

THERAPY PROGRAM FOR YOUNG RETARDED STUTTERERS

by

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ABSTRACT

A treatment program was developed for three stuttering clients from an educable mentally retarded classroom and three clients from a trainable classroom. Clinical procedures are described and results are presented. In general, the stutterers from the educable group made substantial gains in the clinic and limited transfer into non-clinical environments. However, the clients from the trainable group demonstrated very little progress due to a number of factors which are discussed. The value of therapy for this group is questioned.

In recent years considerable progress has been made in the treatment of stuttering. Several programs have been described (Perkins, 1973; Ryan, 1974; Costello, 1975; Boberg, 1976) in which adult stutterers have achieved normal or near normal speech within a clinical setting. The maintenance of satisfactory speech in the post-treatment environment is still a very difficult problem but research projects are underway.

In contrast to the large amount of work done with adult stutterers relatively little has been done with children who stutter and virtually no attention has been paid to young retarded stutterers. In a recent review of literature Boberg (1977) was unable to find any reports of therapy programs consistently applied to retarded stutterers. Moreover, there is considerable confusion in the literature concerning the prevalence of stuttering among the retarded. Prevalence figures reported in the literature have ranged from approximately one percent (Sheehan, Martyn and Kilburn, 1968) to a high of 45% in a group of Down's Syndrome subjects (Schlanger and Gottsleben, 1957).

In an attempt to more accurately determine the prevalence of stuttering in the retarded, Boberg et al. (1978) tested 1279 children in EMR (educable) and TMR (trainable) classes. The reported prevalence figure of 1.8% is similar to the figure reported by Sheehan, Martyn and Kilburn (1968).

In view of the virtual absence of any treatment program for retarded stutterers the next logical step was an attempt to develop such a program. This paper is a report on a project which aimed at adapting an existing adult treatment program to meet the needs of the retarded group.

METHOD

Clients

Two groups of retarded stutterers were used. Group 1 consisted of three clients from an EMR classroom. Their initials, chronological ages and IQ scores were:

PF, CA = 19, (WISC) full score = 79
NC, CA = 19, (WAIS) full score = 79
RR, CA = 13, (WISC) full score = 52

Group 1 met one hour per day for two weeks during November, 1978, and then one hour per day for 15 days during February, 1979.

Group 2 was comprised of younger, more severely retarded clients, selected from a TMR classroom:

TH, CA = 10, Stanford-Binet IQ = 42

LH, CA = 10, Stanford-Binet IQ = 43

CL, CA = 19, The psychologist reported that this child functioned at such a low level that a valid basal score could not be obtained.

Group 2 initially met for one hour per day for two weeks and then for two hours per week for two weeks.

Pre- and Post-Clinic Measures

Group 1. In order to determine the amount and variability of stuttering we obtained a two-minute sample of each client's speech in the following activities; conversation, reading, and telephoning. These measures were made before the program and on the last day of the program. All the speech samples were recorded on audiotape for subsequent analysis. From the tapes, the experimenter counted all spoken syllables and all stuttered syllables. This analysis yielded a two-dimensional measure of stuttering severity; percentage of syllables stuttered and speech rate expressed in syllables per minute. Experimenter reliability was determined by having two independent observers count stuttered and non-stuttered syllables from a series of sample tapes. A percentage of agreement between the observers was computed and found to exceed 85% which was considered to be adequate for the purposes of this study.

Group 2. The clients in Group 2 were unable to perform the tasks described above so they were asked to do the following: give name and date, describe a series of pictures, read from a primary reader, and recite sequences such as numbers, days of the week and the alphabet. All the speech samples were recorded on audio tape and analyzed as described above.

Clinical Program

The treatment strategy for Group 1 was based on the adult program described by Boberg (in press) but modified to fit the special needs of the retarded group. Since the clients in Group 1 were functioning at a relatively high level we made only minor changes in the adult program. We reduced the session length from five to three minutes, reduced the target rate of speech from 200 ± 40 spm to 120 ± 30 syllables per minute, assumed a more active role in the conversations and simplified the record keeping system. We adopted the reduced target rate of 120 ± 30 after we observed in pre-clinic testing that the clients' overall speech rates were considerably depressed by their frequent pauses between phrases. In pre-clinic testing the syllable rates per minute were: PF = 92 spm; NC = 116 spm; RR = 51 spm ($X = 86.3$). In the transfer situations it was often necessary for the experimenter to accompany the client whereas in the adult program the client goes alone and tapes the transfer assignment.

In Group 2 so many changes were required that it might be more accurate to say that a new program was devised. These clients were unable to comprehend the instructions required for the adult program or keep their own records. They could not operate the electronic equipment and were generally unable to participate in group conversations. Moreover, their attention spans were very short.

At the beginning of the program the clients were trained to imitate body movements. We reasoned that if the clients could be taught to imitate such things as arm movements we might then train them to imitate the finer movements involved in speech production. The experimenter presented a verbal cue, modeled the desired movement and then reinforced the client's correct imitation. In this manner the experimenter gradually progressed to modeling and reinforcing the articulatory movements associated with speech production.

When the clients were consistently able to imitate articulatory movements the experimenter modeled prolonged vowel sounds. The clients were reinforced for imitating correctly. With one client it was necessary to vocalize in unison with her until she was able to consistently extend the length of the vowel sounds.

When the clients were able to imitate prolonged vowels correctly for seven out of ten trials, they progressed to the prolongation of words. A picture stimulus was introduced and paired with the verbal model. When the clients reached the criterion at the word level the verbal stimulus was sufficient to elicit a prolonged fluent response. Table 1 summarizes the procedure used throughout the program with Group 2.

TABLE 1

TREATMENT PROGRAM FOR GROUP 2 — YOUNG TMR STUTTERERS

STIMULUS	RESPONSE	REINFORCEMENT
1. Verbal cue "do this" Modelled body movement	Imitate body movement	Token, star chart, social praise
2. Verbal model	Imitate prolonged vowel sounds	Token, star chart, social praise
3. Verbal model Picture stimuli	Imitate prolonged words	Token, star chart, social praise
4. Picture stimuli	Spontaneously produce prolonged word	Tokens, star chart, social praise
5. Verbal model — picture stimuli	Imitate prolonged 2 word phrase	Tokens, star chart, social praise
6. Picture stimuli	Spontaneously produce prolonged 2 word phrase	Tokens, star chart, social praise
7. Verbal model-picture stimuli (filmstrips)	Imitate prolonged 3-4 word sentence	Tokens, activities, social praise
8. Picture stimuli (filmstrips)	Spontaneously produce prolonged 3-4 word sentence	Tokens, activities, social praise
9. Picture stimuli	Spontaneously produce prolonged 3-4 word sentence	Social praise

Treatment sessions were divided into six minute segments, allowing two minutes for each of the three clients. A bell signalled the end of each session and the beginning of a short break. A token economy was developed with Group 2. Tokens were presented to the clients by an experimenter-controlled dispensing device. Initially, a token was presented after each response but after a few sessions we moved to an intermittent schedule. Presentation of the tokens was always paired with verbal praise. The clients collected tokens until the end of the six-minute session at which time they could exchange the tokens for a variety of stars and animal stickers. Later in the program, tokens could be exchanged for opportunities to engage in play activities such as tricycle riding, blowing bubbles or use of musical toys. The tokens were gradually withdrawn so

that the clients were reinforced exclusively by verbal praise. In this way, the treatment sessions began to more closely resemble natural speaking environments.

Formal transfer activities, such as those used in the adult program, were considered to be too difficult for this group so the experimenter observed each client in the classroom, discussed their progress with the teacher and made recommendations regarding possible methods of transferring the improved speech into the classroom. More detailed information on the procedures, stimulus materials, record keeping and reinforcement is available from the authors.

RESULTS AND DISCUSSION

Group 1

Individual pre- and post-clinic scores as well as the percentage of syllables stuttered by each client in Group 1 are presented in Table 2. Group means are provided at the bottom of each column. The scores in the daily training session were obtained by calculating the mean percentage of all three-minute speaking sessions completed by each client on that day. Clients usually completed three to four sessions each day.

TABLE 2
MEAN PER CENT SYLLABLES STUTTERED BY EACH CLIENT IN GROUP 1 DURING PRE- AND POST-CLINIC TESTS AND DAILY TRAINING SESSIONS

PRE-CLINIC TESTS				DAILY TRAINING SESSIONS (NOVEMBER)										POST-CLINIC TESTS — 1		
CLIENT	Reading	Conver.	Telephone	1	2	3	4	5	6	7	8	9	10	Reading	Conver.	Telephone
				BASE RATE	60 SPM			90 SPM			120 SPM					
NC	11.82	18.13	21.88	20.89	5.55	2.92	3.62	3.38	2.57	1.66	3.05	2.07	1.66	1.05	10.12	16.96
PF	1.93	5.98	5.95	6.78	.57	.28	0	0	0	.*	0	.40	0	.62	6.22	7.03
RR	8.89	30.68	32.45	19.80	.52	0	.38	1.09	.39	.29	2.13	.30	.54	6.29	.59	5.26
MEAN	7.55	18.62	20.09	15.82	2.21	1.07	1.33	1.49	.99	.96	1.73	.92	.73	2.65	5.64	9.75

DAILY TRAINING SESSIONS (FEBRUARY)										POST-CLINIC TESTS — 2		
CLIENT	1	2	3	4	5	6	7	8-15	TRANSFER ACTIVITIES	Reading	Conver.	Telephone
	60 SPM	90 SPM			120 SPM							
NC	1.31	1.46	1.34	1.73	.69	1.24	.*	No		0	.83	10.9
PF	0	0	0	0	0	.32	.26	Data		.46	2.27	4.29
RR	.16	1.86	.78	1.14	.99	1.92	0	Available		15.12	7.19	15.38
MEAN	.49	1.10	0.70	.95	.56	1.16	.13			5.19	3.43	10.19

*Client absent

Inspection of the scores in the Daily Training Sessions will reveal that all three clients experienced a steady decrease in the percentage of stuttering through the first 10 training sessions. Two of the clients, NC and RR, demonstrated an increase in stuttering during the eighth session when they increased speech rate to 120 syllables per minute but the stuttering rate dropped again as the clients adapted to the faster rate. On an experimental basis we tried to move the clients to a faster rate of 150 spm but observed a rapid disintegration of fluency at that rate. In contrast to normals, who generally can maintain a continuous flow of conversation and monologue, the clients in this study interrupted their speech with frequent pauses between phrases thus reducing the overall rate of speech. When we observed that they experienced great difficulty at 150 spm we decided to accept a syllable rate of 120 ± 30 spm as the target rate for this group. It is possible that with a considerable extension in therapy time these clients may eventually have adapted to a faster rate.

In the seven daily training sessions, held in February, all three clients continued speaking at the reduced percentage of stuttering. One client, PF, eliminated stuttering entirely for five of the seven training sessions. After each client had completed a minimum of five sessions at 120 spm with less than 2% disfluency the clients engaged in transfer activities (Sessions 8-15). The experimenter suggested several transfer activities and accompanied clients into a few situations. We encountered several difficulties in the transfer phase. Due to limited language and social skills the clients experienced difficulties initiating and maintaining conversations in non-clinical settings. The audience (store clerks, secretaries and teachers) tended to respond to this situation by doing most of the talking which left us with generally inadequate samples of client speech. The accompanying clinician did observe that the clients tended to revert to struggle behaviors and that they did poorly on cancellation in the transfer situations, i.e., the amount of transfer was limited. We had also asked the clients to tape record several transfer situations where the clinician was not present. The tapes that the clients brought back were so poorly done that we were unable to analyze them. Consequently, we have no objective data on their performance in non-clinical settings. To facilitate transfer we would make two changes in future programs: 1. Delay the attempt at transfer until the new fluency has been better stabilized in the clinical setting; 2. arrange a series of transitional steps so that the clients can move much more gradually into non-clinical settings.

Pre- and Post-Clinic Measures

The pre-clinic measures sampled the clients' speech in a variety of situations just before the treatment program. The same measures were made after the treatment program and should reveal the effects of the treatment. By comparing the pre-clinic scores with the first post-clinic tests it may be noted that all three clients displayed a substantial decrease in stuttering frequency. In the second post-clinic test, following the second series of training sessions, two of the clients, NC and PF, demonstrated further improvement. However, it should be noted that the greatest amount of disfluency occurred on the telephone. This suggests that the clients needed additional training sessions before they could successfully transfer their improved fluency to the telephone, a situation most stutterers find difficult.

The third client, RR, showed substantial improvement in the first post-clinic test but then demonstrated increased stuttering in the second post-clinic measure. The precise reasons for RR's relapse are uncertain but some factors should be considered. Of the three clients in this group, RR demonstrated the highest initial stuttering rate. She was also the youngest member of the group and scored lowest on IQ tests. She functioned reasonably well within the sheltered clinical environment but had much more difficulty than the other two clients in the transfer activities when talking to teachers, secretaries and storeclerks. The experimenter observed that RR's difficulties during transfer may have contributed substantially to her poor performance in the second post-clinic measure. We might conclude from her performance that she should have had many more training sessions before starting transfer activities.

In all three clients it may be noted that there was more stuttering in the post-clinic tests than in the final training sessions. That is they all showed some degree of relapse when the therapy program was terminated and they were tested in another environment. This result was entirely expected since by the end of the program the clients had received only 24 hours of actual group therapy. By way of contrast, during the intensive, adult program, clients receive approximately 90 hours of group therapy between the pre- and the post-clinic testing. The brief time spent in therapy by the EMR stutterers would appear to be insufficient for stabilizing new speech patterns.

Group 2

Pre- and post-clinic data for the three clients in Group 2 are presented in Table 3. Although the experimenter attempted to record responses of each client during the daily training sessions it was not possible to maintain systematic records for this group. This was partly due to the very low level of verbal output as well as other factors such as emotional outbursts, inattentiveness and unpredictable responses to the therapeutic environment.

TABLE 3

PRE- AND POST-CLINIC MEASURES OF PERCENT DISFLUENCY AND SYLLABLES PER MINUTE FOR EACH CLIENT IN GROUP 2

Client	PRE-CLINIC MEASURE		POST-CLINIC MEASURE	
	% Disfluency	Syllables Per Minute	% Disfluency	Syllables Per Minute
LH	9.14	48.05	5.38	51.67
TH	4.93	59.94	4.47	68.30
CL	22.29	50.16	8.23	39.50
MEAN	12.12	52.72	6.03	53.16

Pre- and Post-Clinic Data

The scores for each client in Group 2 are presented in Table 3. Two of the three clients, LH and CL, showed some decrease in percentage of stuttering in the post-clinic test. The third client, TH, showed no appreciable change in percentage of stuttering.

Although none of the clients in Group 2 approached normal fluency level or normal speech rate there was, nevertheless, some improvement in spite of the brief time spent in therapy. Due to difficulties in school and family schedules Group 2 received about 14 hours of group therapy compared to 24 hours with Group 1. This difference should be kept in mind when comparing the two groups. However, the difference in the performance levels of the two groups was so large and emerged early in the program that we feel reasonably confident that even if the therapy time for Group 2 had been extended to match Group 1, the differences in performance between the groups would still have been substantial.

Client Profiles

This section contains additional subjective information about Group 2 clients, collected by the second author during and after the treatment sessions. We also asked the classroom teachers to comment on each client's performance during and following treatment.

Client LH

LH was judged to be the most severe stutterer among the three clients. Before treatment, her initial syllable repetitions were associated with facial tension, grimacing, eye-blinking, head movements and teeth grinding. When she sat, she slouched over her desk. Occasionally during a severe block, she would cover her face with her hands. Her classroom teacher stated that stuttering was constantly present. Observation of LH's speech in the classroom situation revealed extreme frustration and tension when required to speak before other students. When LH became excited her rate of speech accelerated, causing her speech to become unintelligible jargon.

During the treatment sessions, LH generally attended well to the task. However, on several occasions, she began to cry for no apparent reason and refused to participate in the therapy activities. During one session she covered her ears and complained of hearing a loud noise, although no such noise was evident.

During the program, the teacher commented that her classroom speech was noticeably more fluent immediately following each of the daily treatment sessions, but that this improvement would dissipate within a day. At the end of the program, the teacher noted that LH's speech had become generally smoother and more intelligible.

Client TH

TH's stuttering behavior consisted of initial syllable repetitions, prolongations and hard contacts. These blocks were generally associated with tension. The teacher commented that her stuttering behavior was extremely variable. Frequency of stuttering tended to increase in the classroom situation when she was asked a question which she was unable to answer.

The teacher also stated that her family situation was generally stressful. Coinciding with the treatment sessions, TH's parents went on vacation, leaving her to stay with relatives. During this period, the teacher and experimenter agreed that she was extremely emotional and unresponsive in both the classroom and therapy settings. During treatment sessions she frequently distracted the other children and on one occasion refused to attend therapy. Following treatment, the teacher had noticed very little change in TH's speech. This observation agrees with the pre- and post-clinic data.

Client CL

CL's stuttering behavior consisted primarily of initial syllable repetitions (particularly on plosives), prolongations and facial tension. In therapy, he was very distractible and had an extremely short attention span. Similar behavior was evident during classroom observation. Another example of his distracting behavior was his constant need to go to the washroom, at least once per session.

Following treatment, CL's classroom teacher noted considerable improvement in his speech. She stated that the duration of the stuttering blocks had decreased. The teacher also related an incident in which she had observed CL using slower, more fluent speech while talking to a classmate on a field trip. Additionally, the experimenter observed that CL's speech was much smoother and was generally free of tension.

SUMMARY AND CONCLUSIONS

This paper has described therapy programs with two groups of retarded stutterers. Group 1 consisted of three teenaged stutterers from an EMR classroom. With only minor modifications we were able to adapt an adult treatment program (Boberg, 1980)

to meet the needs of this group. Scores in the daily training sessions showed a steady decrease in the percentage of stuttering for all three clients throughout the treatment program. The pre- and post-clinic tests revealed a substantial decrease in stuttering for two of the clients while the third client showed some relapse in the final post-clinic test. We suggested that the treatment program should be extended in order to stabilize the improved fluency within the clinic.

Group 2 consisted of three younger and more retarded children from a TMR classroom. It was not possible to adapt the adult program to this group so we essentially devised a new program. The performance in the daily training sessions was somewhat erratic and inconclusive. Pre- and post-clinic measures did reveal some progress in two of the three clients but the improvement was limited by very low language abilities, inattentiveness and emotional behaviors such as crying.

In conclusion, it is important to differentiate between the performances of the two groups. The clients in Group 1 from the EMR classroom responded favorably to the treatment program. It appears reasonable to expect that even greater and more permanent improvement would result with extended periods of treatment. Improvement in speech fluency will be of considerable benefit to clients from this group as they pursue their vocational, educational and social goals. We would, therefore, encourage the provision of therapy to stutterers who are in the EMR category.

The more severely retarded clients in Group 2, from the TMR classes, did not respond as well to treatment. In view of the limited progress achieved with this group the authors recommend that a potential client be assessed carefully to determine whether an extensive therapy program is warranted and likely to be effective.

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