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A COMPARISON OF
ADULT INTENSIVE STUTTERING PROGRAMS

By

Patti L. Solomon

B.S., University of Wisconsin, 1977

Presented in partial fulfillment of the requirements for
the degree of
Master of Communication Sciences and Disorders

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1980

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CHAPTER I
INTRODUCTION

Successful treatment of stuttering has challenged the speech/language pathologist for many decades. Numerous clinical procedures have been developed over the years to obtain fluent speech. Within the past decade, intensive, short term programs, involving hours of therapy per day over approximately one to three months, have gained popularity as a procedure for reducing stuttering in adults. As Boberg, et al (1979) points out, these intensive therapy programs have been highly successful in establishing normal fluency and transferring that fluency to extra-clinical situations. The programs continue to be unsuccessful in obtaining maintenance of fluency after clinical treatment has been terminated. This paper will therefore attempt to:

- 1) Discuss selected therapeutic procedures currently utilized in intensive stuttering programs,
- 2) Describe the organization of two intensive stuttering programs, Ingham and Andrews' "Token Economy Adult Therapy Program" and Hasbrouck's "Intensive Stuttering Program for Adults", and
- 3) Suggest refinements for improving future intensive programs based upon the author's research and involvement in two intensive programs.

CHAPTER II

BEHAVIORIAL MANAGEMENT PROCEDURES

Stuttering therapy procedures in the past have been based on belief in one of two opposing theoretical foundations: psychotherapy and behavior therapy (Ingham and Andrews, 1973b; Perkins, 1973a). Traditional psychotherapeutic approaches involve reduction of stuttering by changing one's attitude toward himself and his speech through counseling. Behavioral approaches stress systematic modification of specific stuttering behaviors (Ingham and Andrews, 1973b).

Within the past two decades, interest in behavioral therapy has increased dramatically and presently dominates the stuttering literature (Ingham and Andrews, 1973b; Perkins, 1973a; Ryan and Van Kirk, 1974; Costello, 1975; Martin, St. Louis, Haroldson, and Hasbrouck, 1975; Ingham and Lewis, 1978). Ingham and Lewis (1973b, p.4) believe the shift from psychotherapeutic procedures is due to "dissatisfaction with the 'mental hygiene' model, absence of concern for the systematic evaluation of outcome and perhaps a fear of stuttering therapy by speech clinicians". Adams, Runyan, and Mallard (1974) also point out that improvements in sophisticated instruments have demonstrated physiological differences between stutterers and non-stutterers which were unsubstantiated fifteen years ago. This physiological evidence, to be described later, has

convinced the author that behavioral management procedures are important components of a successful intensive stuttering program.

The following paragraphs describe some behavioral procedures which have been used to establish normal fluency and transfer that fluency to non-clinical situations. Included will be a brief description of rhythmic stimulation, prolonged speech, shadowing and masking, operant conditioning, reciprocal inhibition and biofeedback.

Rhythmic stimulation is a treatment procedure which has become fairly popular. The Metronome-Conditioned Speech Retraining program, developed by Brady in 1971, begins with the client speaking in the clinic to the accompaniment of a desk metronome. The beat per minute rate is increased, contingent on a reduced level of disfluency, to a target rate. The client is instructed to vary the number of syllables between each beat in order to improve speech quality, and to practice speaking with others to aid transfer of fluency. A miniature earpiece metronome (Pacemaster) is then worn while passing through a hierarchy of speaking situations after which it is either systematically withdrawn or used indefinitely. Conflicting data has been reported concerning the maintenance and naturalness of the newly developed speech pattern (Ingham and Andrews, 1973b; Ingham and Lewis, 1978).

Prolonged speech through use of delayed auditory feedback (DAF) was developed by Goldiamond in 1965. The procedure initially modifies oral reading and stuttering rates with performance-contingent changes in DAF. Prolonged speech is established at approximately 25 words per minute with 250 msec DAF, which is removed for 10 seconds after each patient-identified moment of stuttering. After a criterion of fluency is achieved, the delay level is reduced and reading rate is increased in programmed steps. Self-control procedures are added to aid transfer of fluent speech patterns to non-clinical situations. In some cases, a portable earpiece DAF has been used to further aid carry-over. Many researchers, including Webster, Curlee and Perkins, Ryan and Van Kirk, and Ingham and Andrews, have modified Goldiamond's method for use in their stuttering treatments. It probably has become one of the most widespread stuttering therapy techniques (Ingham and Andrews, 1973b; Ingham and Lewis, 1978).

Shadowing and masking procedures have been developed based on the knowledge that stuttering is usually reduced when the client's voice signal is partially or completely masked. The procedure involves wearing a masking device continuously, either in the form of a miniature earpiece masking unit, or a headset-sized voice-activated masking device such as the "Edinburgh Masker". The former has been

found to be ineffective because the masking effect appears to "wear-off" for some stutterers or produces increased vocal intensities, while the latter is cumbersome and unattractive to wear (Ingham and Andrews, 1973b; Ingham and Lewis, 1978).

Shadowing requires the stutterer to orally read in company with another oral reader and follow, or shadow, the words read by the latter. It is assumed that improved fluency during oral reading will readily transfer to spontaneous, conversational speech. Further research involving more systematic programming is needed before these assumptions can be proven true or false (Ingham and Andrews, 1973b; Ingham and Lewis, 1978).

Operant conditioning involves the arrangement of consequences or contingencies concurrent with emission of a stuttering behavior. Several research designs have been developed using operant techniques, including time-outs contingent upon stuttering (Costello, 1975) and electric shock which was either removed as a consequence of stuttering (escape), delivered contingent on stuttering (punishment) or delivered when subjects were asked to choose either condition (Martin, et al, 1975). Neither study has proved conclusively that stuttering is an operant behavior in adults. If stuttering is to be viewed as an operant behavior, then modification of stuttering may require continuous monitoring of all speech behavior in all environ-

ments (Ingham and Lewis, 1978). This would require extremely complex planning which has not yet been achieved in any intensive stuttering program.

Reciprocal inhibition procedures are based upon the often postulated relationship between anxiety and stuttering. Anxiety is reduced by deconditioning stimuli which are associated with increased stuttering or feelings of tension. Wolpe's relaxation procedures and Brutten and Shoemaker's two-factor treatment approach are both based on this relationship. Ingham and Andrews (1971, p. 299) report an inability to

"establish a clear and unambiguous relationship between anxiety reduction and successful reduction in the frequency of stuttering. (The authors) were unsatisfied that the therapies in which the intended treatment agent is anxiety reduction may actually produce their effects by this means. (The authors) report a therapy programme in which stuttering was markedly reduced but experienced anxiety remained high. Stuttering was reduced by auditory feedback modification techniques which are independent of anxiety reduction".

Anxiety reduction therapies do not appear to be universally successful methods for reducing stuttering.

Biofeedback, however, does appear to be a promising procedure for increasing fluent speech. The patient learns to exercise control over a behavior by feedback arising from that behavior. The application of this principle to stuttering therapy involves belief in the position that excessive muscle tension, particularly in the jaws, mouth, and areas related to speech production, is either associated with, or produces stuttering. Although this position

is related to claims made about the role of anxiety in stuttering, research has supplied data to show that electromyographic (EMG) recordings from the masseter muscle area during stuttering differ from similar recordings made during the speech of non-stutterers (Ingham and Lewis, 1978). Both Guitar (1975) and Lanyon, et al, (1976) have provided evidence to indicate that stuttering may be controlled by feedback of EMG activity from a wide variety of areas, including the face, neck, and laryngeal muscle areas.

The three following programs will be presented in greater detail, due to their significance in the development of Ingham and Andrews' "Token Economy Adult Therapy Program" and Hasbrouck's "Intensive Stuttering Program for Adults".

Bruce Ryan: Programmed Therapy

Ryan has developed a number of operant programs over the years, which he defines as a step-by-step procedures which include prescribed reinforcement schedules and criterion levels (Ryan, 1974; Ryan and Van Kirk, 1974). Establishment, transfer, and maintenance phases are established using delayed auditory feedback to produce a slow, prolonged, fluent speech pattern which is then shaped toward normal fluency. Ryan defines establishment as obtaining fluent conversational speech in the presence of the clinician in the clinical treatment room. Transfer procedures promote the use of the speech fluency in a

variety of settings. Maintenance provides for the continued use of the fluent speech over long time periods. Maintenance is accomplished by systematic clinic rechecks which are gradually eliminated if the client continues to be fluent.

An outline of Ryan's fluency training program and the steps involved in the DAF establishment, transfer and maintenance phases are included in Appendix A (Ryan, 1974). Initially, a standard interview (SI), developed by Ryan, is administered and the client must demonstrate a rate of at least three stuttered words per minute (SW/M) to be admitted to the program. Criterion tests are also given before the establishment program (Criterion Test #1), after the establishment program (Criterion Test #2), and after the transfer program (Criterion Test #3). The client must demonstrate less than .5 SW/M during a five-minute reading, monologue, and conversational period, before he can go onto the next phase of the program. The establishment phase consists of 27 steps to teach the client to read, engage in monologue, and converse in a slow, prolonged, fluent, pattern with the aid of delayed auditory feedback apparatus. Varying amounts of practice at home are assigned. The transfer phase consists of nine different types of speaking situations with a criterion of five minutes of fluent conversation at each step. Home practice is con-

tinued throughout the phase and clients are encouraged to increase their rate of speech provided they continue to be fluent. The maintenance program consists of three-minute samples of reading, monologue, and conversation in the clinic training room with four steps distributed over a 22-month period. Extra practice is provided for clients reporting difficulty in a particular situation.

The author sees a number of positive and negative aspects in Ryan's program. On the positive side it seems that: 1) Ryan has developed a systematic, organized, accountable program for developing normal fluency, 2) Ryan has clearly defined all terminology and criterion levels for progression through the program, 3) Ryan has developed specific evaluation tools for admittance into the program, and 4) the program can be used with a variety of therapy procedures, depending on the needs of the client.

On the negative side it seems that: 1) Criterion levels for normal fluency are extremely lenient. The author has worked with clients in an intensive stuttering program who could easily pass Criterion Test #3 but remained disfluent in a number of situations, 2) More intensive therapy is needed during the establishment phase to develop fluent speech. In Rayn's program, clients attend two one-hour or half-hour sessions a week. The author has worked with clients in an intensive program who were rated for five

minutes each hour, eight hours a day, and then were instructed to use the newly developed speech pattern each time they spoke. Many of these clients still had difficulty replacing their old speech patterns with the new fluent pattern, although much more therapy time was available as compared to Ryan's program, 3) A more natural sounding procedure is needed during the transfer phase of the program. Ryan instructs his clients, during this phase, to gradually reduce the slow, prolonged speech. The author has worked with clients who have been instructed to use a different procedure involving air flow between conversational pauses. The result is normal rhythm and prosody and slightly slower conversational speech. Some clients still complain that this behavior is not natural sounding and feel embarrassed when speaking with other people. Ryan's procedure appears to produce an even more unnatural sounding speech.

William Perkins: Rate Control

Perkins has developed a treatment to shape normal speech flow in adults and adolescents which combines controlled speech rate and conversation within Goldiamond's DAF schedule with breathstream management, prosody development, and self-confidence building (Perkins, 1973a; 1973b). Ingham and Lewis (1978) point out that this therapy is based on theories which regard stuttering as arising from

disco-ordinated phonation, articulation and respiration. Emphasis is placed on these features in order to improve co-ordination of the speech process. Less emphasis is placed on operant methodology and procedures which transfer and maintain the resulting fluency.

The Perkins program consists of a series of nine goals for establishing normally fluent speech and three goals for transferring and maintaining normal fluency in everyday life (Perkins, 1973b). Goal one involves the establishment of fluent speech using prolonged speech while reading, combined with DAF procedures. Goal two involves establishing normal breath flow through use of soft, vocal attack to initiate phrases with maintenance of continuous air flow from the beginning to the end of the phrase. Goal three involves establishing normal prosody by using normal inflections and syllable durations proportional to normal stress patterns, even at the slowest rates. During goal four, responsibility for all subsequent steps is shifted to the stutterer. The patient is allowed to determine whether he has met the criteria for success at each goal and is ready to progress to the next goal. Goal five establishes slow-normal speech in conversation using DAF. Goal six incorporates psychotherapeutic discussions into therapy. Perkins suggests use of thematic content modifi-

cation procedures developed by Shames, Egolf and Rhodes to provide a therapeutic basis for conversation and encourage increased self-confidence. Goal seven involves establishing normal speech rates using decreasing amounts of DAF. Goal eight establishes normal speech without use of the DAF. Goal nine establishes a clear voice by reducing breathiness through use of voice therapy procedures.

Three procedures are used to transfer and generalize normal speech to everyday life (Perkins, 1973b). The first goal prepares the stutterer to recover normal speech when it is disrupted by practicing previous shaping procedures vocally or subvocally. The second goal extends the stimulus control of normal speech to daily life. A series of speaking situations are hierarchically arranged so the stutterer is able to maintain the feeling that speaking is easy across situations. The final goal facilitates living pattern changes to foster permanence of normal speech. Counseling procedures are used which involve exploring activities the stutterer would engage in if he did not stutter and exploring family and friend's reactions to the stutterer's new speech pattern.

Perkins, Rudas, Johnson, Michael, and Curlee (1974) also discusses the effectiveness of the program. They state that intensive treatment involving three daily hours of therapy is significantly more efficient than treatment in-

volving three weekly hours of therapy, while establishing normal fluency. They discovered that combining rate control procedures with breathstream, prosody, and phrasing procedures significantly increases normal fluency at the end of treatment, as compared to exclusive use of rate control procedures. Perkins, et al, (1974) also stated that generalizing speech improvements and establishing them permanently in daily life remains the most troublesome aspect of the program. They are exploring three approaches to this problem: 1) Use of counseling and psychotherapy for clients with personal adjustment difficulties, 2) Use of positive reinforcement contingent upon normal speech such as a token economy, and 3) What they find most promising, use of a pocket-sized electronic unit which can provide feedback on breath management and reduce the client's need to constantly monitor speech skills.

Again, there are both strengths and weaknesses in Perkins' program. Some of the strengths are: 1) Although no objective data exists, the author feels Perkins has developed a program based on theories which the author also believes are accurate, 2) Perkins has developed a multifaceted program involving the use of rate control, breathstream management, and counseling. He is attempting to deal with each of the three important problem areas of fluency, co-ordination and personal adjustment, 3) Perkins

has found intensive therapy to be significantly more efficient during the establishment of fluent speech. On the negative side it seems that: 1) The Perkins program is not a systematically organized program for obtaining normal fluency. Criteria to determine successful completion of goals are not sufficiently specified. The program lacks both accountability and ease of replication by other speech/language clinicians, 2) More transfer and generalization procedures are needed. As Perkins, et al, (1974) points out, this is the most troublesome aspect of the program. The author feels, through involvement in two intensive therapy programs, that transfer and generalization are the most important aspects of such a program. It seems obvious that fluent speech is not beneficial if it cannot be maintained outside the therapy room.

Martin Schwartz: Air Flow Procedures

Schwartz (1974) states that the core of a stuttering block is essentially an inappropriate, vigorous contraction of the posterior cricoarytenoid (PCA) in response to the subglottic air pressures required for speech. He believes this inappropriate response occurs as a result of breakdown under stress, which, in stutterers, substantially reduces the effectiveness of the normal supramedullary controls which inhibit contraction of the PCA. The person struggles and, as a result, laryngeal constriction occurs,

air is unable to flow through the vocal cords, and phonation cannot be initiated.

Adams (1975) has offered a physiologic and aerodynamic analysis of stuttering and fluency. He proposes that fluency is dependent on smooth co-ordination of activities of the respiratory, phonatory, and articulatory systems. Perkins, Rudas, Johnson, and Bell (1976) believe that disco-ordination of these elements results in difficulty achieving transglottic pressures that promote the precisely timed glottal air flow and vocalization required to facilitate fluent speech. Perkins concludes that disco-ordination of the elements of speech does not cause the stuttering, but rather is the stuttering. He has experimentally manipulated phonation only, and has obtained evidence which strongly supports the hypothesis that stuttering consistently results from the complexity of phonatory co-ordination with articulation and respiration, rather than from articulatory or respiratory co-ordinations. Further evidence from Hutchinson and Ringel (1973) suggest that aerodynamic measures appear sensitive to changes in vocal tract events, and several distinct aerodynamic patterns are associated with stuttered speech. Clearly, inappropriate laryngeal/phonatory functioning appears crucial in creating stuttering behaviors.

Azrin and Numm (1974) have developed a procedure which

includes a regulated breathing approach that appears to be very compatible with Schwartz's (1974) data. The client is instructed to take a deep breath by exhaling and then slowly inhaling, consciously relaxing the thoracic and laryngeal muscles, formulate mentally the words to be spoken, speak immediately after taking a deep breath, emphasize the initial part of a statement and speak for a short duration.

Hasbrouck (1979) has modified Azrin and Nunn's (1974) regulated breathing approach and developed an air flow procedure for use in his "Intensive Stuttering Program for Adults". The systematic approach ultimately involves inhalation of air between conversational pauses, and gradual, nearly inaudible exhalation of air during conversational speech. The following paragraphs further describe the physiologic and aerodynamic rationale for this air flow procedure.

Schwartz (1974) offers two explanations of how a person may respond to the inappropriate vigorous abductive response of the larynx when supramedullary control is lost during stressful situations. First, a person might forcefully contract any or all of the musculature capable of overcoming the powerful abductory response of the PCA, resulting in complete blockage of phonation. Secondly, a person might instead display hypertense postures of the

lips, tongue, or jaw as a means of releasing the abducted larynx. Other areas of muscular compensation, such as abdominal muscles, hands, or arms may also be tensed. The observable responses seen in stuttering therefore may result from physiological occurrences.

The author feels the data collected by Adams (1975), Adams, et al, (1975), and Hutchinson and Ringel (1973) lend important evidence to support an aerodynamic and physiologic explanation of stuttering. Air flow procedures developed by Hasbrouck (1979) have proven to be incompatible with discoordination in the phonatory process and consistently have established fluent speech for every stutterer who completed the Hasbrouck intensive stuttering program.

CHAPTER III

INGHAM AND ANDREWS'

"TOKEN ECONOMY ADULT THERAPY PROGRAM"

The token economy adult intensive stuttering program was originally developed by R. Ingham and G. Andrews in 1968 based upon a token reinforcement system developed by Allon and Azrin in 1965 (Plomley, Ingham, and Andrews, 1969) and has been continually revised throughout the years as new data is obtained. The program combines operant methodology in the form of a token economy for positive and negative reinforcement, with prolonged speech to produce normal fluency. Emphasis is placed on procedures which transfer and maintain fluency (Ingham and Lewis, 1978).

The author feels there are many important aspects to this program: 1) It is innovative in the treatment of stuttering through development of short term, intensive programming, 2) The procedures for obtaining and maintaining fluency are well defined and organized, while criterion levels for progression within the program are clearly stated, 3) Behavioral methodology is adhered to strictly, allowing conclusions to be drawn about the program based upon the data collected. Because of the three above reasons, the "Token Economy Adult Therapy Program" has formed the basis for the organization of Hasbrouck's "Intensive

Stuttering Program for Adults". The following pages describe, in greater detail, the organization of the Ingham and Andrews program, the establishment, transfer and maintenance phases in the program, and a discussion of the program's effectiveness.

Organization and Rationale of the Program:

The treatment program is divided into three parts. In the first part the establishment of fluent speech takes place wholly within the laboratory. The second part allows the person to demonstrate that his fluent speech can be transferred to a number of outside speaking situations. The third part, extending after the period of hospitalization, allows the person to demonstrate that the improvement is being maintained. People proceed through the program at their own pace depending on their ability, although they are asked to leave the program if they do not progress after a specified amount of time even though the criteria for dropping from the regime is not specified (Ingham and Andrews, 1971. 1973a; 1973c).

A maximum of six patients are allowed in the program at any one time. Patients live in the hospital on a full time basis for the duration of the first two phases of the program. The day begins at 7 A.M. and ten rating sessions and/or assignment sessions are held between 7 A.M. and 8 P.M. (See Appendix B, Table 1). A rating session is a 45

minute group conversation in which each person must aim to speak at least a set minimum number of syllables without stuttering and with a prescribed rate and type of speech depending on his stage in the program. The speech/language clinician records the number of syllables said, number of stutters that occur, and elapsed time, to determine the percent syllables stuttered (%SS) and the rate of speech in syllables per minute (S.P.M.). At the conclusion of each rating session, patients calculate and record their scores in a daily log book. During the establishment and transfer phases, a system of token rewards exists and tokens are paid in accord with performance (See Appendix B, Table 2 for a schedule of rewards and penalties). Patients are expected to be fluent 100% of the time (Ingham and Andrews, 1971; 1973a; 1973c).

Several research projects conducted by Ingham and others have convinced Ingham and Andrews that the combination of a token economy with prolonged speech produces the most effective results. Ingham, Andrews, and Winkler (1972) have explored the use of combinations of treatment procedures including syllable-timed speech, with 58 adult stutterers. They have concluded that the combination of syllable-timed speech and the token system was the most effective combination of treatments for reducing stuttering and increasing rate of speech within the therapy period allowed.

Another study (Ingham, Martin and Kuhl, 1974) also has produced evidence that rate control alone does not significantly reduce stuttering. Ingham and Andrews (1973a) also conducted several studies involving manipulation of token reinforcers and prolonged speech with and without DAF. The authors have concluded: 1) The penalty schedule combined with the reward schedule in the token system increased the rate of reductions in frequency of stuttering and improved rate of speech, when compared with the reward schedule alone, and 2) The group treated by prolonged speech using DAF completed the phases of the program more rapidly than the group treated with prolonged speech only.

Establishment of Fluent Speech:

When beginning the program, the patient's habitual rate of speaking is assessed and the minimum number of syllables required for the next rating session is calculated. On rating session five of the first day, the patient is introduced to prolonged speech (See Appendix B, Table 3, for the sequence of the stages). The patient is required to speak at a very slow rate prolonging each syllable and ensuring that hard consonants and plosives are said in a very smooth and easy fashion. For the first rating sessions, the target rate is 40 S.P.M. with a minimum number of 300 syllables. If a person completes this without stuttering, he will receive ten tokens and proceed to the next stage known

as 40/2. Promotion from stage 40 and all other stages occurs after six consecutive perfect sessions. Patients having difficulty may be assisted by DAF the first three sessions of each stage. A list of the target rates of speech, the minimum number of syllables needed and the quality of speech required is listed in Appendix B, Table 4. If the quality of speech is judged to be incorrect, the speech is not rated. The results of each session determine which stage is to be attempted in the next rating session. The criteria for progression are in Appendix B, Table 4. The complete progression chart for establishment of fluency is listed in Appendix B, Table 5 (Ingham and Andrews, 1971; 1973a; 1973c).

Counting, singing and reciting are not rated. Adequate eye contact and elimination of word avoidance is stressed. Log books must be kept up to date by the patient using the code provided in Appendix B, Table 7. Mistakes in progression in the log books result in being returned to the stage at which the error was made (Ingham and Andrews, 1971; 1973a; 1973c).

Between rating sessions patients are instructed to use prolonged speech, similar to that used in the last rating session, at all times. Stuttering and lapses from prolonged speech incur a penalty of two tokens per stutter. Periods of silence exceeding five seconds may also be penalized by a penalty of two tokens (Ingham and Andrews, 1971;

1973a; 1973c).

Transfer of Fluent Speech:

Once six consecutive successful sessions at 190 syllables per minute have been completed, the patient progresses to the transfer phase of the program. Ingham and Andrews state patients not reaching this by day 14 may be asked to leave the course. The first stage of this program is a number of ward interviews and the progress schedule is laid out in Appendix B, Table 6. WF and WM refer to female and male ward patients (Ingham and Andrews, 1973a; 1973c).

A list of assignments, as described in Appendix B, Table 6, are the next requirements. The patient lists the tasks in order of difficulty and begins with the easiest. All conversations are tape recorded. The telephone radio task requires that after completing four 1,300 syllable telephone assignments, a 500 syllable call be made to an open-line talkback radio show, the recording being made from the radio. The speech assignment requires that one stand and speak in front of an audience of at least six strangers. The home assignment requires the patient to record two 1,300 syllable conversations at home with at least two other persons. The assignments must be completed within 14 days of their commencement of the patient may be asked to leave the program (Ingham and Andrews, 1973a; 1973c).

During the assignment phase, each patient is rated four

times per day for three minutes each. Any rating session/assignment may be repeated due to failure or desire to repeat the task at a penalty of two tokens per three minutes of speech (Ingham and Andrews, 1973a; 1973c).

Maintenance of Fluent Speech:

The third part of the program is designed to ensure that the improvement gained is maintained. On the first, third, and seventh weeks after the patient finishes the intensive program, he returns to the hospital for a rating session, a ward interview and a telephone call. If there is no stuttering throughout the session, the patient returns on the next due date. If stuttering is detected, the patient begins a short three-hour mini program designed to reestablish fluency and is asked to attend subsequent rating sessions of one, three and seven weeks from then. The treatment program ends after the patient has demonstrated fluency over a seven-week period. Three, six, nine, 12, and 24 months after treatment has ended, appointments are sent asking the patient to attend post-treatment assessments (Ingham and Andrews, 1973a; 1973c).

Discussion:

The "Token Economy Adult Therapy Program" has not been found to be totally successful. The main area of concern, as with Perkins' (1974) program, is with generalization to

everyday life. Although much emphasis is placed on the maintenance phase, Ingham and Packman (1977) have reported some discouraging data in this area. Contingency management and rate control procedures were combined in a treatment program for an adult stutterer. During laboratory sessions, a combination of both procedures resulted in maintained stutter-free speech within a target rate range over a six month period. Bidaily recordings of the subject's speech across all non-laboratory speaking situations preceding and throughout the treatment, revealed no correspondence between laboratory and non-laboratory speech behavior. Thus, although cessation of stuttering and speech rate control were maintained over a lengthy period time, there was no evidence to suggest they generalized beyond the treatment setting.

An additional study by Ingham (1975) yielded similar findings. Covert and overt recordings were made of the speech behavior of nine subjects following successful completion of the token economy adult therapy program. At the three month post therapy interval, significant differences in %SS was noted between the covert and overt recordings. At six months post treatment, differences between the conditions were not significant but the trend for subjects to speak more slowly when they became less fluent supported the author's hypothesis that less attention was

being paid to the subject's speech.

On a more positive side, Ingham (1979) has conducted two additional studies and found that maintenance may be regarded as an operant for some subjects required to supply recordings of themselves in various situations after completion of treatment. It may be possible to increase the probability that fluency and rate will be maintained if consequences are arranged to occur on the appearance of maintained fluency and rate. By requiring some subjects to pay closer attention to their fluency and rate while in stressful situations, after therapy has been completed, maintenance of newly obtained behaviors can be generalized across situations.

The author sees a number of strengths and shares a number of concerns with Ingham and Andrews concerning the success of the "Token Economy Adult Therapy Program". On the positive side: 1) Ingham and Andrews have shown that establishment and transfer of normal fluency can be obtained more rapidly and efficiently (six patients in less than 28 days) through use of a systematic, intensive and operantly based program. Far too many speech/language pathologists have invested a year or more in therapy with only one client to achieve even fewer results. 2) Ingham and Andrews have created a program which places success or failure on the patient rather than the speech/language patho-

logist. The program is designed with only slight changes between the steps of each stage to ensure success. Successful completion of the program is inevitable if the patient is willing to work hard to change his old speech behaviors. Patients unwilling to work are asked to leave the program within 14 days, preventing waste of their time or the speech/language pathologist's time. The patient is aware of this information before the program begins, thus avoiding any future misunderstanding.

The author feels that there are negative aspects of this procedure: 1) The use of a token economy is very complicated, requires a large staff and requires the cooperation of an entire hospital staff, making reduplication difficult in most other settings. Development of this complex system was based on evidence suggesting stutterers were reluctant to use syllable-timed speech and found it difficult to use at a fast speed. It was argued that a token system would be an effective way of increasing the stutterer's desire to use prolonged speech (Plomley, et al, 1969). The author feels use of a different procedure would have been easier than developing a token economy system. 2) Use of prolonged speech to achieve normal fluency may be both difficult to learn and may produce perceptually unacceptable speech. Ingham (1979) is currently concerned about the perceptual normality of stutterers who use prolonged speech

to obtain normal fluency; further there are procedures which are as rapid and efficient as prolonged speech in producing normal fluency and also result in perceptually more normal sounding speech. 3) Maintenance of fluency and rate continue to be a problem with this program, although emphasis has been placed on transfer and generalization. Nonbehavioral procedures such as counseling may be extremely beneficial in aiding the patient's adjustment to the new way of speaking.

CHAPTER IV
HASBROUCK'S

"INTENSIVE STUTTERING PROGRAM FOR ADULTS"

Two six-week intensive stuttering programs were conducted at Fitzsimmons Army Medical Center, Aurora, Colorado, on June 18, 1979 to July 27, 1979 and on October 1, 1979 to November 9, 1979. The first program was designed by Jon Hasbrouck, Ph.D. and Fran O'Brecht, M.A., and was based upon Schwartz's air flow procedures and the organizational procedures developed by Ingham and Andrews in their "Token Economy Adult Therapy Program". The program was conducted by Hasbrouck, O'Brecht and three student externs, including the author. The second program was redesigned by Hasbrouck, O'Brecht, and two student externs, Lucinda Wolf and the author, based upon difficulties with procedures encountered during the first program. This program was also conducted by the same four people. The following pages describe the organization of both programs, the procedures used to establish, transfer and maintain normal fluency in the second program, and a discussion of the effectiveness of the programs.

Organization and Rationale of the Treatment Program:

As with the token economy program, the treatment program is divided into three parts. The first part takes place

within the clinic and hospital setting. The second part allows the client to demonstrate that his fluent speech can be transferred to a work setting. The third part, extending after successful completion of the treatment program, allows the person to demonstrate that the improvement is being maintained. People proceed through the program at their own pace, depending on their ability, although as with the token economy program, they are asked to leave the program if they do not progress after a specified amount of time.

A maximum of four active duty/dependent military personnel are allowed in the program at any given time. Patients are not required to live in the hospital during any phase of the program but must be at Fitzsimmons from 8 A.M. to 4 P.M. each weekday. Counseling, rating, assignment and work sessions are conducted during these hours (See Appendix C, Table 1). One 30 minute counseling session is held each day during the first seven stages of the program. Two types of rating sessions are held during the first six stages. An air flow rating session is a five minute individual conversation, either live or tape recorded, in which the patient must aim to use air flow 100% of the time without stuttering, depending on his stage in the program. An identification rating session is a five minute individual taped conversation in which either the clinician or patient

identifies stuttering behaviors, depending on the stage in the program. During patient identification, agreement of stuttering behaviors between clinician and patient must be \pm three per minute to pass the rating session (See Appendix C, Table 2 for the data recording form used to determine a pass or fail during air flow and identification rating sessions). A progress record form (See Appendix C, Table 3) is used to record the stage and level of the patient, check whether the patient has passed or failed the air flow/fluency rating session or the identification rating session, mark which stage and level the patient will proceed or return to at the next rating, and initial and date the rating session.

The work of Schwartz (1974), Perkins, et al, (1976), Adams (1975), and Adams, et al, (1975) seems to have convinced the speech/language pathologists at Fitzsimmons AMC that a combination of air flow and identification procedures will produce rapid, lasting normally fluent speech. The rationale for using air flow is that a relaxed release of air through the vocal folds prior to the onset of phonation allows the folds to be set into vibration prior to approximation. The air is allowed to flow through the larynx, build-up of excessive subglottic pressure is prevented and the stutterer's perception of a need to overcome a blockage within the larynx is extinguished. The ration-

ale for use of identification is twofold. First, in order to properly utilize air flow procedures, the patient must be able to identify every air inspiration and every pause without air inspiration because those are the points at which air flow is used. Second, in order to modify and eliminate stuttering, the patient must know what stuttering is and when it occurs in his speech production. Some patients must also learn to identify anticipation of stuttering so they can use air flow in response to this anticipation stimulus (Hasbrouck, 1979).

Counseling procedures were introduced during the second intensive program after learning from the first program that some patients did not seem emotionally prepared for the changes in their lives due to the rapid onset of normal fluency. The goal of the counseling sessions is to help the patients adjust emotionally to their new speech behaviors.

Establishment of Fluent Speech:

The establishment phase of the program includes air flow (AF) stages one through six and identification (ID) stages one through four (See Appendix C, Table 4 for the sequence of the stages). The first day of the program involves orientation, learning to use air flow as a group and beginning identification training through use of demonstration tapes. A 30-minute tape recorded speech sample of each

patient is also obtained for future use in identification rating sessions. On the second day of the program, air flow and identification rating sessions begin. Three air flow ratings take place in the morning and three identification ratings take place in the afternoon. This schedule continues for the remainder of the establishment phase.

The first stage of air flow (AF-1) involves use with vowels (a vowel list for AF-1 and a single syllable word list for AF-2 are provided for the patients). If a person completes the rating session using 100% air flow and zero stuttering, he passes stage one, level one (AF-1/1) and proceeds to AF-1/2. Promotion from stage one occurs after four consecutive perfect sessions. A list of the number of consecutive levels which must be passed within each stage, the amount of time per rating session, the criteria for passing a session and a description of the stage is provided in Appendix C, Table 4. The results of each session determine which level is to be attempted in the next rating session. The criteria for progression are in Appendix C, Table 5. ID-4 must be completed before a patient may move into the transfer phase (AF-7 and AF-8). AF-1 through AF-4 consist of live conversation with the clinician, while AF-5 and AF-6 involve tape recordings. ID-4 involves identification of the patient's own stuttering behaviors recorded during the first day of the program. Any person not

progressing at least one level within a stage over a four day period is asked to leave the program.

Between rating sessions, patients are instructed to practice air flow and identification at the appropriate stage level. Once the patient has reached AF-3 (air flow on two to three words in conversation), all conversation must include 100% air flow and zero stuttering. Any patient not meeting this criteria will fail and drop back accordingly. Clinicians, fellow patients in the program and any other people aware of the program may fail the patient.

Group counseling sessions begin the second of the program and continue through AF-7. Some discussion topics include feelings about stuttering, feelings about being a stutterer, why people stutter, why air flow and identification procedures produce normal fluency, who is responsible for stuttering, what changes will occur in the patient's life because he is normally fluent, how other people are reacting to the patient's new behaviors and so on.

A number of changes were made in this phase of the program following evaluation of the first intensive program. Several air flow stages were eliminated after it was discovered patients did not need those extra increments of change to be successful at using air flow during conversation. The number of levels at AF-4 and AF-5 were also in-

creased to provide extra practice at the conversational level. The number of situational stages were reduced from six to two (AF-5 and AF-6) after it was learned that inclusion of the additional stages had little impact on increasing the patient's ability to use normally fluent speech consistently. The number of ID ratings were also increased after it was discovered that the patients needed extra sessions to learn to identify stuttering behaviors accurately.

Transfer of Fluent Speech:

After ten consecutive successful sessions of using air flow in conversation with people on the telephone, and five consecutive successful sessions of identification of the patient's own stuttering behaviors, the patient progresses to the transfer phase of the program. The transfer phase consists of two stages, AF-7 and AF-8. In AF-7, the patient is involved in a real life work situation for half a day, and is rated at the clinic the other half of the day. The patient tape records all speech during the work period, listens to the tape, and counts any "no flows" (no use of air flow) or stuttering on the tape. During the three subsequent rating sessions each clinician selects a random ten minute sample from the recording and rates the sample. Any failure adds one more day to the stage.

After four consecutive successful half-days at work, the patient moves on to AF-8. This stage involves working in a real life setting seven hours per day, while tape recording all speech, and having no contact with the clinic. At least 60 minutes of speech must be recorded throughout the day and rated by the patient during the eighth hour of the day. This tape is then placed in a repository in the main hospital to be delivered to the clinic the following day. Feedback about the tape is delivered from the clinic to the patient in the same manner. Any failure also adds one more day to this stage.

Once again, a number of changes were made in this phase of the program following evaluation of the first intensive program. In the first program, the transfer phase consisted of AF-5 and AF-6 plus four more situations. However, it was determined that a more intermediate step was needed between the eight daily rating sessions dealing with six artificial situations in the transfer phase and the real life, occasional 25-minute tape recording of the maintenance phase. The clinicians appeared to be becoming the major stimulus for fluent speech. The two work situations developed for the second program were felt to be good solutions to this dilemma. Clinician contact with the patients has been removed in two steps rather than one, the patients are placed in a much more realistic situation, and the

patients are still rated and therefore need to continually monitor their speech.

Maintenance of Fluent Speech:

The third part of the program is designed to ensure that the new speech behaviors are maintained. This phase consists of AF-9 through AF-14 (See Appendix C, Table 5). On the first, third, sixth, 12th, 24th, and 48th weeks after the patient finishes the intensive program, he mails a 25-minute conversational tape to the clinic which had already been rated by the patient. A random five minute sample is then rated by a clinician for 100% air flow, zero stuttering and 100% agreement with the patient on stuttering counts. Occasional random phone calls are also made to the patient with the same criteria. Failure at any level results in repetition of that level for consecutive weeks until that level is passed. After completion of AF-14, the maintenance phase ends.

Discussion:

The success of the "Intensive Stuttering Program for Adults", like other stuttering treatment programs, remains in question. Of the eight patients involved in the program, two patients successfully completed the establishment and transfer phases, three patients were asked to leave the program due to lack of progress and motivation, and three

patients increased their fluency but did not complete the transfer phase within the allotted six-week period. The two patients who successfully completed the first two phases of the program have not, as of December 14, 1979, provided the clinic with any maintenance tapes.

As with previously described programs, the author observes a number of strengths and weaknesses in the Hasbrouck program. The strengths include: 1) Utilization of establishment procedures (air flow and identification) which easily and rapidly produce perceptually natural sounding fluent speech, 2) Development of realistic transfer procedures which require consistent monitoring of newly acquired speech behaviors without a clinician stimulus, 3) establishment of an organized, systematic program with carefully graduated steps to ensure success for the motivated client, 4) Inclusion of counseling procedures to help the patient adapt more easily to rapidly obtained normal fluency, and 5) Creation of a program which places success or failure in the hands of the client rather than the speech/language clinician.

The author feels two weaknesses exist in the Hasbrouck program. The first weakness is seen during the establishment phase. Although all patients were able to learn air flow procedures and obtain fluent speech, many continued to be tense, therefore needing extreme concentration to use

air flow properly. Use of electromyographic feedback (EMG) may have helped these patients reduce the excessive tension and reduce the need to concentrate as heavily while using air flow procedures. The second weakness of the program is lack of maintenance procedures. Granted, the military population is very transitory and maintenance procedures such as follow-up reassessment visits, group counseling sessions or occasional refresher sessions would be unrealistic. Nevertheless, attempts must be made to contact patients during the maintenance phase and provide any additional help which may be necessary.

The most baffling concern of the author and her fellow colleagues throughout the two intensive programs, has been the lack of motivation on the part of six out of eight patients. It is hard to understand why the patients are not willing to work eight hours per day for six weeks or less to become normally fluent speakers (each patient is given leave from regular military duties and receives regular pay throughout the duration of their involvement in the program). The answer to this dilemma can not be found in the existing stuttering literature, but poses some interesting questions about the inflexibility of adult human nature.

CHAPTER V
CONCLUSION

In summary, this paper has attempted to accomplish a number of goals. First, it has described a number of stuttering treatment procedures which have been used in intensive stuttering programs, including rhythmic stimulation, prolonged speech, shadowing and masking, operant conditioning, reciprocal inhibition and biofeedback.

Secondly, the paper has discussed, in greater detail, three particular programs and procedures. They highlight a number of characteristics which the author feels are important components of any intensive stuttering program. Ryan's programmed therapy emphasizes the need for a systematic, organized, accountable program. Perkins' rate control program emphasizes the need for a multi-faceted program which deals not only with fluency difficulties. Schwartz's air flow procedures emphasize the need for a treatment based upon the physiological, and possibly neurological, difficulties which may cause or be associated with stuttering.

Next, the paper has presented a detailed account of one adult intensive stuttering program, Ingham and Andrew's "Token Economy Adult Therapy Program". The organization of the program, as well as the establishment, transfer and maintenance phases of the program, are described. The

author finds the overall organization of the program to be excellent, but questions the use of a token economy combined with prolonged speech, as a means for establishing normal fluency and transferring that fluency to extra-clinical situations.

Finally, the paper has presented a detailed account of an adult intensive stuttering program which the author helped develop and run. Once again, the organization and establishment, transfer and maintenance phases are explained. The author feels this program was well organized and has developed excellent establishment, transfer and maintenance procedures for the military population who serve as patients. However, the author feels that additional procedures during the establishment phase (such as use of EMG biofeedback) and maintenance phase (with closer contact with the patient) might well produce an even more effective program.

The main conclusion to be drawn from this paper is: Adult intensive stuttering programs involving behavioral principles have been successful in establishing normal fluency within a clinical setting and transferring that fluency into extra-clinical situations. These programs have not been successful in maintaining that fluency in the natural environment (Boberg, et al, 1979; Helps and Dalton, 1979). Prins (1970) has presented data to suggest that clients perceive maximum regression to occur within six

months of therapy termination. He suggests that intensive, residential programs may produce fluency too rapidly, leaving the stutterer uncertain about what he has done to accomplish the change. He feels fluency regression may not depend on the use of careful conditioning procedures, but on intrapsychic characteristics which give the stutterer a reason for returning to previous nonfluent speech behaviors. He (and the author) therefore feel that treatment programs should institute more activities at the outset which are directed toward problem-solving and self-acceptance, and self-confrontation.

Boberg, et al, (1979) and Hanna and Owen (1977) discuss a number of maintenance procedures which can be incorporated into any adult intensive stuttering program:

- 1) Teach the patient to self-monitor disfluencies.
- 2) Provide regular clinical contact following treatment.
- 3) Begin use of self-help groups consisting of patients who have completed the establishment and transfer phases of a program.
- 4) Emphasize the need for changes in attitudes to speech and self-concepts through use of assertiveness and group counseling.
- 5) Provide intensive one-day refresher programs to increase attention to normal fluency.
- 6) Require patients to deposit a sum of money as an incen-

tive to return for follow-up procedures.

Based upon the information presented in this paper and the experience gained through involvement in two intensive stuttering programs, the author suggests the following refinements for improving future adult intensive stuttering programs:

- 1) Use of the organizational, establishment, and transfer procedures described in the section on Hasbrouck's "Intensive Stuttering Program for Adults".
- 2) Additional use of EMG biofeedback during the establishment phases of the program to reduce excess tension to a level optimum for speech production, and increase the patient's awareness of tension levels so he may modify them.
- 3) Use of the maintenance procedures described in the section on Ingham and Andrews' "Token Economy Adult Therapy Program", plus items three through six described in the previous paragraph on maintenance suggestions.

Clearly, intensive stuttering programs have proved to be more efficient and more successful in reducing stuttering in adults than previously utilized procedures. At present, a number of different programs using a number of varying procedures have produced a wealth of new information in the area of stuttering treatment. The answers to totally successful stuttering treatment are not currently known, but

draw closer to being answered as each new piece of data is accumulated and analyzed.

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APPENDIX A
RYAN'S PROGRAMMED THERAPY

| Step | Stimulus | Response |
|-------|--|--|
| 1-3 | Identification of stuttered words. | Identify stuttered words. |
| 4 | Instructions to read slowly. Set DAF at 250. | Read slowly in prolonged manner with DAF earphones. |
| 5 | Instructions to read slowly. Set DAF at 200. | Read slowly in prolonged manner with DAF earphones. |
| 6 | Instructions to read slowly. Set DAF at 150. | Read slowly in prolonged manner with DAF earphones. |
| 7 | Instructions to read. Set DAF at 100. | Read slowly in slightly prolonged manner with DAF earphones. |
| 8 | Instructions to read. Set DAF at 50. | Read with DAF earphones. |
| 9 | Instructions to read. Set DAF at 0. | Read with DAF earphones. |
| 10 | Instructions to read. | Read. |
| 11-30 | Recycle with monologue and conversation. | Monologue or conversation. |

Referral

SI

Wait
3 months

3 SW/M

Criterion Test #1
Read
Monologue
Conversation

.5 SW/M

Establishment
Read
Monologue
Conversation
Traditional
DAF
Punishment
GILCU

Criterion Test #2
Read
Monologue
Conversation

.5 SW/M

Transfer

Criterion Test #3
Read
Monologue
Conversation

.5 SW/M

Maintenance

.5 SW/M

Dismiss

APPENDIX B
INGHAM AND ANDREWS '
"TOKEN ECONOMY ADULT THERAPY PROGRAM"

TABLE 1
TIMETABLE

| | |
|------------|-----------------------------|
| 7- 8 a.m. | Rating Session 1 |
| 8- 9 a.m. | Breakfast |
| 9-10 a.m. | Rating Session 2/Assignment |
| 10-11 a.m. | Rating Session 3/Assignment |
| 11-12 a.m. | Rating Session 4/Assignment |
| 12- 1 p.m. | Rating Session 5 |
| 1- 2 p.m. | Lunch |
| 2- 3 p.m. | Rating Session 6/Assignment |
| 3- 4 p.m. | Rating Session 7/Assignment |
| 4- 5 p.m. | Rating Session 8/Assignment |
| 5- 6 p.m. | Dinner |
| 6- 7 p.m. | Rating Session 9 |
| 7- 8 p.m. | Rating Session 10 |
| 8- 9 p.m. | Supper |
| 9-10 p.m. | Generalization Tape |

TABLE 2
TOKEN REWARDS AND PENALTIES

| | Usual token payments or penalties |
|--|--------------------------------------|
| (i) in rating/assignment session. | |
| No stuttering, minimum syllables achieved and rate within target range | +10 |
| Each stuttered syllable | - 2 |
| (ii) outside sessions. | |
| Each stuttered syllable | - 2 |
| Each lapse from desired speech quality | - 2 |
| Each 5 sec. silence of group. | - 2 per person present |
| (iii) Special assignments or sessions. | + 2 per 3 mins. |

TABLE 3

PROLONGED SPEECH

AIM: (i) to extend the duration of the speech sounds.
(ii) to reduce intensity and rate of speech onset.

TECHNIQUE:

Stage 40

1. Speak very slowly 40 S.P.M.
2. Extend duration of all vowels, continuous consonants and fricatives.
3. Extend duration of articulation of stop consonants, i.e., hard contacts should be softened and onset gentled.
4. Concentrate on accurate articulation of each syllable and become aware of what you do to speak well.
5. Minimize intersyllable and interword pause times.
6. Ignore any resulting loss of intonation.

Stage 70

1. Speak at 70 S.P.M.
2. Prolong all sounds as above.
3. Eliminate intersyllable pauses.
4. Concentrate on correct intersyllable phonetic transitions.
5. Minimize interword pauses.
6. Introduce correct stress timing to words.

Stage 100

1. Speak at 100 S.P.M.
2. Prolong all sounds.
3. Eliminate all pauses in phonation apart from phrase and sentence pauses.
4. Concentrate on correct articulation of whole phrases, including stress timing of words and intonation of phrases.

Stage 130 and 160

Successively approximate this pattern to normal.

Stage 190

Speak normally.

CHECK TAPE OF SPEECH MODEL FOR EACH STAGE¹

¹A cassette recording of the target speech behavior characteristics for Stages 40, 70, 100, and 130 is available for subjects to self-assess their speech at any time during passage through these stages.

TABLE 4

SUMMARY OF FLUENCY ESTABLISHMENT PHASE
RATING SESSION CONDITIONS

| Target Rate and Range | Minimum Syllables | Quality of Prolonged Speech |
|--------------------------|----------------------|-----------------------------|
| + 40 - 20 S.P.M. | 300 | Syllabized Prolonged Speech |
| + 70 - 20 S.P.M. | 500 | Word Prolonged Speech |
| + 100 - 20 S.P.M. | 700 | Phrase Prolonged Speech |
| + 130 - 20 S.P.M. | 900 | Smoothed Speech |
| + 160 - 20 S.P.M. | 1,100 | Smoothed Speech |
| + 190 - 20 S.P.M. | 1,300 | Normal Speech |

Speech that does not conform to the quality requirements will not be rated.

PROGRESSION SCHEDULE

Progress if no stuttering and syllables correct and rate correct.
Repeat if no stuttering but syllables wrong or rate wrong.
Retreat if any stuttering.

TABLE 5

FLUENCY ESTABLISHMENT SCHEDULE

| Stage Attempted | Failed: Retreat to | Success: Progress to |
|-----------------|--------------------|----------------------|
| 40/1 | 40/1 | 40/2 |
| 40/2 | 40/1 | 40/3 |
| 40/3 | 40/1 | 40/4 |
| 40/4 | 40/1 | 40/5 |
| 40/5 | 40/1 | 40/6 |
| 40/6 | 40/1 | 70/1 |
| 70/R | 40/1 | 70/2 |
| 70/1 | 70/R | 70/2 |
| 70/2 | 70/1 | 70/3 |
| 70/3 | 70/1 | 70/4 |
| 70/4 | 70/1 | 70/5 |
| 70/5 | 70/1 | 70/6 |
| 70/6 | 70/1 | 100/1 |
| 100/R | 70/1 | 100/2 |
| 100/1 | 100/R | 100/2 |
| 100/2 | 100/1 | 100/3 |
| 100/3 | 100/1 | 100/4 |
| 100/4 | 100/1 | 100/5 |
| 100/5 | 100/1 | 100/6 |
| 100/6 | 100/1 | 130/1 |
| 130/R | 100/1 | 130/2 |
| 130/1 | 130/R | 130/2 |
| 130/2 | 130/1 | 130/3 |
| 130/3 | 130/1 | 130/4 |
| 130/4 | 130/1 | 130/5 |
| 130/5 | 130/1 | 130/6 |
| 130/6 | 130/1 | 160/1 |
| 160/R | 130/1 | 160/2 |
| 160/1 | 160/R | 160/2 |
| 160/2 | 160/1 | 160/3 |
| 160/3 | 160/1 | 160/4 |
| 160/4 | 160/1 | 160/5 |
| 160/5 | 160/1 | 160/6 |
| 160/6 | 160/1 | 190/1 |
| 190/R | 160/1 | 190/2 |
| 190/1 | 190/R | 190/2 |
| 190/2 | 190/1 | 190/3 |
| 190/3 | 190/1 | 190/4 |
| 190/4 | 190/1 | 190/5 |
| 190/5 | 190/1 | 190/6 |
| 190/6 | 190/1 | W.F.1 |

TABLE 6

ASSIGNMENT SCHEDULE

| Stage Attempted | Failed: Retreat to | Success: Progress to |
|-----------------|--------------------|----------------------|
| WFR | 190/1 | WF1 |
| WF1 | WFR | WF2 |
| WF2 | WF1 | WF3 |
| WF3 | WF1 | WM1 |
| WMR | WF1 | WM2 |
| WM1 | WMR | WM2 |
| WM2 | WM1 | WM3 |
| WM3 | WM1 | Next Task |

Rank in order of difficulty (Home, Shopping, Speech, Telephoning, Work)

HOME

| | | |
|-----|-----------------|-------------|
| H R | Previous Task 1 | H 2 |
| H 1 | H R | H 2 |
| H 2 | H 1 | Next Task 1 |

SHOPPING

| | | |
|------|-----------------|-------------|
| Sh R | Previous Task 1 | Sh 2 |
| Sh 1 | Sh R | Sh 2 |
| Sh 2 | Sh 1 | Next Task 1 |

SPEECH

| | | |
|------|-----------------|-------------|
| Sp R | Previous Task 1 | Sp 2 |
| Sp 1 | Sp R | Sp 2 |
| Sp 2 | Sp 1 | Next Task 1 |

TELEPHONING

| | | |
|----------|-----------------|-------------|
| T R | Previous Task 1 | T 2 |
| T 1 | T R | T 2 |
| T 2 | T 1 | T 3 |
| T 3 | T 1 | T 4 |
| T 4 | T 1 | TB Radio |
| TB Radio | T 1 | Next Task 1 |

WORK

| | | |
|-----|-----------------|-------------|
| W R | Previous Task 1 | W 2 |
| W 1 | W R | W 2 |
| W 2 | W 1 | Next Task 1 |

APPENDIX C
HASBROUCK'S "INTENSIVE STUTTERING PROGRAM FOR ADULTS"

PERSONNEL SCHEDULE
 INPATIENT STUTTERING PROGRAM
 1 OCT 79 - 9 NOV 79

TABLE 1

STAGES. AF: 1 - 6 and ID: 1 - 4

| | | |
|-------------|-----------------------------|------------------------------|
| 8:00- 8:30 | Staffing | |
| 8:30- 9:00 | Counseling Sessions - Patti | |
| 9:00-10:00 | Jon | |
| 10:00-11:00 | Patti | Airflow: Stages 1-6 |
| 11:00-12:00 | Fran | |
| 1:00- 2:00 | Jon | Identification: Stages 1-4, |
| 2:00- 3:00 | Fran | followed by Airflow at what- |
| 3:00- 4:00 | Cindie | ever stage individual pat- |
| | | ients have reached. |

STAGE. AF: 7

| | | |
|-------------|-----------------|-----------------|
| | Eric and Bonnie | Chet and Horace |
| 8:00- 9:00 | Work | Rate Self |
| 9:00-10:00 | Work | Rating: Jon |
| 10:00-11:00 | Work | Rating: Patti |
| 11:00-11:30 | Work | Practice |
| 11:30-12:00 | Rate Self | Practice |
| 1:00- 2:00 | Rate Self | Work |
| 2:00- 3:00 | Rating: Fran | Work |
| 3:00- 4:00 | Rating: Cindie | Work |
| 4:00- 4:30 | Practice | Work |

STAGE. AF: 8

| | | |
|-------------|-------------------------------------|----------------|
| 7:45- 8:00 | Staff feedback placed in box in ENT | |
| 8:00- 9:00 | Work | Rating: Jon |
| 9:00-10:00 | Work | Rating: Patti |
| 10:00-11:00 | Work | Rating: Fran |
| 11:00-12:00 | Work | |
| 1:00- 2:00 | Work | |
| 2:00- 3:00 | Work | |
| 3:00- 4:00 | Rate Self | Rating: Cindie |
| 4:00- 4:30 | Rate Self | |

TABLE 4

| AIRFLOW | | | | | STUTTERING IDENTIFICATION | | | | |
|---------|--------|------------------------------------|-----------------------|---|---------------------------|--------|------------------------------------|------------------------------|--|
| Stage | Levels | Rating Time/ Level (Min.) | Stuttering Allowed | Description | Stage | Levels | Rating Time/ Level (Min.) | Errors Allowed/ Minute | Description |
| 1 | 4 | 5 | 0 | Airflow on vowels | 1 | 2 | 40 | NA | Demonstration tapes of stuttering behavior |
| 2 | 4 | 5 | 0 | Airflow on single syllable words | 2 | 2 | 40 | NA | Clinician identification of stuttering in stutterers' conversation |
| 61 3 | 10 | 5 | 0 | Airflow on two to three words in conversation | | | | | |
| 4 | 10 | 5 | 0 | Airflow in conversation following inspiration and pausing | 3 | 10 | 5 | + - 3 | Patient identification of stuttering in other stutterers' speech on tape |
| 5 | 10 | 5 | 0 | Airflow in conversation with people other than staff | | | | | |

TABLE 4 (CONTINUED)

| 6 | 10 | 5 | 0 | Airflow in conversation with people on the telephone | 4 | 10 | 5 | + - 3 | Patient identification of stuttering in their own speech on tape |
|---|----|----|---|---|--|----|---|----------|--|
| 7 | 4 | 30 | 0 | Airflow in conversation in work settings with clinic contact | (NOTE: Stage 4 Identification must be completed before patients may move to Stage 7 Airflow) | | | | |
| 8 | 4 | 60 | 0 | Airflow in conversation in work settings with little clinic contact | | | | | |

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INPATIENT STUTTERING TREATMENT PROGRAM (1 OCT - 9 NOV 1979)

AIRFLOW

| Stage | Levels | Rating Time/ Level (Min.) | Stutt. Allowed | Time | Description |
|-------|--------|------------------------------------|-------------------|--------|------------------------------|
| 9 | 5 | 5 | 0 | Wk. 1 | Airflow in conver- sation |
| 10 | 5 | 5 | 0 | Wk. 3 | " |
| 11 | 5 | 5 | 0 | Wk. 6 | " |
| 12 | 5 | 5 | 0 | Wk. 12 | " |
| 13 | 5 | 5 | 0 | Wk. 24 | " |
| 14 | 5 | 5 | 0 | Wk. 48 | " |

TABLE 5

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CRITERIA

Stages 1-6: 100% airflow and 0 stuttering. Fail first time in a stage, drop back 1 level; fail 2 or more times in a stage, drop back to the beginning of that stage.

Stages 7-8: 100% airflow, 0 stuttering, and 100% agreement with clinicians on stuttering counts. Failure at any level adds one day to that stage.

Stages 9-14: 100% airflow, 0 stuttering, and 100% agreement with clinicians on stuttering counts. Failure at any level results in repetition of that level for consecutive weeks until that level is passed.

CRITERIA

Stages 1-2: None.

Stages 3-4: Agreement within ± 3 stutterings per minute with clinician counts. Fail first time in a stage, drop back 1 level; fail second or more times in a stage, drop back to beginning of that stage.