Clinical Management of Stuttering in Adults
Traitement clinique du bégaiement chez les adultes

by • par

Ann Meltzer
The Rehabilitation Centre
Ottawa, Ontario

ABSTRACT

The intent of this article is to capture the broad range of issues clinicians have to address when deciding appropriate management of the adult who stutters[1], to review treatment methods in widespread use, and to reflect on philosophies and procedures I have found helpful and which have evolved over twenty years working as a clinician with a special interest in fluency disorders.

ABRÉGÉ

L'objet de cet article est de présenter le vaste éventail de questions avec lesquelles les cliniciens doivent conjuguer en vue d'offrir le traitement approprié au bègue adulte, de passer en revue les méthodes de traitement généralement utilisées, et d'examiner les philosophies et procédures que j'ai trouvées utiles et qui ont évolué au cours de mes vingt ans en milieu clinique et compte tenu de mon intérêt particulier pour les troubles de fluidité.

KEY WORDS: stuttering • stuttering management in adults • intensive therapy • targets • fluency • treatment

The issues clinicians have to address when deciding appropriate management of the adult who stutters include: the nature of the clients; the nature of the problem; achievable outcomes; current trends in health care; intervention options; the clinician's skill, experience, and philosophy; available resources; and, outcome measures.

The Nature of the Clients

Adults who seek help for their stuttering problem can be as young as 16 or over 60. They participate in very diverse communication environments, have different speaking needs and expectations and disparate attitudes to group acceptance and conformity. What is acceptable speech for one individual will not be tolerable for another. Some may be more accepting of disfluent speech than others. They have different learning styles and their educational levels may range from little formal schooling to having a doctoral degree. There can be wide disparities in personal economic, vocational and social circumstances, learning abilities, and emotional management. The client may be unilingual or multilingual, and may have cultural beliefs which differ from those of a North American clinician (Leith, 1986; Finn & Cordes, 1997).

For efficacious management, clinicians must take into consideration the diversity in the nature of their clients. The clinician must choose intervention strategies and approaches to treatment which best meet individual needs.

The Nature of the Problem

Not only do clients differ on a variety of characteristics but the nature of the stuttering problem also varies. Fluent speech depends on the successful integration of speech and language components and also on integration of cognitive, linguistic and motoric processes as a whole (Starkweather, 1987). A breakdown in fluency could result from dysfunction in a given component or disruption in the integration of two or more components. It is therefore not surprising that different researchers attribute the onset of stuttering in early childhood to different causes including neurological, physiological and cognitive factors (Bloodstein, 1987; Gracco, 1997; Ingham, Fox, & Ingham, 1997; Kolk & Postma, 1997; Kroll, DeNil, Kapur, & Houle, 1997; Smith & Kelly, 1994; Starkweather 1987; Webster, 1997).

In adults, the nature of the stuttering problem is usually multidimensional and complex because of the interwoven effects of heredity, environment, physical make up, and learning on the onset of stuttering. The symptoms reflect a history of involuntary disruption in the forward flow of motor speech production, physical struggle, and avoidance and escape tactics learned in response to the experience or anticipation of being "stuck" (Peters & Guitar, 1991).

In adults who stutter, feelings and attitudes can be as much a part of the problem as the speech behaviours and aberrant communication strategies. They may experience shame, frustration, and low self-esteem. These pervasive feelings may be-

come part of their belief system, leading to negative anticipation and anxiety about speaking (Bloodstein, 1975; Prins, 1984; Van Riper, 1982). This anxiety can affect motor speech function and further exacerbate stuttering (Webster, 1997).

The symptoms of the stuttering problem in the adult can be wide ranging. The presentation of the stuttering problem in one adult may bear no resemblance to the presentation in another. One person may display speech that falls within normal listener expectations for fluency and effective communication. Another person may have such frequent disruptions in the forward flow of speech that verbal communication is almost nonfunctional (Peters & Guitar, 1991). Stutterers' attitudes about themselves and others and the communication problem may vary greatly depending on the personality characteristics of the individual and levels of emotional upset, anxiety and frustration experienced from real or perceived communication failure (Peters & Guitar, 1991). The degree of handicap may be large or it may be minimal. It may not bear any relationship to the observed outward severity of the problem or the extent of the reported covert disability (Yaruss, 1998).

In the management of adults who stutter, clinicians need to consider the following questions:

1. What are the predictable common elements associated with stuttering?
2. What are achievable outcomes from intervention?
3. What are current trends in health care?
4. What management strategies are efficacious in addressing the common elements associated with stuttering?
5. What allowance must be made for individual variables?

Common Elements of Stuttering

Many adult stutterers produce stutter free speech the majority of the time. They have a greater overall rate of disfluencies compared with non-stutterers (Wingate, 1984) but appear to have less normal disfluency, that is, disfluency common to all speakers occurring as a result of cognitive and linguistic integration (Meltzer & MacKay, 1995). At certain moments during conversation stutterers sense they are or will become "stuck" in their speech and take evasive action (Bloodstein, 1997; Peters & Guitar, 1991; Starkweather, 1997). Inappropriate muscle activity at the larynx characterizes many stuttering moments (Conture, McCall, & Brewer, 1977; Schwartz, 1974). The overt symptoms usually include disruptions in airflow (Denny & Smith, 1997; Peters, Hietkamp, & Boves, 1994) and excessive effort in production of sounds (Bloodstein, 1975; Van Riper, 1982). Variations in the occurrence of stuttering or anticipated occurrence are frequent (Andrews, Howie, Dozsa, & Guitar, 1982; Bernstein Ratner, 1997). Ninety percent of the time, stuttering occurs on the first sound or syllable of a word (Bloodstein, 1995). Most interruptions in fluency occur in contextual speech and on content rather than function words (Bernstein Ratner, 1997; Hubbard & Prins, 1994). Increasing language and speech production demands usually lead to more disfluency and associated behaviours (Wingate, 1988). In addition to these predictable linguistic characteristics, there are predictable external stimuli which influence the occurrence of stuttering. Most involve changes in the amount of communicative pressure or perceived pressure arising from such factors as communicative responsibility, time for motor planning of speech, listener reaction, concern about social approval, and audience size (Bloodstein, 1997).

Given the predictability of the stuttering event it is not surprising that anticipation of speech failure and associated autonomic nervous system arousal is a common experience for most adults who stutter (Brutten, 1963; Ickes & Pierce, 1973). This warning becomes the catalyst for "fright and flight" behaviours: increased speech rate and avoidance behaviour which is positively reinforced because it prevents the occurrence of an expected negative stimulus (Webster & Poulos, 1989).

Stutterers share feelings of loss of control over their speech and varying degrees of frustration, anxiety, shame, and embarrassment. Almost all adults seen in clinic report some form of avoidance behaviour. How often and in what circumstances such behaviours occur varies enormously. Avoidance may be confined to linguistic elements only or it may extend to speaking situations and major life decisions affecting educational, vocational, and social choices.

These elements of stuttering, which include observable, measurable, affective and cognitive components, guide the clinician in developing a management plan. Treatment strategies will promote change in speech production, autonomic arousal, avoidance behaviour, and attitude towards communication (Boberg & Kully 1985, 1995; Peters & Guitar, 1991; Prins, 1997). Clients' individual needs will influence approaches to treatment, and goal setting for transfer of fluent speech into everday speaking situations.

For effective management of stuttering in adults, the clinician must set goals which are achievable given the nature of the client and the nature of the problem and base interventions on methods which have documented support.

Achievable Outcomes

In the adult, stuttering is a chronic disorder and is often tenaciously resistant to change. The coping strategies have been repeatedly rehearsed whether overtly or covertly, as part of the stutterer's communication pattern throughout life and may be influential in the development of self-concept. All clients would most likely wish to be free from stuttering at all times but few are able or prepared to pay the price for this full recovery of fluency. Fluent speech skills learned in therapy are not well

maintained in one third or more clients (Boberg, Howie, & Woods, 1979; Craig & Calver 1991; Martin, 1981; Starkweather, 1993).

Changing deeply entrenched physiological and psychological conditioned responses, while speaking in constantly changing situations, requires extraordinary personal qualities and circumstances (Prins, 1997). In addition, the client may also be working with an innately fragile speech production system (Bakker & Brutten, 1989; McFarland & Prins, 1978; Watson & Alfonso, 1983). Many clients have concerns that their new speech does not sound natural following therapy. This may result in a reluctance to use the new fluent speech targets even though they may lead to high levels of fluency and more efficient communication (Boberg, 1981; Onslow & Ingham, 1987). In my experience, most clients eventually choose more modest outcome goals for themselves: improvement in fluency, a sense of control over their stuttering, a reduction in autonomic arousal to residual speech disruptions and a more positive attitude about their communication.

Current Trends in Health Care

Recent developments that have influenced thinking about the management of stuttering in adults include changes in health care outcome measures and the move to client-driven functional goals (Conture, 1996). The definition of success in treatment of many chronic disorders now includes not only the level of recovery from the disorder but also the level of change in disability and handicap (i.e., ability to meet personal educational, vocational, social, and emotional needs) associated with the disorder (Frattali, 1998; Yaruss, 1998). Intervention has become client-focused where the client is recognised as a partner with the clinician in decisions around treatment objectives. Goals are client and clinician-determined.

What is the objective of the client coming to the clinic in the first place? Is it to be able to say anything, anywhere, any time without stuttering or the fear of stuttering? Given the nature of the disorder and available treatments, this goal may be unrealistic. Rather than reject it, the clinician may work with the client to examine the chance of attaining it, the effort needed and the numerous factors in addition to fluency that contribute to successful communication. Together, the two may set a less rigorous level of fluency and a broader focus on enhancing the overall quality of communication.

In summary, the challenge confronting clinicians working with adults who stutter is that their clients are not a homogeneous group. Individual and group differences in clients, in the presenting problem and in causal factors have to be addressed (Enderby & Emerson, 1995). Clinicians need to embrace a multifactorial framework. Rather than attempt to develop management strategies based on one theory of the causes of stuttering, it is more useful to address the presenting realities. The impairment may be neurologically based, but the handicapping effects lie at the speech output level and its effect on communication interaction (Prins, 1991). "It is not physiological or neurological events that lead stutterers to seek treatment but the handicapping effects of being unable to produce speech that they perceive as acceptably fluent for their own needs " (Ingham & Cordes, 1997, p. 414).

Approaches to Treatment

The selection of specific intervention strategies should be supported by a consensus of research findings and models, and by past clinical practices and data on treatment outcomes (Enderby & Emerson, 1995). The work of past practitioners and researchers is well summarized in *A Retrospective Look at Stuttering Therapy* (Boberg & Kully, 1989)

During the first half of the twentieth century, clinicians such as Johnson, Van Riper, and Goldiamond influenced contemporary treatment. From the late 1930s to the late 1960s treatments focused on modifying the stuttering behaviour and reactions to the events. Johnson (1937) asserted that the crux of the stuttering problem was the reaction triggered by false assumptions and avoidance. Although he encouraged detailed analysis of speech muscle activity during stuttering in order to reduce the excessive effort, Johnson's major contributions to management were conceptual. He held that changes in beliefs were essential to changes in performance, an idea that was to become a fundamental tenet of cognitive learning theory (Bandura, 1977). Van Riper also believed that stuttering was triggered by an avoidance reaction: expectancy of stuttering (feeling of being blocked on a word) which invoked a neuromuscular adjustment, a preparatory set that precipitated the overt stutter (Van Riper, 1937). However, his approach to treatment emphasised mastery of speech modification skills as well as changes in attitudes and beliefs (Van Riper, 1947, 1973). He also recommended therapy to reduce the intensity of emotional arousal during stuttering in order to better control the speech motor responses.

In the 1960s, treatments for stuttering were influenced by the impact of behaviourism. A study by Flanagan, Goldiamond, and Azrin (1958) showed stuttering could be eliminated and produced a revolution in thought about treatment (Ingham, 1984). The goal of treatment shifted toward eliminating the stuttering through consequential stimuli or by training a new speaking pattern. Curlee and Perkins (1969) introduced prolonged speech which was based on Goldiamond's (1965) delayed auditory feedback research. The therapy components of prolonged speech included prolonged continuous phonation, slow articulatory rate, easy (gentle) voice onset, and easy articulatory contacts. These fluency targets were taught in systematic

behaviour modification programs (Ryan, 1974; Webster 1980). Their use in treatment was motivated by research findings of the day that speech motor control failures precipitate stuttering (Wingate, 1976).

In many North American centres, treatment focused exclusively on the elimination of stuttering. There were many positive elements to such an approach, including major fluency gains in clients with severe stuttering and attention to the relationship between procedure and outcome (Andrews, Guitar, & Howie, 1980; Prins, 1997). However, success was defined narrowly in terms of stuttering frequency and ignored the multidimensional nature of the disorder. Furthermore, concerns about speech naturalness and long term maintenance of fluency were beginning to arise. Most present day clinicians appear to recognize the valuable contribution of the fluency enhancing techniques used to reduce stuttering and the importance of changing motor patterns. They also recognize the limitations of this single focus when applied to a disorder which, in adults, is a chronic multidimensional problem occurring in a heterogeneous population (Boberg & Kully, 1985; Curlee & Perkins, 1984; Gregory, 1979; Peters & Guitar, 1991; Smith & Kelly, 1994).

Current management appears to favour an eclectic but structured approach directed towards the whole person and integrating both fluency enhancing skills and modification of moments of stuttering. Fluency shaping and stuttering modification are no longer considered mutually exclusive (Boberg & Kully, 1989; Peters & Guitar, 1991). Clinicians are more accepting of the idea that much of the stuttering behaviour in adults is the result of a long-standing defence reaction which is resistant to change. Successful therapy must provide the client with the skills not only to maintain fluent speech in many situations but also to regain fluency with minimal disruption when stuttering does occur. In addition, emphasis is being placed on speech naturalness (Boberg & Kully, 1994, 1995; Gregory, 1994; Meltzer, 1995; Onslow & Packman, 1997), including acceptance of a normal range and frequency of normal speech disfluency. The successful use of these fluency enhancing speech skills will induce cognitive change in the form of altered expectations. Cognitive change is also directly addressed through therapy to reduce negative feelings and attitudes that contribute to the maintenance of stuttering and interfere with the successful establishment of the new motor speech skills (Craig & Howie, 1982; Emerick, 1988; Kully & Langevin, in press; Peters & Guitar, 1991; Webster & Poulos, 1989).

This integrated approach provides an arsenal of procedures which address all of the common and individual needs of the clients within the loose theoretical framework of emerging ideas about brain mechanisms associated with stuttering and current theories of cognitive learning and behaviour therapy (Boberg & Webster, 1990; Prins, 1997). "If you deal only with speech motor control, the fears and apprehension associated with right hemisphere activation will continue to provide a source of interference with the fragile left hemisphere system. If you deal only with fears, you still have a fragile speech motor control system that cannot handle the demands placed upon it" (Webster, 1997, p. 132).

Einer Boberg introduced the first intensive treatment for stuttering in Canada in 1972. The approach was modelled on a program described by Ingham and Andrews in Sydney, Australia (1973). Deborah Kully joined Boberg in 1980 and together they and other colleagues continued to systematically evaluate and modify the program (Boberg & Kully, 1985, 1995; Kully & Langevin, in press). In present form the approach integrates behavioural strategies to enhance fluency with techniques to treat attitudes, avoidances, confidence, and social skills. Syllable prolongation provides the framework in which various fluency skills are taught, including easy breathing, gentle onset, light contacts, and blending (i.e., continuous airflow and articulatory movements). The Boberg-Kully program is also aimed at increasing the client's skill at self-management as this is considered a prerequisite for success in maintaining a satisfactory level of fluency after treatment. Realistic expectations of fluency are emphasised, recognizing how difficult it is to replace an automatic response with a voluntary response that requires almost constant attention.

Changes in attitudes, beliefs, and self-confidence are fostered through readings, discussion, and behavioural exercises and through experiencing changes in speech behaviour. Self-directed change is achieved through the acquisition of self-monitoring and problem solving skills and self-reinforcement. The Boberg and Kully program collected outcome measures over 13 years (Boberg & Kully, 1994; Langevin & Boberg, 1993) and they are among the most comprehensive outcome measures currently available.

In discussion with many clinicians in Canada and some from the U.S. who specialize in the management of stuttering in adults, I have found that the majority accept an eclectic behaviour modification approach to treatment and share similar goals for their clients: (a) speech that looks and sounds as normal as possible; (b) feelings of control over the speech behaviour and choices as to how they will speak; (c) confidence in the knowledge that they can use the speech fluency enhancing skills consistently; (d) efficient and effective communication to meet educational, vocational, social, and emotional needs; and, (e) ability to problem solve, to be their own therapist. An overarching objective is for clients to experience feelings of pleasure or satisfaction from speaking.

Treatment: Questions clinicians need to ask

Selection of speech features to modify and the methods

used depend on the theoretical beliefs, goals, and priorities of the clinician and the needs of the client. Different treatment programs may emphasise different elements, or use different technical approaches to achieve similar objectives. Clinicians have to ask themselves which components of the client's behaviour need to be changed. Not all clients need to make the same changes or the same degree of change. How should the modifications be made ?

It may be that none of the interventions work in the way that we believe them to operate. However, clinicians should set clear goals and they should adopt therapy procedures based on: (a) theoretical principles and beliefs, (b) empirical data about effectiveness of techniques, (c) documented or experiential rationales, (d) the collective and individual needs of their clients, (d) their level of comfort in initiating the procedures according to experience and training, and (e) evidence of measurable change towards achieving predetermined goals.

Management programs usually include three or four components. These are: (a) increasing speech fluency, (b) enabling the client to be able to use the fluency enhancing skills to say what they want to say, where they want to say it, and how they want to say it (i.e., generalization strategies), and (c) facilitating maintenance of improved communication.

Efficacious intervention demands that all three components are built into management programs for the treatment of adults who stutter. How much time and emphasis is given to each component varies between clients because of their individual characteristics.

Increasing Speech Fluency

There is an extensive list of treatment methods for increasing speech fluency in adults who stutter. Among the methods developed are Einer Boberg and Deborah Kully's (1985, 1995) Comprehensive Stuttering Program, William Perkin's (1973) Conversational Rate Control Therapy for Stuttering, and Ronald Webster's (1980) Precision Fluency Shaping Program. All have some elements in common for increasing speech fluency. These include attention to airflow, speech rate, and tension in the speech musculature. Strategies that are used to address these elements may vary. The focus for debate lies in the detail. Clinicians' adoption and modification of these strategies will be influenced by what they believe to be the relative contribution of physiology and learning. The clinician needs to decide or determine through trial approaches the degree to which the client needs compensatory motor speech strategies because of a fragile speech motor system and how much fluency will increase by just eliminating unproductive coping strategies.

Airflow

Aberrant respiration may be a contributing factor to the etiology of stuttering, but it is also likely that attempts to overcome speech failure lead to disruptions in respiration both in preparation for speech and during production. These disruptions may include blocking off the airflow by maintaining inappropriate glottal closure, "run on" phrases resulting from inadequate frequency or duration of pausing, inhalation or breathy articulation to release blocks, and loss of air during articulatory struggle. The clinician must decide whether direct work on respiration is required or whether changing the coping strategies will facilitate normal air support for speech.

In my clinical experience using a range of commonly used treatment methods, I have found that for a large majority of clients, elimination of the behaviours disrupting airflow are sufficient to facilitate adequate air support for fluent speech. This process includes attention to establishing normal frequency and duration of pauses and normal phrase length (Boberg & Kully, 1985; Meltzer, 1995; Perkins, 1973), an awareness of an open glottis during pauses, elimination of blocks, elimination of block release through inhalation, and extinction of articulatory struggle. Training in breathing is introduced with those clients who continue to experience poor air support for speech and/or the fluency enhancing targets after other interfering factors have been modified. The approach may be similar to that sometimes used in therapy for voice disorders or described in the Precision Fluency Shaping Program (Webster, 1974). In this program, treatment for achieving airflow to support fluent speech focuses on taking a full diaphragmatic breath at the beginning of a sentence.

Assuring adequate (normal) air support in preparation for speech is a goal common to many management programs. There are differences among some programs in specific strategies used to manage airflow during speech production. In normal speech production, speech onset usually occurs near the onset of exhalation. To facilitate easy onset of phonation, some therapy programs teach a release of air prior to initiating speech. If the goal is to have normal sounding speech produced in the most natural way possible, with minimal intervention, the strategy of pre-voice exhalation may not accomplish this goal. Speech may be excessively breathy and require more air in circumstances where low air support for sustaining speech is often a problem. I have found the strategy to be a useful training method in individual cases where easy voice onset is very difficult to establish. Release of air to attain an easy voice onset can be taught as a branch step which is then modified to normal. For the majority of clients I do not find this procedure to be necessary.

Maintaining continuous smooth airflow throughout the phrase is identified in most programs as a critical element for

reducing the occurrence of stuttering. Reducing breaks in air flow within the phrase between pauses, reduces the points at which stuttering is likely to occur to phrase onsets (Perkins, 1973). Smooth airflow is achieved by the normal blending or linking of one sound into the next within the phrase.

Rate Control

Speech rate control is a component of treatment common to many programs. The purpose is to reduce the occurrence of stuttering and/or to assist in modifying stuttering blocks, struggle and excess tension. There are three ways to achieve a reduction in speech rate: (a) prolonging the duration of sounds/syllables, (b) increasing the frequency of pauses, and (c) increasing the duration of pauses.

A primary objective of reduced speaking rate is to facilitate fluency by slowing the transitional movements from sound to sound. The most frequently used method is probably syllable prolongation and its variations (Boberg & Kully, 1985; Ingham, 1987a; Ingham, 1987b; Perkins, 1984; Peters & Guitar, 1991; Webster, 1974).

There are several approaches to training prolongation. Clinicians need to ask themselves three questions. First, where should prolongation occur - on every syllable in the phrase or just on selected syllables? For some clients, particularly those who appear to be very vulnerable to motor speech disruption, prolongation may be needed on all the syllables across the phrase. However, for a large majority of clients I have not found this to be necessary. Prolongation on selected syllables together with other strategies allows clients to minimise stuttering or appropriately modify blocks. Which syllables, then, should be prolonged? Stuttered moments are more likely to occur on utterance-initial and clause-initial words (Berstein Ratner, 1997; Bloodstein, 1995; Wingate, 1988). If the clinician believes the primary problem contributing to the stuttering behaviour is the initiation of normal voice onset, then prolongation on the first syllable is logical. However, if the clinician's goal is to reduce the overall speech rate, then the speech may sound more natural if the prolongation is on stressed syllables.

The second question is, on which sounds should prolongation occur? Many clinicians seem to agree that attention to timing and coordination of voice onset is crucial to fluent speech and therefore prolongation should occur on voiced sounds. There is not the same consistency of opinion around voiceless sounds. If delayed auditory feedback (DAF), as used by Perkins (1984) or Peters and Guitar (1991), is used to reduce the rate of speech then it is likely that continuant sounds will be prolonged. However, in the method used by Boberg and Kully, only stressed vowels are prolonged. In Precision Fluency Shaping Program (Webster,1974), prolongation focuses on vowels and voiced continuent sounds but is minimized on voiceless sounds. This leads to the third question. If only voiced sounds are prolonged, should prolongation occur on the first voiced continuant of the syllable immediately following a pause, or on the vowel sound? Again, until data are available to guide such decisions, the clinician's observations and beliefs about factors contributing to stuttering and their philosophy on an approach to treatment will determine this decision.

Where and how much prolongation is used and its duration can make a marked difference to the sound of speech. The clinician has to decide which approach is going to best meet the individual client's goals. The decision may be made around four issues:

1. Does the client need to establish a reduced rate on all syllable productions as a permanent fluency enhancing target to achieve his/her goals?

2. Does the client need to establish a reduced rate on all syllable production as an interim strategy to assist in learning other strategies?

3. Can the client achieve his/her goals by using prolongation only on selected syllables?

4. What is the clinician's philosophy and intent when deciding which syllables and which sounds to prolong?

In Webster's Precision Fluency Shaping Program, the initial target is to prolong every syllable for two seconds. If there is only one voiced continuent sound in the syllable, it is prolonged for two seconds. If there is more than one voiced continuent sound, the first sound is prolonged for one second and the subsequent voiced sounds are completed in one second. The prolongation is gradually reduced, first to one second for each syllable, then to half a second and finally to 'slow- normal'. In the Boberg and Kully Comprehensive Stuttering Program, the prolongation is on the vowel of the primary and secondary stressed syllables and the duration is determined by the total number of syllables to be produced in a minute starting at 40-60 syllables per minute and progressing gradually to a slow normal rate of about 190 syllables per minute (140-210 spm).

My approach for the large majority of clients is to use prolongation only on the first voiced continuant sound following every pause. The sound is prolonged for one second during the initial training of gentle voice onset and then modified. The purpose of this prolongation is to stabilize the action of the vocal cords on the first voiced sound before attempting to move on to the next sound. The selection of the first voiced continuant after a pause is based on research findings suggesting that some people who stutter may need a longer time to initiate voice (Peters & Hulstijn, 1989). Only clients exhibiting difficulty reducing stuttering by this method are trained to prolong initial voiced continuants on each word throughout the

entire phrase. One might speculate that it is these clients who have a longer latency related to coordination of laryngeal and articulatory movements, and that therapy to establish an overall rate suited to physiological capacities is appropriate.

Naturalness has been identified as a priority by clients and clinicians for acceptance and long-term maintenance of fluency skills (Perkins, 1981; Schiavetti & Metz, 1997). Regardless of the different ways clinicians implement prolongation, their long term goal is to modify it to sound as close to normal speech as possible. How rapidly and to what extent this can be achieved is variable depending on characteristics of individual clients (e.g., stuttering severity).

While prolongation is often the strategy of choice for rate reduction to enhance fluency, some clinicians have suggested that increasing the frequency and duration of pauses with attention to having an open airway during the pause may be an effective and efficient way to modify rate and moments of stuttering without altering the acoustic quality and naturalness of speech (Healey & Adams, 1981; Meltzer, 1995). Pausing will reduce the overall rate of syllable production, but leave the articulatory rate unchanged. Fluency may be enhanced because the pause facilitates changes in other variables that affect the frequency of occurrence of stuttering. Pausing also allows moments of stuttering to be modified before they become overtly disruptive to fluency.

Some clinicians have suggested that modifying the frequency of pauses may be easier for speakers to accomplish than modifying time frames of articulatory gestures (Schneider, 1995). Because pausing does not distort articulation, it is acceptable to clients although they may still have concerns about sounding too slow. Pausing provides a foundation upon which other fluency enhancing strategies can be introduced. Its purposes are to: (a) facilitate normal air flow, (b) allow time to modify moments of aberrant motor speech, (c) facilitate use of other fluency enhancing strategies such as easy voice onset, (d) promote a sense of control over speech, (e) allow for formulation of language and coding into motor speech, (f) reduce time pressure (Haynes & Christensen, 1995), (g) enhance naturalness, and (h) reduce the avoidance 'fright and flight' response associated with stuttering.

Whether clients are modifying the rate of syllable production by sound/syllable prolongation and or increased pausing, the required syllable rate per minute for enhancing fluency varies across clients. A reduction to 200 syllables per minute may be appropriate for one client while another initially needs to maintain a rate of 100 syllables per minute to maintain fluency. An approach where clients explore and determine for themselves the rate at which they feel they can maintain fluent speech or modify moments of stuttering (Onslow & Packman, 1997), may yield better results in the long term than a clinician-prescribed rate (Owen, 1981).

The speech needs and concerns for conformity of a 16-year-old and a 60-year-old are likely to be very different and speech rate is very variable within and between different speakers. Programs should be able to accommodate both different individual needs and the varying needs of the individual. A slower rate of speech may be appropriate in more formal speaking situations or monologue but impractical or unacceptable to the client in fast moving group discussion. A slower rate of speech may enable the client to maintain stutter free speech more successfully while a faster rate may require the client to deal with some stuttering events. I believe it is important for clients to experience two different rates, one where they feel they could not possibly stutter and the other where stuttering might occassionally occur but is manageable and there is no feeling of loss of control, or negative affect.

Easy Speech

Increasing speech fluency same as easy speech

*E*asy Speech is a treatment process common to most stuttering behaviour modification programs (Boberg & Kully, 1985; Gregory, 1986; Perkins, 1984; Peters & Guitar, 1991; Van Riper, 1982; Webster, 1974). The rationale is based on the observation that adults who stutter often use excess effort to produce specific sounds or even entire phrases. This excess effort may be in response to a sense of being "stuck" or it may contribute to becoming stuck. Clinicians may have different ways of training Easy Speech with emphasis on different elements of speech production. There are several ways to approach changing effortful speech. Boberg and Kully, Gregory, and Van Riper emphasise the need for clients to analyse their own behaviour and identify the feelings of excess tension and effort which interfere with speech production and flow. This self-awareness training before or during acquisition of specific easy speech skills helps clients identify for themselves what needs to be changed and builds self-management skills that are considered prerequisite for success in maintaining a satisfactory level of fluency (Boberg & Kully, 1985).

Easy Speech may be trained globally or divided into specific elements, Gentle Voice Onset and Minimal Articulatory Pressure, and used in specific places in a phrase. Gentle Voice Onset may be used on: (a) the first voiced sound following a pause/initiation of phrase onset, (b) the first voiced sound in every word in the phrase, or (c) all syllables. Maintaining gentle vocal onset of phrase initiation has been viewed as one of the most effective ways of preserving fluency with naturalness (Perkins, 1981). Minimal articulatory pressure may be introduced on: (a) initial consonants immediately following a pause, (b) the first consonant in every word in the phrase, or (c) all consonants throughout the phrase. With some clients, I find that Gentle Voice Onset promotes minimal pressure and that

separate training of this element is not required. For others, excess articulatory effort may be a pervasive problem and a primary focus in therapy requiring attention throughout the phrase. When training Easy Speech, care must be taken to ensure that the resulting sound is normal and that the client achieves normal volume throughout the learning process. The psychological association of gentle/easy with soft/quiet must be overridden.

Normal Speech Disfluency

Little has been documented about the place of normal speech disfluency in stuttering therapy. During the 1970s, measures of disfluency, often included normal as well as stuttered disfluencies. Outcome goals were speech with no more than 1-2% disfluency whether stuttered or normal. Yet nonstutterers exhibit a range of 3%-14% disfluencies (Goldman-Eisler, 1968). At the 1979 Banff conference organized by Einer Boberg, Martin (1981, p. 28) commented "It seems to me somehow implicit in the notion of normal nonfluency that a successfully treated person who stutters ought to exhibit or ought to be allowed to exhibit normal nonfluencies".

A recent study by Meltzer and MacKay (1995) found that a group of 10 stuttering adults had significantly less normal speech disfluency in spontaneous speech than a did their normally fluent counterparts. They also found an inverse relationship between stuttering frequency and normal disfluency: as stuttering increased, normal disfluency decreased. Most clinicians are probably familiar with the surprise shown by their clients when asked to listen to normal speakers' disfluency. It seems that people who stutter often believe that everyone else has perfectly fluent speech and that this should therefore be their goal.

Many of the same factors that increase normal disfluency in nonstutterers also increase stuttering in stutterers: time pressure, uncertainty, and increased linguistic complexity (Bernstein, 1981; Berstein Ratner, 1997; Bloodstein & Gantwerk, 1967; Jayaram, 1984). It would seem to be unrealistic to expect stutterers to replace stuttering with fluent speech in these situations where nonstutterers are normally disfluent. Thus, it would appear that stutterers should become more accepting of disfluency in these circumstances and this may often entail training in the deliberate use of normal speech disfluency.

I have found that, it is beneficial to train stutterers to use simulated normal speech disfluency and to encourage the use of normal speech disfluency in addition to the core fluency enhancing techniques. Simulated normal speech disfluency is introduced after fluent speech techniques or stuttering modification techniques have been established. Clients practise using word or phrase repetitions within the sentence, at the beginnings of sentences and before words conveying significant information. They then systematically transfer these simulated disfluencies into conversation. Where the client is automatically using normal speech disfluencies (fillers) such as "well", "ums", and "ers" appropriately, the behaviour is accepted and reinforced.

In my experience the benefits of this approach are: (a) more natural sounding speech, (b) reduction in linguistic processing demands, (c) fluency facilitation (a word or phrase repetition using targets can be used if stuttering is suddenly anticipated or experienced), (d) facilitation of frequent pauses (pauses are frequently "filled" with interjections in the speech of non-stutterers and this normal speech dysfluency makes the use of pause more natural), (e) desensitization to disruptions in speech, particularly important for covert stutterers, and (f) more reasonable fluency expectations.

In summary, there is no one treatment approach that can guarantee normal fluency at all times (Prins, 1997). The clinician must consider the client's needs and what interventions will achieve the identified goals in the shortest time. Certain fluency enhancing targets are more useful to some people than to others. The clinician should provide the client with optional skills. The client can then decide which ones are the most effective, acceptable, and feasible.

Eye Contact

An important nonspeech behaviour incorporated into treatment is normal eye contact with the listener, bearing in mind that what is normal in one culture may not be so in another. It is uncomfortable both for the speaker and listener to have eye contact during a severe long stuttered block but once fluent speech or stuttering modification skills have become established then appropriate eye contact can be systematically developed. Eye contact is important for three reasons. First, making eye contact before starting to speak may help clients maintain focus so that they are more aware of the onset of stuttering or erroneous coping strategies (i.e., struggle behaviour), and make appropriate changes. Secondly, it affects the listener positively which in turn enhances the comfort level of both parties. If the client looks away when stuttering, he/she conveys the message that there is a problem. Even if the client has some mild but identifiable stuttering, keeping eye contact will signal that the listener does not need to be concerned. Thirdly, it assists the stutterer in reducing avoidance behaviours and negative reactions towards his /her speech (Breitenfeldt & Lorenz, 1995).

Another potentially important nonspeech behaviour which I have yet to explore is the incorporation of gesture training. Recent studies (Mayberry & Shenker, 1997; Shenker, Mayberry, Scobie, Grothe, & White, 1995) have found differ-

ences between stuttering and nonstuttering adults in the frequency of speech-related gestures. The ratio of gesture to speech was significantly less in the adults who stuttered. This finding is of particular interest when considered in conjunction with the findings of Meltzer and MacKay (1995) that adult stutterers have less normal disfluencies than nonstutterers. Gestures accompanied normal disfluencies but were supressed during stuttered disfluencies. The authors suggest that training in normal gesture may enhance fluency and positively contribute to the perception of speech naturalness.

The Treatment Process

Once goals have been established and management strategies identified, there are options for eliciting and establishing new speech behaviours. Goal setting and achievement provide the framework within which the success of the intervention can be measured and therapy adjusted accordingly. Clients need to be aware of their behaviour so that they understand the extent to which their own actions and feelings contribute to the stuttering problem. They should develop the ability to self-motivate, evaluate, and internally reinforce behaviour (Cooke, 1995; Peters & Guitar, 1991). They should come to expect that they can successfully execute the responses required to achieve a satisfactory outcome. Furthermore any newly acquired skills deteriorate if not practised. There is no set prescription for the type and amount of practice, but the clinician must tailor it to meet the needs and capabilities of the individual client based on principles of behaviour change (Bandura, 1976). Fluency enhancing skills are hard to retrieve in demanding speaking situations if they are not very familiar. The most important factors affecting motor learning are: (a) the amount of repetition, (b) feedback through self-recognition of performance level and knowledge about how to make change, (c) scheduling practice, and (d) motivation (Schmidt, 1991).

Clients must be encouraged to determine for themselves a practical and achievable schedule for focussed solo skill practice. They should also be encouraged to use small windows of opportunity so that skill practice can be incorporated into daily life activities, such as when reading a bedtime story to children or during the commercials when watching television.

Initially behaviours are usually modified through exaggerated practice and then shaped towards normal as skills are mastered. Practice usually begins with reading as this reduces cognitive language processing and allows the client to pay full attention to the motor skills. Reading also provides an easy medium for manipulating such variables as sounds, phrase or sentence length, and language complexity. Once the skill is established in reading a transition is made to spontaneous speech. This can be done in steps by first completing phrases, then describing pictures and finally initiating conversation and responding. A transfer hierarchy is constructed which systematically introduces and manipulates the known variables affecting fluency: cognitive linguistic demand, subject matter, time pressure, communicative demand, the listener, and group size.

Details of clinical procedures are outlined in a number of programs including the Comprehensive Stuttering Program (Boberg & Kully, 1985; Kully & Langevin, in press), The Essential Pause (Meltzer, 1989), Stuttering - an Integrated Approach to its Nature and Treatment (Peters & Guitar, 1991), The Precision Fluency Shaping Program (Webster, 1980), and Programmed Therapy for Stuttering in Children and Adults (Ryan, 1974).

Multiple Languages

Many clinicians work with clients who speak more than one language. Clinicians have to consider establishing fluency and modifying stuttering behaviour in other languages. This is not an insurmountable problem. At our clinic I have found that it is possible to work on fluency in a language that the clinician does not speak. One can establish the new speech behaviours in English or French, and then monitor their transfer into any other language. The clinician and client can work together to identify the characteristics of sounds not used in the first language treated. This includes identifying components of diphthongs and sound categories (e.g., voiced or voiceless, plosive, or continuant), and then applying the targets accordingly. Practice and transfer of skills into everyday speaking situations can be guided by the therapist with the client identifying opportunities to use the other language. Research at our centre is underway to examine the generalization of fluency skills across languages (Roberts & Maillet, 1998).

Cognitive Change

For the new fluency enhancing speech skills to be transferred and maintained successfully in everyday speaking situations outside the clinic, it is essential to deal with any negative attitudes and feelings the client might have about stuttering and speaking. It is widely believed that negative emotion and physiological arousal disrupt motor speech production and interfere with the use of the fluency enhancing speech techniques (Bloodstein, 1987; Boberg et al., 1979; Owen, 1981; Peters & Guitar, 1991; Prins, 1997; Van Riper, 1973). Dealing with avoidance, attitudes and feelings is also important for minimizing the occurrence of stuttering and adjusting to residual stuttering.

Cognitive change includes reducing speech fears, replacing negative thoughts about speech with positive or more helpful thoughts, reducing misperceptions about speech, improving understanding about the multiple factors that contribute to successful communication, strengthening confidence and self-esteem, and adjusting to increased fluency. Ingham (1993) emphasises client self-efficacy (personal knowledge, motiva-

tion, change, challenge, and reward) as the keys to success.

Adapting to increased fluency includes handling changes in the interaction between speaker and listener such as tolerating interruption, managing turn taking, and improving other pragmatic skills that may be weak or insufficiently developed. Clients may need to acquire social and communicative skills in order to expand social contacts and opportunities to practise in new social settings (Boberg & Kully, 1995; Rustin, Spence, & Cooke, 1995; Webster & Poulos, 1989).

Clinicians must carefully consider their level of clinical competency to work in some of these domains. As speech-language pathologists we are trained to work on speech. In some cases it may be important to refer clients to other professionals such as psychologists or counsellors.

Generalization

Successful performance experiences are achieved through mastery of new speech skills and through replacement of negative with positive thoughts. Speech skills and positive self-talk are gradually transferred into everyday speaking situations in a hierarchy identified by clients. The selection of goals for applying skills outside the clinic may originate from different philosophical points of view. One view is that the targets should be monitored and used at all times in all situations. The benefits of this approach are that with sufficient practice the fluency skills can become automatic and exaggeration of targets may be modified to sound natural more quickly. Another view is based on the premise that constant monitoring of targets places unrealistically high demands on the person who stutters. Accordingly, the goal is to increase the use of new speaking skills through identifying specific times, places, and people for monitored practice.

The individual's functional communication needs and desired associated feelings drive the selection of performance goals and strategies. A hierarchy of step-by-step achievements should be individualised and client-selected, with the clinician providing the necessary intermediate steps to accomplishment. A personal profile can be drawn up to include all the people that the client is likely to speak with each day. This would include people with whom just a few words are exchanged (e.g., a car-park attendant) to people with whom one has long conversations. People are identified that may only be seen once a week or on specific occasions. The main speaking situations are talking one on one, in a group, or on the phone. Speaking environments are also identified. These might include classroom, committee meeting, office, or dance hall. The client then identifies priorities: the people, the situation (e.g., telephone) and the environment. For example, a client may indicate that using his fluency enhancing skills when talking with co-workers on the phone is a priority. This method of goal setting takes into account that clients are not a homogeneous group. For some clients it may not be a priority to speak fluently at home compared with speaking at work. Activities to achieve the client's identified goal become the focus for therapy.

Clinicians need not be locked into either/or choices. The client can be encouraged to use methods for enhancing fluency as much as possible in all situations. However, using the new skills successfully often requires a level of intense focus which is difficult to sustain over a prolonged period. Therefore, it is recommended that clients select a specific length of time or identify specific speaking situations where using the new skills will be a primary focus.

Maintenance

Goals for long term maintenance of skills and their use outside the clinic have to be part of the therapy process from the beginning (Boberg, 1981). Making clients aware of and responsible for what they do as they speak is a cornerstone for management. Clients must be motivated to takes small steps outside their comfort level. Cognitive change in the form of self-efficacy expectations is brought about by successful performance experiences. This involves client's learning how to plan steps to achieve maximum success: how to recognize what they did well, how to identify where there is a need for change, and how to problem solve to make the change. The problems of long-term maintenance of the new skills are addressed by: (a) ensuring the client understands the principles underlying behaviour change and the nature and extent of the work involved both at the speech and cognitive level; (b) helping the client adapt to the new status as a person who stutters, who has efficient and effective communication; (c) empowering clients to be able to be their own therapist and to problem solve; (d) providing the necessary support; and, (e) giving as much attention to transfer (generalization) and follow-up maintenance procedures as to the initial treatment strategies.

Service Delivery Models

There are many sources of reference for planning treatment programs but the clinician has little guidance to determine the best service delivery model. There has been sparse research into the value of intensive over semi-intensive or nonintensive programs, group versus individual treatment, and varying amounts of treatment. The range of options for service delivery is extensive and may well be determined more by such factors as finances, geography, and client and clinician availability than by preferred practice.

Most adults who present with consistent and severe breakdown in motor speech production and who need extensive supported practice to establish new fluent speech techniques

outside the clinic probably require intensive therapy — full day programs for a number of weeks. This may mean that, where clinicians cannot offer this opportunity, they should encourage clients to attend a program outside their region. Clients then return to their local facility for the follow up and maintenance. The local clinician, particularly if he/she is a generalist, may find it helpful and in the client's best interest to establish a partnership with an intensive treatment clinic. In this way, clinical expertise is available for problem solving, shared follow up, and provision of refresher courses. If there is no therapist in reasonable proximity to the client, long distance follow up by telephone is feasible. The appointments and structure of sessions are scheduled exactly as if the client was present. Taped assignments can be exchanged. When appropriate, the client would be encouraged to visit the clinic every four months for extended appointments over two to three days if possible.

Clients who have moderate overt stuttering and those who seldom stutter but have elaborate and restrictive avoidance behaviours do not necessarily require daily intensive therapy. Clients whose stuttering is covert may need to spend more time on attitude change than on motor speech practice, but if they are to feel confident in their ability to speak, they need both interventions. I have found some clinicians reluctant to admit covert stutterers for treatment because they may never hear the client stutter. Some of the most handicapped clients are those who appear fluent and whose stuttering may not appear until therapy is well underway. In such cases I view the appearance of stuttering as progress and prepare the client for this interim stage of recovery. Just as the overt stutterer needs to become skilled in the use of fluency enhancing speech behaviours, so too does the covert stutterer. They need to know they have the tools to facilitate fluency and exercise control over how they speak. This may be relatively easy compared to the degree of work that has to be done to reduce the strength of the emotion accompanying stuttering events and speaking situations (Bloodstein, 1987). This cognitive change around thinking, perceptions, feelings, and self-efficacy is not achieved immediately in a crash course, but gradually as clients are able to demonstrate to their own satisfaction that they do not need to avoid.

Moderate overt stutterers who are not particularly handicapped by the communication impairment and demonstrate a capacity for sustained periods of fluent speech may not need the intense focused motor speech practice only available in intensive daily therapy programs. They may respond well, for example, to hourly sessions twice a week with a rigorous home program.

Clinicians can be creative and provide a variety of service options including semi-intensive programs. Examples include twice a week evening courses for eight to ten weeks. These might include Saturdays to provide opportunity for concentrated skill practice and assignments to achieve generalization outside the clinic. This service delivery model accommodates people who are unable to attend during the day. Severe overt stutterers who cannot attend the recommended daily intensive program, may benefit from a semi-intensive format. This format may be most suitable for clients less subject to motor speech break down or those who are internalized stutterers. An advantage of semi-intensive models of service delivery is that client's have more time to make emotional and attitude changes as they make fluency changes.

Working in small groups for at least part of the therapy has several benefits: sharing with people who have a similar problem; learning from observing stuttering and its modification in others; and, practicing new motor speech, pragmatic skills, and presentation skills in a comfortable environment. Not all clients are initially willing to work in a group, and flexibility on the part of the therapist is required. Most clients also find it helpful and encouraging to work with and meet clients who have completed therapy or are at a more advanced stage of treatment. However, clinicians should ensure that group discussion is not a substitute for action. Sharing can be very supportive and cathartic but speech skill practice and active cognitive change are the focus.

Technical Devices

What is the place for devices to assist in the establishment of fluent speech? Delayed auditory feedback (DAF) is an option for establishing a rate of speech (prolonged speech) at which the client does not stutter. As the client becomes more proficient, the DAF machine is withdrawn and the use of the new motor speech skills are internalized (Peters & Guitar, 1991). Computerized systems may be useful aids in establishing fluency targets. The Cafet System[2] provides visual feedback on chest wall movement, easy voice onset, and sound duration. The IBM Speech Viewer provides visual and auditory feedback for easy voice onset and sound prolongation. These instruments may have a role in treatment, but clinicians should not despair if they have none of these tools. A stopwatch and an experienced "clinical ear" will suffice. The devices can be useful adjuncts in training, particularly in group treatment when the client may be working alone for periods of time. They also can be temporarily motivating. We do not know whether clients trained to use the monitors have better long term results than those deprived of the opportunity. In my clinical experience success is more dependent on the client mastering the skills and internalizing associated sensations than on the device used in training fluency skills. Clients should be encouraged to self-monitor movements and sensations associated with fluency techniques as soon as possible and not become dependent on external feedback. A possible drawback of

monitoring devices is that clinicians can become too focused on making the client response meet the requirements of the instrument. In many instances this may be unnecessary or inappropriate.

Criteria for Accepting a Client into Therapy

For which clients is it efficacious to offer intervention? This question is most relevant to particular groups of stutterers. One group of adults ranges from 16 to approximately 20 years of age. Some members of this group may not want to come for treatment but are being pressured by concerned family members to "do something about their speech". Clients must want to work on their speech for themselves and not because of others. Some may not have the focus, motivation, or maturity to fully benefit from therapy. During assessment and throughout therapy the clinician must make sure clients understand what is required of them, what treatment involves, and what are reasonable goals and expectations. If clients are asking for help and are fully informed, then admission for treatment may be efficacious. Clients will gain an understanding of the complexity of the problem, and develop skills that provide them with more choices about how they speak. Although not all goals may be achieved, and although relapse in fluency may occur, in many cases clients will make valuable gains in one or more areas of the stuttering problem. They may come to appreciate the need for taking responsibility and recognize the time and effort required to make the speech and cognitive changes that are necessary to meet their goals in the future. Many members of this group will request treatment a second time. They come back because in their first program they recognised and experienced some of the gains that could be made. When they request treatment a second time they often come better prepared and understand the extent of the commitment they must make to maintain their skills and functional success.

Other clients for whom the clinician must question the efficacy of intervention include those who may have psychiatric illness, depression, or social problems unrelated to their speech problem. Clients should be encouraged to seek help for these problems from appropriate other professional sources. The clinician will have to decide whether or not trial speech therapy with clearly defined short term goals should be offered at the same time. Some clients may have second language limitations, learning disabilities, articulation problems, or voice problems. The clinician should decide on an individual basis whether or not the client could benefit from intervention currently or in the future. Factors to consider include whether these conditions are contributing to increased stuttering (e.g., the client does not know how to pronounce certain words, which may cause embarrassment further precipitating stuttering), the level client's level of commitment, ability to understand the process of therapy, and capacity for personal responsibility. The clinician can modify materials and the training process for clients with special needs. Where anxiety about language and pronunciation are identified as contributing to stuttering or the application of fluency targets, remedial work in these areas should be made available. Clients with minor voice problems may benefit from therapy for stuttering. In our clinic, approximately one in six clients may report occassional voice loss following extensive speaking. Air support and gentle voice onset techniques will improve voice production but clients in intensive therapy must take care not to overuse the voice.

Most clinicians who work in adult fluency have had clients who want fluency for a special event (e.g., wedding vows, job interview) — a "magic bullet" to get them through that day. As I unfortunately cannot work miracles or at least not instant cures, I do not accept clients under these conditions. However, I seldom have had to directly refuse these individuals treatment. When given an explanation of the treatment process, clients usually adjust their expectations and make an appropriate decision on their own.

When Do you Discharge your Client?

Goals may be achieved with some clients in five hours of therapy. With others, two hundred hours may not be enough. Goal setting with ongoing measurement of change will indicate when it is appropriate to discharge a client. If the goals are not being achieved, then the clinician has to identify the reasons and act accordingly. Does the clinician need to make changes in therapy? Does the clinician have the time to provide the appropriate intervention? Does the client have language problems or pragmatic problems associated with stuttering? Is the client doing the necessary work? Are there other factors interfering with progress such as personality characteristics, depression, or social problems unrelated to speech?

Most clinicians are familiar with the process of gradually reducing the frequency of appointments as clients improve. This process is particularly important for clients who stutter.

The frequency of appointments can also be contingent on clients working independently towards achieving their stated goals. If a client has not accomplished a particular well planned and achievable assignment because of lack of effort or opportunity, appointments can be rescheduled for a later date so that the client can complete the work. Goal setting and outcome measures provide the indicators for discharge.

Outcome Measures

A framework eminently suited for outcome measurement is the International Classification of Impairment, Activity Limitations (formerly disability), and Participation Restrictions (formerly handicap) proposed by the World Health Organization (WHO, 1980; Yaruss, 1998). This framework provides a

structure for measurement at three separate but related levels. Impairment incorporates measures of severity of the stuttering behaviour and associated emotional and cognitive reaction. Parameters may include frequency and duration of stuttering, speech rate, secondary behaviours, self-perception of stuttering, levels of expectation of stuttering, and confidence to enter speaking situations. Pretreatment and posttreatment measures from representative speech samples of video or audio tape provide a basis for identifying improvement in fluency. Scales may be used to rate pre- and posttreatment severity of stuttering, speech naturalness, and anxiety and confidence levels associated with speaking (Andrews & Cutler, 1974; Enderby & Emerson, 1995; Riley, 1994; Woolf, 1967).

Change in level of impairment can also be evaluated by the client on a personal goal profile discussed under treatment. Ingham and Cordes (1997) suggest that self-rating as well as observer ratings may be usefully incorporated into all aspects of stuttering measurement. Before treatment, clients rate the level of difficulty they have in speaking with different people, in various environments and situations self-identified in their profiles. As an example, a scale from 1-10 may be used where 10 is the most difficult speaking situation. The client might rate talking to the boss on the phone pretherapy as a 7. Clients then rate the same situation posttreatment to appraise progress and guide decision making. These type of measures are valuable in determining whether a specific treatment goal is being achieved in situations outside the clinic, whether the intervention helped, and in planning or changing therapy processes, goals, and objectives. Furthermore, these measures may be useful as therapy tools. Less than satisfactory scores can be the catalyst for identifying the need for behaviour change. Tangible evidence of positive change can be a motivating strategy.

Activity Limitations addresses the extent to which the person's performance of activities in everyday life is limited by their impairment. For stutterers this might be avoiding certain speaking situations because they may not be able to initiate speech or they fear the consequences of stuttering (e.g., when answering the phone or when responding to questions in class). Functional activity may also be affected by feelings associated with the impairment. Measures of functional activity pre-and posttherapy are critical measures for efficacious treatment as they provide information on progress for the client and the clinician on which management decisions can be based. Furthermore, this information is meaningful to health managers and funding agencies to whom the clinician is accountable.

Participation Restrictions incorporate the extent to which the Activity Limitations have an impact on the client's involvement in everyday life educationally, socially, emotionally, and vocationally. Measures of change could be made using validated available tools (Enderby & Emerson, 1995) and quality of life instruments. The latter are not available for measuring the effect of treatment for stuttering on quality of life but an instrument for measuring change in degree of handicap and its significance for quality of life is currently being developed at our centre.

What Does the Future Hold for the Management of Adults Who Stutter?

There is no cure, no quick fix, for the adult who stutters. There is the opportunity to make very significant positive long term change in a large majority of clients. In my clinical experience and that reported by many of my clinical colleagues, measurable positive change can occur in fluency, associated behaviour, thoughts and feelings, and in educational, vocational, social, and emotional domains of the client's life.

In future, clinicians need to identify preferred practice to ensure efficacious treatment with responsible resource management. Future management of adults who stutter will benefit from a continuation, with the same zeal and integrity shown by Einer Boberg, of ongoing research to identify the exact nature of changes that result from our interventions and to identify the minimal but most efficacious treatment.

The legacy left by Einer Boberg and carried on by Deborah Kully, Marilyn Langevin, and colleagues will continue to serve clinicians well. In the words of Perkins (1985, p. ix), their Comprehensive Stuttering Treatment Program

> is a remarkably successful marriage of fluency-shaping skills with stuttering-management skills. But their objectives go far beyond the mechanics of fluency. They know the inside view as experienced by the person who stutters as well as the outside view as heard by the listener. Their goals are as much concerned with issues of confidence, social skills and self-control as they are with speaking ability.

Endnotes:

1. I do not advocate the use of the word "stutterer" in clinical practice, but confine its use to technical literature.
2. Cafet system -4208, Evergreen lane, Suite 213, Annandale, Virginia, 22003

Please address all correspondence to: Ann Meltzer, The Rehabilitation Centre, 505 Smyth Road, Ottawa, Ontario K1H 8M2.

Acknowledgements

I would like to acknowledge the valuable assistance of Deborah Kully, Rosalee Shenker, and Pat Roberts in revisions to the manuscript, and Susan Carroll-Thomas and JoAnne Wilding for their helpful comments.

References

Andrews, G., & Cutler, J. (1974). Stuttering therapy: The relation between changes in symptom level and attitudes. *Journal of Speech and Hearing Disorders, 39,* 312-319.

Andrews, G., Guitar, B., & Howie, P. (1980). Meta-analysis of the effects of stuttering treatment. *Journal of Speech and Hearing Disorders, 4,* 287-307.

Andrews, G., Howie, P., Dozsa, M., & Guitar, B. (1982). Stuttering: Speech pattern characteristics under fluency enducing conditions. *Journal of Speech and Hearing Research, 25,* 208-216

Bakker, K., & Brutten, G. J. (1989). A comparative investigation of the laryngeal pre-motor adjustment and reaction times of stutterers and non stutterers. *Journal of Speech and Hearing Research, 32,* 239-244.

Bandura, A. (1976). Self- reinforcement: Theoretical and methodological considerations. *Behaviorism, 4,* 133-155.

Bandura, A. (1977). *Social learning theory.* Englewood Cliffs, NY: Prentice-Hall.

Bernstein, N. (1981). Are there constraints on childhood disfluency? *Journal of Fluency Disorders, 6,* 341-350.

Bernstein Ratner, N. (1997). Stuttering - a psycholinguistic perspective. In R. F. Curlee & G. M. Siegel (Eds.), *Nature and treatment of stuttering: New directions* (pp. 99-127). Boston: Allyn & Bacon.

Bloodstein, O. (1987). *A handbook on stuttering.* Chicago: National Easter Seal Society.

Bloodstein, O. (1995). *A handbook on stuttering* (4th. ed.). San Diego: Singular.

Bloodstein. O. (1997). Stuttering as an anticipatory struggle reaction. In R. F. Curlee & G. M. Siegel (Eds.), *Nature and treatment of stuttering: New directions* (pp.169-181). Boston: Allyn & Bacon.

Bloodstein, O., & Gantwerk, B. F. (1967). Grammatical function in relation to stuttering in young children. *Journal of Speech and Hearing Research, 10,* 786-789.

Boberg, E. (1981). Maintenance of fluency. In E. Boberg (Ed.), *Maintenance of fluency* (pp. 71-111). New York: Elsevier.

Boberg, E., Howie. P., & Woods, L. (1979). Maintenance of fluency: A review. *Journal of Fluency Disorders, 4,* 93-116.

Boberg, E., & Kully, D. (1985). *Comprehensive Stuttering Program.* San Diego, CA: College-Hill Press.

Boberg, E., & Kully, D. (1989). A retrospective look at stuttering therapy. *Journal of Speech-Language Pathology and Audiology, 13,* 1-9.

Boberg, E., & Kully, D. (1994). Long-term results of an intensive treatment program for adults and adolescents who stutter. *Journal of Speech and Hearing Research, 37,* 1050-1059.

Boberg, E., & Kully, D. (1995). Comprehensive stuttering program. In C. W. Starkweather & H. F. M. Peters (Eds.), *Stuttering: Proceedings of The First World Congress on Fluency Disorders, Vol. I.* (pp. 305-308). Nijmegen, The Netherlands: International Fluency Association.

Boberg, E., & Webster, W. G. (1990). Stuttering: Current status of theory and therapy. *Canadian Family Physician, 36,* 1156-1160.

Breitenfeldt, D., & Lorenz, D. (1995). An overview of the successful stuttering management program for adolescent and adult stutters. In C.W. Starkweather & H. F. M. Peters (Eds.), *Stuttering: Proceedings of The First World Congress on Fluency Disorders,* Vol. I, (pp. 309-312). Nijmegen, The Netherlands: International Fluency Association.

Brutten, E. J. (1963). Palmer sweat investigation of dysfluency and expectancy adaptation. *Journal of Speech and Hearing Research, 6,* 40-48.

Conture, E. G., McCall, G. N., & Brewer, D. W. (1977). Laryngeal behavior during stuttering. *Journal of Speech and Hearing Research, 20,* 661-668.

Conture, E. G. (1996). Treatment efficacy: Stuttering. *Journal of Speech and Hearing Research, 39,* S18-S26.

Cooke, P. (1995). Strategies for lasting change. In C. W. Starkweather & H. F. M. Peters (Eds.), *Stuttering: Proceedings of The First World Congress on Fluency Disorders,* Vol. II (pp. 461-463). Nijmegen, The Netherlands: International Fluency Association.

Craig, A. R., & Calver, P. (1991). Following up on treated stutterers: Studies of perceptions of fluency and job status. *Journal of Speech and Hearing Research, 34,* 279-284.

Craig, A. R., & Howie, P. M. (1982). Locus of control and maintenance of behavioural therapy skills. *British Journal of Clinical Psychology, 21,* 65-66.

Curlee, R. F., & Perkins, W. H. (1969). Conversational rate control therapy for stuttering. *Journal of Speech and Hearing Disorders, 34,* 245-250.

Curlee, R. F., & Perkins, W. H. (1984). [Preface] In R. F. Curlee & W. H. Perkins (Eds.), *Nature and Treatment of stuttering: New directions.* San Diego, CA: College Hill Press.

Denny, M., & Smith, A. (1997). Respiratory and laryngeal control in stuttering. In R. F. Curlee & G. M. Siegel (Eds.), *Nature and treatment of stuttering: New Directions* (pp. 128-142). Boston: Allyn & Bacon.

Emerick, L. (1988). Counseling adults who stutter: A cognitive approach. *Seminars in speech language and hearing, 9,* 257-267.

Enderby, P., & Emerson, J. (1995). *Does speech and language therapy work? A Review of the Literature.* San Diego, CA: Singular.

Finn, P., & Cordes, A. K. (1997). Multicultural identification and treatment of stuttering: A continuing need for research. *Journal of Fluency Disorders, 22,* 219-236.

Flanagan, B., Goldiamond, I., & Azrin, N. (1958). Operant stuttering: The control of stuttering behaviour through response contingent consequences. *Journal of the Experimental Analysis of Behaviour, 4,* 45-56.

Frattali, C. (1998). Outcome measurement: Definitions, dimensions and perspectives. In C. Frattali (Ed.), *Outcomes measurement in speech-language pathology* (p. 7). New York: Thieme Medical Publishers.

Goldiamond, I. (1965). Stuttering and fluency as manipulable operant response classes. In L. Krasner & L. P. Ullman (Eds.), *Research in behaviour modification* (pp. 106-156). New York: Holt, Rinehart & Winston.

Goldman-Eisler, F. (1968). *Psycholinguistics: Experiments in spontaneous speech.* New York: Academic Press

Gracco, V. L. (1997). A neuromotor perspective on speech production. In W. Hulstijn, H. F. M. Peters, & P. H. H. M. Van Lieshout. (Eds.), *Speech production: Motor control, brain research and fluency disorders* (pp. 37-56). NewYork: Elsevier.

Gregory, H. H. (1979). Controversial issues: Statement and review of the literature. In H. H. Gregory (Ed.), *Controversies about stuttering therapy.* Baltimore: University Park Press.

Gregory, H. H. (1994). Stuttering: Where are we? Where are we going? In C. W. Starkweather & H. F. M. Peters (Eds.), *Stuttering: Proceedings of The First World Congress on Fluency Disorders,* Vol. II (pp. 584-586). Nijmegen, The Netherlands: International Fluency Association.

Gregory, H. H. (1986). *Stuttering: Differential evaluation and therapy.* Austin, TX: Pro-Ed.

Haynes, E., & Christensen, S. (1995). The story is the pause. In C. W. Starkweather & H. F. M. Peters (Eds.), *Stuttering: Proceedings of The First World Congress on Fluency Disorders,* Vol. II (pp. 608-612). Nijmegen, The Netherlands: International Fluency Association.

Healey, E. C., & Adams, M. R. (1981). Speech timing skills of normally fluent and stuttering children and adults. *Journal of Fluency Disorders, 6,* 233-246

Hubbard, C. P., & Prins, D. (1994). Word familiarity, syllabic stress pattern, and stuttering. *Journal of Speech and hearing research, 37,* 564-571.

Ickes, W. K., & Pierce, S. (1973). The stuttering moment: A plethysmographic study. *Journal of Communication Disorders, 6,* 165-164.

Ingham, R. J. (1984). *Stuttering and behaviour therapy: Current status and experimental foundations.* San Diego, CA: College Hill Press.

Ingham, R. J. (1987a). *Residential prolonged speech stuttering therapy manual.* Santa Barbara, CA: University of California.

Ingham, R. J. (1987b). *Stuttering and behaviour therapy: Current status and experimental foundations.* San Diego, CA: College-Hill Press.

Ingham, R. J. (1993). Current status of stuttering and behaviour modification - II: Principle issues and practices in stuttering therapy. *Journal of Fluency Disorders, 18,* 57-81.

Ingham, R. J., & Andrews, G. (1973). Details of a token economy stuttering therapy program for adults. *Australian Journal of Human Communication Disorders, 1,* 13-20.

Ingham, R. J., & Cordes, A. K. (1997). Self-Measure and evaluating stuttering treatment efficacy. In R. F. Curlee & G. M. Siegel (Eds.), *Nature and treatment of stuttering: New directions* (p. 414). Boston: Allyn & Bacon.

Ingham, R. J., Fox. P. T., & Ingham, J. C. (1997). An H2O positron emission tomography study on adults who stutter: Findings and implications. In W. Hulstijn, H. F. M. Peters, & P. H. H. M. Van Lieshout (Eds.), *Speech production: Motor control, brain research and fluency disorders* (pp. 293-305). New York: Elsevier.

Jayaram, M. (1984). Distribution of stuttering in sentences: Relationship to sentence length and clause position. *Journal of Speech and Hearing Research, 27,* 329-338.

Johnson, W. (1937). The descriptional principle and the principle of static analysis. Reprinted in W. Johnson & R. R. Leutenegger (Eds.), *Stuttering in children and adults* (1955, p. 441). Minneapolis, MN: University of Minnesota Press.

Kolk, H., & Postma, A. (1997). Stuttering as a covert repair phenomenon. In R. F. Curlee & G. M. Siegel (Eds.), *Nature and treatment of stuttering: New Directions* (pp. 182-203). Boston: Allyn & Bacon.

Kully, D., & Langevin, M. (in press). Intensive treatment for stuttering adolescents. In R. Curlee (Ed.), *Stuttering and related disorders of fluency* (2nd ed.). New York: Thieme Medical Publishers.

Kroll, R. M., De Nil, L. F., Kapur, S., & Houle, S. (1997). A positron emission tomography investigation of post-treatment brain activation in stutterers. In W. Hulstijn, H. F. M. Peters, & P. H. H. M. Van Lieshout (Eds.), *Speech production: Motor control, brain research and fluency disorders* (pp. 307-319). New York: Elsevier

Langevin, M., & Boberg, E. (1993). Results of an intensive stuttering therapy program. *Journal of Speech-Language Pathology and Audiology, 17,* 158-166.

Leith, W. R. (1986). Treating the stutterer with atypical cultural influences. In K. O. St. Louis (Ed.), *The atypical stutterer. Principles and practices of rehabilitation* (pp. 9-34). Toronto: Academic Press.

Martin, R. R. (1981). Introduction and perspective: Review of published research. In E. Boberg (Ed.), *Maintenance of fluency* (p. 28). New York: Elsevier.

Mayberry, R. I., & Shenker, R. C. (1997). Gesture mirrors speech motor control in stutterers. In W. Hulstijn, H. F. M. Peters, & P. H. H. M. Van Lieshout (Eds.), *Speech production: Motor control, brain research and fluency disorders* (pp. 183-190). New York: Elsevier.

McFarland, S. C., & Prins, D. (1978). Neural response time of stutterers and non-stutterers in selected motor tasks. *Journal of Speech and Hearing Research, 26,* 768-778.

Meltzer, A. (1989). The Essential Pause: A workbook for the modification of stuttering behaviour. Ottawa: The Rehabilitation Centre.

Meltzer, A. (1995). An innovative integrated adult therapy program. In C.W. Starkweather & H. F. M. Peters (Eds.), *Stuttering: Vol. II. Proceedings of the first world congress on fluency disorders* (pp. 613-618). Nijmegen, The Netherlands: International Fluency Association.

Meltzer, A., & MacKay, I. R. A. (1995). Normal disfluencies in stutterers. In C.W. Starkweather & H. F. M. Peters (Eds.), *Stuttering: Proceedings of the first world congress on fluency disorders* (pp. 613-616). Munich: International Fluency Association.

Onslow, M., & Ingham, R. J. (1987). Speech quality measurement and the management of stuttering. *Journal of Speech and Hearing Disorders, 52,* 2-17.

Onslow, M., & Packman, A. (1997). Desiging and implementing a strategy to control stuttered speech in adults. In R. F. Curlee & G. M. Siegel (Eds.), *Nature and treatment of stuttering: New directions* (pp. 356-376). Boston: Allyn & Bacon.

Owen, N. (1981). Facilitating maintenance of behaviour change. In E. Boberg (Ed.), *Maintenance of Fluency* (pp. 31-70). New York: Elsevier.

Perkins, W. H. (1973). Replacement of stuttering with normal speech. II. Clinical procedures. *Journal of Speech and Hearing Disorders, 38,* 295-303.

Perkins, W. H. (1981). Measurement and maintenance of fluency. In E. Boberg (Ed.), *Maintenance of fluency* (pp. 146-178). New York: Elsevier.

Perkins, W. H. (1984). Techniques for establishing fluency. In W. H. Perkins (Ed.), *Stuttering disorders* (pp. 173-181). New York: Thieme-Stratton.

Perkins, W. H. (1985). Foreward. In E. Boberg & D. Kully (Eds.), *Comprehensive stuttering program* (p. ix). San Diego, CA: College-Hill Press.

Peters, H. F. M., Hietkamp, R., & Boves, L. (1994). Aerodynamic and phonatory processes in dysfluent speech utterances of stutterers. In C. W. Starkweather & H. F. M. Peters (Eds.), *Stuttering: Vol. I. Proceedings of The First World Congress on Fluency Disorders.* (pp. 76-80). Nijmegen, The Netherlands: International Fluency Association.

Peters, H. F. M., & Hulstijn, W. (1989). Acoustic and physiological reaction times of stutterers and nonstutterers. *Journal of Speech and Hearing Research, 32*, 668-680.

Peters, T. J., & Guitar, B. (1991). *Stuttering: An integrated approach to its nature and treatment.* Baltimore, MD: Williams & Wilkins.

Prins, D. (1984). Treatment of adults: Managing stuttering. In R. F. Curlee & W. H. Perkins (Eds.), *Nature and treatment of stuttering: New directions* (pp. 335-355). San Diego, CA: College-Hill Press.

Prins, D. (1991). Theories of stuttering as event and disorder: Implications for speech production processes. In H. F. M. Peters, W. Hulstijn, & C.W. Starkweather (Eds.), *Speech motor control and stuttering* (pp. 571-580). Amersterdam: Excerpta Medica.

Prins, D. (1997). Modifying stuttering - The stutterer's reactive behaviour: Perspectives on past present and future. In R. F. Curlee & G. M. Siegel (Eds.), *Nature and treatment of stuttering: New directions* (pp. 335-355). Boston: Allyn & Bacon.

Riley, G. D. (1994). *Stuttering Severity Instrument for children and adults* (3rd ed.). Austin, TX: Pro-Ed.

Roberts, P., & Maillet, L. (1998). *Perceptions des adultes bègues bilingues de leur degré de begaiement selon la langue utilisée.* Unpublished manuscript, University of Ottawa, Ottawa, ON.

Rustin, L., Spence, R., & Cooke, F. (1995). The communication skills approach: Management of stuttering in adolescence. In C.W. Starkweather & H. F. M. Peters (Eds.), *Stuttering: Vol. II. Proceedings of The First World Congress on Fluency Disorders* (pp. 364-366). Nijmegen, The Netherlands: International Fluency Association.

Ryan, B. P. (1974). *Programmed therapy for stuttering in children and adults.* Springfield, IL: Charles C. Thomas

Shenker, R. C., Mayberry, R. I., Scobie, J., Grothe, M. C., & White K. (1995). The gesture-speech relationship in stuttering: results of preliminary research and applications to treatment. In C. W. Starkweather & H. F. M. Peters (Eds.), *Stuttering: Vol. 1. Proceedings of the first world congress on fluency disorders.* (pp. 116-118). International Fluency Association.

Schiavetti, N., & Metz, D. E. (1997). Stuttering and the measurement of speech naturalness. In R. F. Curlee & G. M. Siegel. (Eds.), *Nature and treatment of stuttering: New directions* (pp. 398-412). Boston: Allyn & Bacon.

Schmidt, R. A. (1991). *Motor learning and performance.* Champaign: IL. Human Kinetics Books.

Schwartz, M. F. (1974). The core of the stuttering block. *Journal of Speech and Hearing Disorders, 39*, 169-177.

Smith, A., & Kelly, E. (1994). Application of an integrated multifactorial theory to the development of stuttering. In C. W. Starkweather & H. F. M. Peters (Eds.), *Stuttering: Vol. 1. Proceedings First world congress on fluency disorders.* (pp. 210-212). Nijmegen, The Netherlands: International Fluency Association.

Smith, A., & Kelly, E. (1997). Stuttering: A dynamic multifactorial model. In R. F. Curlee & G. M. Siegel (Eds.), *Nature and treatment of stuttering: New directions* (pp. 204-217). Boston: Allyn & Bacon.

Schneider, P. (1995) Aself adjustment approach to fluency enhancement. In C. W. Starkweather & H. F. M. Peters (Eds.), *Stuttering: Vol. 1. Proceedings of the First world Congress on Fluency Disorders.* (pp. 334-337). Nijmegen, The Netherlands: International Fluency Association.

Starkweather, C. W. (1987). *Fluency and stuttering.* Englewood Cliffs, NJ: Prentice Hall.

Starkweather, C. W. (1993). Issues in the efficacy of treatment for fluency disorders. *Journal of Fluency Disorders, 18*, 151-168.

Starkweather, C. W. (1997). Learning and its role in stuttering development. In R. F. Curlee & G. M. Siegel (Eds.), *Nature and treatment of stuttering: New directions* (pp. 79-95). Boston: Allyn & Bacon.

Van Riper, C. (1937). The preparatory set in stuttering. *Journal of Speech Disorders, 2*, 149-154.

Van Riper, C. (1947). *Speech correction: Principles and methods* (2nd ed.). New York: Prentice- Hall.

Van Riper, C. (1973). *The treatment of stuttering.* Englewood Cliffs, NJ: Prentice Hall.

Van Riper, C. (1982). *The nature of stuttering* (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.

Watson, B. C., & Alfonso, P. J. (1983). Foreperiod and stuttering severity on acoustic laryngeal reaction time. *Journal of Fluency Disorders, 8*, 183-205.

Webster, R. L. (1974). *Precision Fluency Shaping Program: Speech reconstruction for stutterers.* Roanoke, VA: Hollins Communication Research Institute.

Webster, R. L. (1980). Evolution of a target-based therapy for stuttering. *Journal of Fluency Disorders, 5*, 303-320.

Webster, W. G. (1997). Principles of human brain organization related to lateralization of language and speech motor functions in normal speakers and stutterers. In W. Hulstijn, H. F. M. Peters, & P. H. H. M. Van Lieshout. (Eds.), *Speech production: Motor control, brain research and fluency disorders* (p. 132). New York: Elsevier.

Webster, W. G., & Poulos, M. G. (1989). *Facilitating fluency: Transfer strategies for adult stuttering treatment programs.* Edmonton, AB: Institute for Stuttering Treatment and Research. (Reformatted and reprinted from 1989 work of the same title originally published by Communication Skill Builders, Tucson, AZ)

Woolf, G. (1967). The assessment of stuttering as struggle, avoidance, and expectancy. *British Journal of Disorders of Communication, 2*, 158-171.

World Health Organization. (1980). *International classification*

of impairments, diabilities, and handicaps: A manual of classification relating to the consequences of disease. Geneva: Author.

Wingate, M. E. (1976). *Stuttering theory and treatment*. New York: Irvington.

Wingate, M. E. (1984). Fluency and dysfluency: Illusion and identification. *Journal of Speech Disorders, 12*, 79-101.

Wingate, M. E. (1988). *The structure of stuttering: A psycholinguistic approach*. New York: Springer-Verlag.

Yaruss, J. S. (1998). Describing the consequences of disorders: Stuttering and the International Classification of Impairments, Disabilities, and Handicaps. *Journal of Speech, Language and Hearing Research, 41*, 249-257.