

Treating the Young Stutterer: Manipulating Variables in Favour of a Successful Outcome

D.L. Fraser and L. Avery

Abstract

Recent literature supports direct treatment of young stutterers. The approach used in our clinic to treat stutterers from 3 to 7 years old is described. A number of variables, which can be manipulated to improve outcome, are discussed in relation to the assessment and therapy process.

Introduction

Early intervention is becoming more common in the treatment of young stutterers as increasing evidence supports its value (Shine, 1980; Costello, 1983; Johnson, 1984 and Culp, 1984). Unfortunately, however, stuttering is often handled inadequately (Cooper and Cooper, 1985), largely because of the lack of appropriate material to use as a guide in providing direct treatment and also because students and clinicians often feel unprepared to deal with young stutterers. For this reason, we have identified some of the variables that can be manipulated to improve outcome at various stages of intervention, including pretreatment/assessment and indirect and direct treatment.

In the pretreatment phase we look at parent motivation and how it may be manipulated by training parents to improve outcome. Similarly, in the establishment phase we examine parent involvement as a variable that can be manipulated by training parents to carry out home practice. This facilitates the establishment process and prepares both parents and children for transfer. We believe that the variables discussed in this paper provide a basis for planning and organizing treatment using a variety of therapeutic approaches (Table 1).

Pretreatment/Assessment

A case history form is completed for each child prior to assessment. The developmental information this provides allows the clinician to focus specifically on information related to the fluency problem during the parent interview. Parents are questioned about the onset and progression of their child's stuttering problem, the child's awareness of and/or frustration with his fluency failure, their reaction to the dysfluency, and relevant family history.

Our evaluation of the child includes speech and language screening, oral peripheral examination, and elicited

speech samples. At least two samples are obtained, including speech during child-clinician interaction based on story/picture book stimulus and spontaneous conversation during play activity, which includes questions and interruptions by the clinician. Parents are asked to judge the speech samples by either observing or listening to tape recordings of the session and comment on how well they represent the child's usual speech. If the samples are not "typical", an attempt is made to elicit a more representative sample by observing parent-child interaction.

Case history information (i.e., family history, time since onset of the speech problem) and behavioural characteristics (as identified by Adams, 1977), which are evident in the speech samples, are used to differentiate between children who are "normally non-fluent" and those who are incipient stutterers. In our discussion with parents following assessment of the child, we present information which categorizes the child's fluency as normal or in the mild, moderate, or severe range of stuttering. We also provide information based on Riley's Stuttering Severity Instrument score (Riley, 1972).

Once a diagnosis is made, the parents are informed of the options for appropriate follow-up in our clinic. These may include a parent education program and a three month follow-up, re-evaluation in three to six months, or direct therapy. Parents are then encouraged to decide which option is most appropriate. If they cannot make a decision, the clinician will make a specific recommendation. It is our feeling that the family's willingness to participate in making decisions about follow-up reflects their readiness (i.e., sufficient concern about the effects of dysfluency on family interaction and a commitment to completing home practice). The participation of the parents is a major factor in determining the outcome of treatment.

Indirect Treatment

In the pretreatment period, we find that parent motivation is a significant variable with young children and therefore we try to determine the extent to which the child's dysfluency disrupts family interaction; the same degree of dysfluency may be a serious problem in one family and be taken easily in stride by another. The effect of the dysfluency may determine how willing parents are to become involved in therapy and their subsequent ability to remain adequately committed to carrying through with home assignments.

Parent motivation is manipulated through education. All parents are provided with the same basic information, either through individual counselling or through parent education programs. These programs are offered 2-4 times a year, depending on the need, and usually involve

Address reprint requests to:

Ms. D. Lynn Fraser
Department of Speech Pathology
The Hospital for Sick Children
555 University Avenue
Toronto, Ontario M5G 1X8 Canada

Table 1. Key variables and the means of manipulating each variable for indirect and direct treatment.

Variables	Means of manipulation
Indirect treatment	
Motivation — parent	Provide general information by individual counselling or parent education program
Direct treatment: establishment	
Child's behaviour	Peer pressure resulting from grouping
Fluency	Programmed through prolonged speech training
Performance — fluency targets	Shaped through tangible reinforcement paired with verbal reinforcement
Parent involvement	Parents trained through observation and direct involvement in sessions to carry out home practice
Indirect treatment	
Motivation — parent	Provide general information by individual counselling or parent education program
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Parent involvement	Parents trained through observation and direct involvement in sessions to carry out home practice
Direct treatment: transfer	
Fluency	Programming (within and outside clinic) to enhance spontaneous generalization or (in absence of same) programming to facilitate the transfer process
Performance — fluency targets	Shaped by response cost in clinic. Tangible reinforcement used to reward spontaneous generalization at home
Performance — self-monitoring	Initially shaped through tangible reinforcement and subsequently through social reinforcement
Parent involvement	Training in cuing, reinforcement and monitoring techniques

two afternoon or evening sessions. Both parents are asked to attend. General information provided to the parents includes:

- (i) basic facts about stuttering, for example, the causes, incidence, and environmental factors which are believed to exacerbate stuttering
- (ii) information about normal non-fluency as distinguished from stuttering
- (iii) instruction in maintaining a good listening environment
- (iv) ways to facilitate fluency in the home as well as in the nursery or school.

While the main objective is to provide basic information, the short-term goal is to enable parents to reduce communication pressure. Two specific strategies for dealing with dysfluency, selective attention and modelling of a slow rate of speech, are discussed in detail with parents. With respect to selective attention, parents are taught to distinguish between normal and abnormal dysfluencies and to deal selectively with fluency through various forms of verbal and non-verbal response. Using a checklist, like that described by Johnson (1984), increases the parents' awareness of verbal and non-verbal responses in preparation for selectively attending to fluency. In terms of modifying the rate of speech, we model and give training at a

slow to normal rate (180-220 syllables per minute). Initially parents are trained to speak more slowly while reading and are subsequently asked to model this rate in a storytelling activity with their child.

Establishment Phase of Direct Treatment

Observing the child during the assessment allows us to identify behaviours which could potentially disrupt therapy, such as limited attention span and non-compliance (i.e., unwillingness to follow instructions and participate appropriately). Behaviour which is not "ideal" is generally manipulated through pairing or grouping of children in therapy. Peer modelling and pressure are very effective ways of increasing attention and compliance in small group sessions. Although the actual manipulation of behaviour occurs in the treatment phase it is a variable that must be identified before treatment.

Once treatment starts, other variables become important. Three that can be identified and manipulated are fluency, the child's performance, and parent involvement. Fluency is also the primary goal of therapy. The treatment regimen which has been used with young children in our clinic is derived from prolonged speech techniques. Prolonged speech originally referred to the slowing of speech by lengthening vowels, as induced with

delayed auditory feedback (DAF). There has been a move away from the use of DAF to establish this behaviour (Ingham, 1984), and prolonged speech now encompasses treatment techniques such as gentle onset and soft articulatory contacts (Howie and Andrews, 1984). Our approach uses a basic program which provides training in simple techniques and includes additives.

Fluency is manipulated through the training of vowel prolongation as the basic target. Depending on the pattern of dysfluencies, additional targets may include gentle onset of phonation and sustained (continuous) phonation (Adams, 1980). Training is accomplished through clinician modelling, with greater emphasis on the model than on the explanation. Ryan's program, "Gradual Increase in Length and Complexity of Utterance [GILCU]," (Ryan, 1974) is incorporated in that we begin training in vowel prolongation at the single word level and progress through phrases and sentences to spontaneous conversation. The child learns to use vowel prolongation on the first word of each sentence and as needed to prevent dysfluency. Labels used to describe the prolongation target include "slow", "smooth", "easy", and "stretched" speech. Typically a child will identify with one particular label early in therapy.

Performance of fluency targets refers to how the child uses them during clinic activities. This variable is manipulated by positive reinforcement which is usually tangible (i.e., stickers) and verbal. Similar reinforcement is recommended to increase motivation to perform accurately in home assignments.

The parents observe all sessions and in this way their involvement is manipulated. They are trained to model the vowel prolongation and other targets that are included for home practice. They are also asked to score the accuracy of their child's performance on the target(s) when they are observing sessions in the clinic and during home practice. At this stage, parent involvement is indirect in the clinic and direct at home.

The treatment phase is completed when the child can maintain fluent speech (95% criterion) using the targets in various clinic activities.

Transfer Phase of Direct Treatment

The significant variables during the transfer phase of treatment are fluency, the child's performance (fluency and self-monitoring performance), and parent involvement. (We use the terms fluency performance and self-monitoring performance to refer to the child's ability to execute the target(s) and self-correct as needed, respectively.) Spontaneous generalization frequently occurs with young children (Adams, 1980). When it happens in conversation, it is reinforced immediately by the clinician. For example, if the child starts to stutter and stops and then prolongs the word in a controlled manner, the clinician would say, "Good! You started to have trouble on that word but you caught yourself and made it smooth instead of bumpy." As parents have been previously trained through observation to identify accurate use of

fluency targets, they now become more directly involved and are instructed to reinforce the use of these targets in out-of-clinic situations. Older siblings may also cue and reinforce and are often very good at reminding the younger child to use fluency targets. In some cases, specific transfer activities are required which involve the following:

- 1) pairing or grouping children to facilitate the use of fluency targets during interaction with peers.
- 2) demonstrating to parents how the "structure" of activities for home practice can be varied. For example, an activity such as playing a game could be considered "structured" if the child is required to respond using carrier phrases or "unstructured" when a new game is introduced and the child is allowed to respond spontaneously.
- 3) discussing how transfer activities can be expanded by increasing the participation of family members. Home assignments may require that the child maintain fluency with all family members in a variety of speaking situations.

Early in the transfer phase, a modified response-cost system is used to provide the child with nonverbal feedback. Correct responses are rewarded with plastic tokens and incorrect responses are punished by taking tokens from the child. This approach is useful with young children because it is visual and does not interrupt the flow of conversation. Response-cost is usually continued until the child no longer requires cuing or tangible reinforcement. Similarly, parents may be trained to use response-cost or a token system (e.g., pennies earned being traded in for a desired toy). The child's use of fluency targets can also be manipulated by using a chart system in which a specific number of correct responses must be attained before a sticker can be added to a chart which is located in a prominent place. Over time, reinforcement in and out of the clinic becomes social.

Development of self-monitoring and self-correction behaviours becomes important at this stage. Self-monitoring refers to the child's ability to prevent stuttering by using fluency targets employed during the establishment phase. Self-correction is similar to Van Riper's (1973) cancellation and pull out; cancellation is the first stage (i.e., the child stops after a stuttered word and says it again fluently using new targets) and pull out is a later stage (i.e., the child actually interrupts or prevents stuttering as it begins to occur by using fluency targets). Differential reinforcement (i.e., through response-cost) helps to develop simple self-monitoring and self-corrective behaviours.

The transfer phase of treatment is completed when the child can maintain fluent speech by using targets and self-correction as needed (95% criterion) in out-of-clinic situations.

Maintenance

It has been our experience that unassisted maintenance often follows spontaneous beyond-clinic generali-

zation in preschool children. Those who seem to require very little structured transfer need little structure in the maintenance phase. Follow-up in this phase is determined individually and occurs every three months, then at six months, and then at one year.

Children who have had a structured transfer will have achieved consistency in using fluency targets in spontaneous speaking situations when they enter the maintenance stage. Sessions are then scheduled on a monthly basis and the child is followed for a minimum of one year. Group sessions are preferable for monthly visits. Between visits parents are asked to chart the child's

fluency on a daily basis (Figure 1). In the monthly sessions, the child's clinic performance and the parental report are used to evaluate how well the child is maintaining the fluency targets. With respect to parental reporting, an overall pattern indicating improved fluency (i.e., reduced frequency of dysfluency, absence of secondary behaviours and avoidances noted prior to initiation of therapy) is desired at this stage. Parents are asked to record specific sounds and/or words as well as situations that continue to be associated with dysfluency. The information they provide is used to plan subsequent group sessions.

Legends.

Figure 1. Chart used for parental reporting between monthly sessions in the maintenance phase.

Name: _____ Month: _____

	NO. OF *GOOD DAYS	NO. OF *BAD DAYS	WAS IT RELATED TO A SPECIFIC SITUATION?	TYPE OF DYSFLUENCY** MOST EVIDENT
Week 1	_____	_____	_____	_____
Week 2	_____	_____	_____	_____
Week 3	_____	_____	_____	_____
Week 4	_____	_____	_____	_____
TOTAL	_____	_____	_____	_____

*GOOD = little or no dysfluency.
 BAD = child is noticeably dysfluent several times.

**TYPE OF DYSFLUENCY — i.e. repetitions of whole words, repetition of part of word, trouble getting words out, prolongations of sounds, hesitations.

Schedule

There are several options for scheduling during the establishment and transfer phases. Sessions may be individual, group, or a combination of the two.

Table 2 shows data for 10 children seen in the clinic from 1983 to 1985. One child (A.C.) discontinued therapy after completing the transfer phase. Three (S.B., D.T., and A.R.) completed transfer six months ago and their follow-up is presented.

A schedule which alternates between weekly individual and group sessions is preferable because it makes more varied activities possible and yet allows for specific work on language or phonological problems as needed by individuals within the group. Learning with peers enhances generalization and often helps with less than optimal motivation. A 2:1 ratio of children to clinician is maintained for group sessions. The children are matched for chronological age to within 12 months or according to maturity. We have found that children seen on this sche-

dule require fewer clinic hours (approximately 12 hours) to reach transfer. In comparison, children who are seen individually on a weekly basis require approximately 16 clinic hours to complete establishment. S.B., D.T., and A.R. were seen weekly for 20 weeks and twice a month for two months. These 24 sessions comprised the establishment and transfer phases of therapy.

Children who are seen individually in establishment are usually paired or grouped in transfer to help with generalization among peers. Sessions are scheduled weekly and are either individual or alternating individual and group. Therapy is gradually reduced to twice a month for the latter part of transfer and to once a month by the beginning of maintenance. An average of 12 clinic hours is required to complete the transfer generalization process.

In conclusion, we find that treatment for stutterers in the 3 to 7 year range can be effective when approached directly. Regardless of the therapy regimen used, if variables are identified early, they can be manipulated to enhance the outcome.

Table 2. Percentage of words stuttered during in-clinic conversation before treatment, at the end of transfer, and in follow-up

Patients	Age	Percentage of words stuttered		
		Before treatment	End of Transfer	Follow-up 12 months
Weekly Individual Sessions				
G.H.	4.8	16	3	2
R.R.	6.1	17	1	0
L.S.	5.11	20	3	0
A.C.	5.3	14	4	
W.G.	6.8	30	3	0
Weekly Group (Paired) Sessions				
T.O.	4.7	14	2	1
R.A.	5.6	14	1	1
Weekly Sessions, Alternating Between Individual and Group (Follow-up 6 months)				
S.B.	4-1	26	3	3
D.T.	3-7	18	5	4
A.R.	4-10	8	0	0

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