter.

## APPENDIX F Continued...

58. Saying words slowly or rapidly preceding the word on which stuttering is expected.
59. Concentrating on how you are going to speak (e.g., thinking about where to put your tongue or how to breathe).

APPENDIX G  
GROUND RULES

What to look for in the video-tapes of stutterers. A stutter is any disruption in the fluency of a word. This is any involuntary, audible, or silent repetitions or prolongations in uttering speech. Some of these characteristics could involve some accessory features like jerking the head, snapping the fingers, winking, breathing extra hard, etc.

1. Excessive amounts of initial sounds will be termed a stutter. For example, "s-s-s-s-stutter", "m-m-m-money", "t-t-t-turn", etc. is a stutter.
2. Unnaturally long periods of silence will be termed a stutter. For example, "I will .....go to the park for lunch", "Turn.....of the light, please".
3. Any facial or head mannerisms to help the person get the word out will be termed a stutter. For example, jerking the head, licking the lips, etc.
4. If any words are interjected where most people do not say those words, then this is a stutter. For example, "I like ,uh, this", "I cannot, uh, uh, do the job", "I would like to eh, work for you", "I, you know, talked to, you know, Dr. Richards, about the, you know, problem" , then this is counted as a stutter.
5. If the person looks like he is having trouble or pressure getting the word out, count this as a stutter. This could be a build up of breath behind the lips, bubble sounds, etc.
6. If the person starts on a thought and changes his mind midway, this is also counted as a stutter. For example, "The change of life comes at about...I think the best time I had was when I was at college, with all my friends".
7. If there is a repetition of one word more than once then this is counted as one stutter. If the person repeats any sound more than once this is also counted as a stutter. For example, "l-l-l b-b-b-began to s-s-s-stutter when I was ab-b-b-bout four years old", "My first situation where I stuttered was when I was at the b-b-b-butcher sh-sh-shop and I could only say the word well,well,well, instead of the kind of meat I wanted, and the butcher said if you're not well then go home ", The latter stutter has three stutterings, the word "butcher", "shop" and "well". The former sentence has four stutterings, the words "l", "began", "stutter", and "about".

The stuttered word could be on the initial sound of the word or on the accented syllable of the word. For example, the word "about" in the previous sentence is stuttered on the "b" sound instead of the "a" sound. Other examples include re-ll'-ant, de-tox'i-cate, gym-na'-si-um, etc. The stutterer could stutter on "rell-ll-liant" etc. Any of the above combinations together (numbers 1-7) will be termed a stutter. Count these as a single stutter and not two or three if the stuttering is on the single word. For example, "I like, (head jerk), eh, eh, um, (head jerk) ch-ch-chocolate.



## APPENDIX H

## CALCULATION SHEET OF PERCENTAGES OF DYSFLUENCIES

PRE-TREATMENT MEASURES

	READING I	READING II
NUMBER OF WORDS READ:	_____	_____
NUMBER OF DYSFLUENT WORDS:	_____	_____
PERCENTAGE OF DYSFLUENT WORDS:	_____	_____

## INTERVIEW

NUMBER OF WORDS SPOKEN:	_____
NUMBER OF DYSFLUENT WORDS:	_____
PERCENTAGE OF DYSFLUENT WORDS:	_____

P.S.I. SCORES: S \_\_\_\_\_; A \_\_\_\_\_; E \_\_\_\_\_; TOTAL \_\_\_\_\_.

POST-TREATMENT MEASURES

	READING I	READING II
NUMBER OF WORDS READ:	_____	_____
NUMBER OF DYSFLUENT WORDS:	_____	_____
PERCENTAGE OF DYSFLUENT WORDS:	_____	_____

## INTERVIEW

NUMBER OF WORDS SPOKEN:	_____
NUMBER OF DYSFLUENT WORDS:	_____
PERCENTAGE OF DYSFLUENT WORDS:	_____

P.S.I. SCORES: S \_\_\_\_\_; A \_\_\_\_\_; E \_\_\_\_\_; TOTAL \_\_\_\_\_.

## APPENDIX I

## SUBJECTS' RESULTS OF DYSFLUENCIES IN CONVERSATION

SUBJECTS	GROUP A	
	PRE	POST
1.	19	6
2.	24	4
3.	20	2
4.	58	3
5.	69	10
6.	12	5
7.	16	7
8.	18	4
9.	29	11
MEANS	29.44	5.78

SUBJECTS	GROUP B	
	PRE	POST
A.	24	1
B.	20	1
C.	25	11
D.	30	15
E.	13	1
F.	38	3
G.	14	0
H.	10	4
I.	25	8
J.	13	12
K.	15	7
MEANS	20.64	5.73

## APPENDIX J

## SUBJECTS' RESULTS OF DYSFLUENCIES IN READING

SUBJECTS	GROUP A	
	PRE	POST
1.	2	0
2.	25	0
3.	4	1
4.	77	1
5.	70	5
6.	2	1
7.	2	1
8.	1	0
9.	31	1
MEANS	23.78	1.11

GROUP B SUBJECTS	PRE	POST
	A.	12
B.	10	0
C.	0	3
D.	2	2
E.	19	1
F.	59	0
G.	6	0
H.	14	1
I.	2	2
J.	5	0
K.	12	1
MEANS	12.82	0.91

## APPENDIX K

## SUBJECTS' RESULTS IN PERCEPTIONS OF STUTTERING INVENTORY

GROUP A SUBJECTS	PRE	POST
1.	28	2
2.	42	31
3.	20	1
4.	36	2
5.	49	6
6.	11	4
7.	33	9
8.	20	8
9.	11	3
MEANS	27.78	7.33

GROUP B SUBJECTS	PRE	POST
A.	28	3
B.	19	5
C.	42	3
D.	32	12
E.	37	0
F.	34	5
G.	29	0
H.	35	8
I.	12	9
J.	24	5
K.	11	3
MEANS	27.55	4.81

## APPENDIX L

SUBJECTS' RESULTS IN STRUGGLE, AVOIDANCE, AND EXPECTANCY  
IN THE PERCEPTIONS OF STUTTERING INVENTORY

GROUP A PRE-TREATMENT				GROUP B PRE-TREATMENT			
SUBJECTS	STRUGGLE	AVOIDANCE	EXPECTANCY	SUBJECTS	STRUGGLE	AVOIDANCE	EXPECTANCY
1.	9	7	12	A.	14	4	10
2.	17	14	11	B.	9	6	4
3.	8	10	2	C.	10	15	9
4.	15	14	7	D.	15	5	12
5.	18	17	14	E.	11	17	9
6.	5	1	5	F.	13	15	6
7.	14	8	11	G.	12	9	8
8.	3	6	11	H.	12	12	11
9.	5	0	6	I.	2	8	2
MEANS	10.44	8.56	8.78	J.	10	3	11
	POST-TREATMENT			K.	5	4	2
1.	0	0	2	MEANS	11.0	8.91	7.64
2.	6	14	11		POST-TREATMENT		
3.	0	0	1	A.	1	0	2
4.	0	0	2	B.	0	3	2
5.	0	1	5	C.	0	0	3
6.	5	1	5	D.	3	2	7
7.	3	1	5	E.	0	0	0
8.	1	3	4	F.	0	0	5
9.	0	0	3	G.	0	0	0
MEANS	1.11	2.11	4.11	H.	2	1	5
				I.	1	2	6
				J.	2	0	3
				K.	0	0	3
				MEANS	0.82	0.73	3.27