MANAGEMENT OF HYPERFUNCTIONAL VOICE DISORDERS IN CHILDREN THROUGH TRIADIC INTERVENTION

David E. Hartman
Dept. of Communicative Disorders
College of St. Teresa
Winona

Doreen M. Arcus
Dept. of Communicative Disorders
College of St. Teresa
Winona

ABSTRACT

This report provides a framework of vocal intervention for school age children using members of the child's natural environment as the critical sources for instituting behavior change.

Children displaying disorders of voice have long populated the caseloads of public school speech-language pathologists. In a nationwide sample, Bingham et al. (1961) found such children to comprise 2.3% of those caseloads. Recent investigations, however, have indicated that the actual percentage of voice disordered children may be considerably higher. Reports of chronic hoarseness range from 7.1% (Baynes, 1966) to 23.4 (Silverman and Zimmer, 1975). In a survey of over 32,500 school age children, Senturia and Wilson (1968) found approximately 6% presenting voice deviations.

The discrepancy between the number of children in need of vocal management and the number receiving it may be the result of several factors. It may be that public school speech-language pathologists lack adequate information regarding the treatment of voice disorders. In light of the range of therapeutic techniques described throughout the literature, including chewing, pushing, and relaxation exercises (Boone, 1977), hypnosis (LaGuaite, 1976), and the use of instrumentation for monitoring loudness (Holbrook et al., 1974), such an argument appears incongruous.

Another factor may be that public school clinicians lack a formal intervention framework, which, when utilized, prevents the haphazard application of a series of techniques and procedures. A variety of models, however, have been described. Wilson (1972), for example, outlined a basic therapeutic progression with children that included (1) an explanation of vocal mechanics, (2) ear training, (3) training appropriate vocal behavior, (4) negative practice, and (5) habituation. Freedman and Garstecki (1973) reported successful implementation of a child directed model, Drudge and Phillips (1976) demonstrated the effectiveness of shaping in a behavioral program, and Wilson (1972) applied a communication centered model (Low et al., 1959) to the clinical treatment of voice.

If the ultimate goal of vocal management was the acquisition and maintenance of behaviors in a clinical setting, the previously cited information would appear to sufficiently prepare school clinicians for this task. However, as noted by Moncur and Brackett (1974, p. 30), ". . . the most difficult task is to get the client to perform successfully away from the clinic . . .". Shearer (1972) found that even after an inservice

training program for voice disorders, public school clinicians continued to report awareness of vocal abuse, and carryover of vocal improvement outside the therapy session as being the most difficult aspects of therapy.

For children with communication disorders, the responsibility for carryover is usually delegated to the family, teachers, and peers (Wilson, 1972; Deal et al., 1976). The literature in speech pathology, however, lacks a comprehensive model designed specifically for the implementation of a maintenance program of vocal management within the child's natural environment. Clinicians are thus left to apply a variety of procedures without the cohesiveness such a structured framework would provide.

The purpose of the present report is to provide a model of intervention which relegates the responsibility of vocal change to members of the child's natural environment. Application of a framework designed from the onset to train utilization of acceptable phonatory behaviors in familiar situations could permit permanent maintenance of those behaviors.

The Triadic Model

Triadic intervention was originally designed for behavior management of delinquent youths within their natural environment. The model is based upon the premise that the traditional dyadic relationship between client and professional, as used in psychotherapy and in medicine, propagates new and artificial alliances which must be strengthened until the professional has identified, in terms of his own approvals and disapprovals, the client's reinforcers. The time involved in searching for and applying imposed reinforcers is considered wasteful and peripheral to the management process. Because the treatment is not taking place in the client's natural environment, and is therefore not being influenced by its members, generalization of newly acquired behaviors may be hindered. Tharp and Wetzel (1969) further state that:

> . . . the intrusion of the artificial therapeutic relationship often has ignominious consequences: the disruption of natural relationships — whether marital, parental, or community — as a consequence of psychotherapy is a well-known embarrassment of the mental health profession . . .(p.4).

Within the triadic paradigm, however, the primary responsibility for behavior change rests directly with members of the environment, rather that with a "professional specialist" such as a social worker or a psychiatrist. The model, which is based upon principles of behavior modification, provides that the specialist work with the client only to establish the behavior to be changed, and to periodically assess the effectiveness of the program. Following training, advisement, and consultation with the specialist, the program is administered by individuals who bear some natural relationship to the client. This procedure is based upon the assumption that in most situations members of the client's natural environment have, and are in control of, the most powerful reinforcing agents. The logic behind behavior modification principles suggests that individuals who have reinforcers should be placed in a mediating position between the professional and the client, the target for behavior change. The basic triadic model, therefore, consists of three persons: a Consultant, Mediator, and a Target. Accordingly, all factors of behavior change must proceed from the Consultant through the Mediator to the Target.

By definition, a Consultant is anyone who has knowledge of a problem. This person could be a social worker, mother, psychiatrist, or a speech-language pathologist. The Mediator, who is in direct contact with both the Consultant and the Target, must have the Target's reinforcers and be able to dispense them contingently. Anyone in the client's

natural environment could be a Mediator, provided these criteria are met. The Target is anyone who has a problem; juvenile delinquents and individuals with communication disorders are but a few possible Targets.

Selection of an appropriate Mediator is critical for effective behavior change through triadic intervention. If a Mediator is selected who has the Target's reinforcers but cannot dispense them contingently, the program may be of little benefit. Furthermore, the reinforcers possessed by the Mediator must be strong enough to offset other reinforcers found in the Target's environment. Occasionally, it may prove necessary to utilize more than one Mediator to effect behavior change and help negate the influence of reinforcement from uncontrolled sources (See Figure 1).

Fig. 1

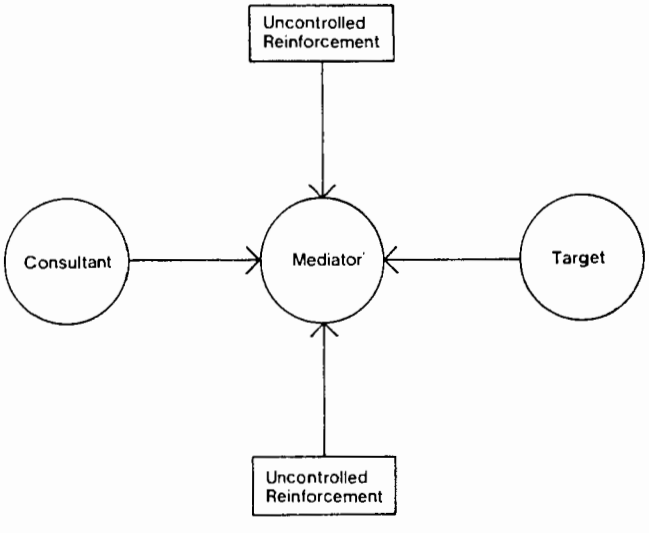

Figure 1. Use of multiple Mediators to offset uncontrolled reinforcement.

Because of his position within the triad, the Mediator is subject to reinforcement from the Consultant, Target, and uncontrolled sources. For an adult, social reinforcement from these areas and observed behavior changes in the Target can be enough to maintain the contingency program with the Target. For a child who assumes the role of Mediator, however, tangible reinforcement provided by the Consultant may be necessary in order to maintain the program. Figure 2 shows the sources of reinforcement for the Mediator.

Fig. 2

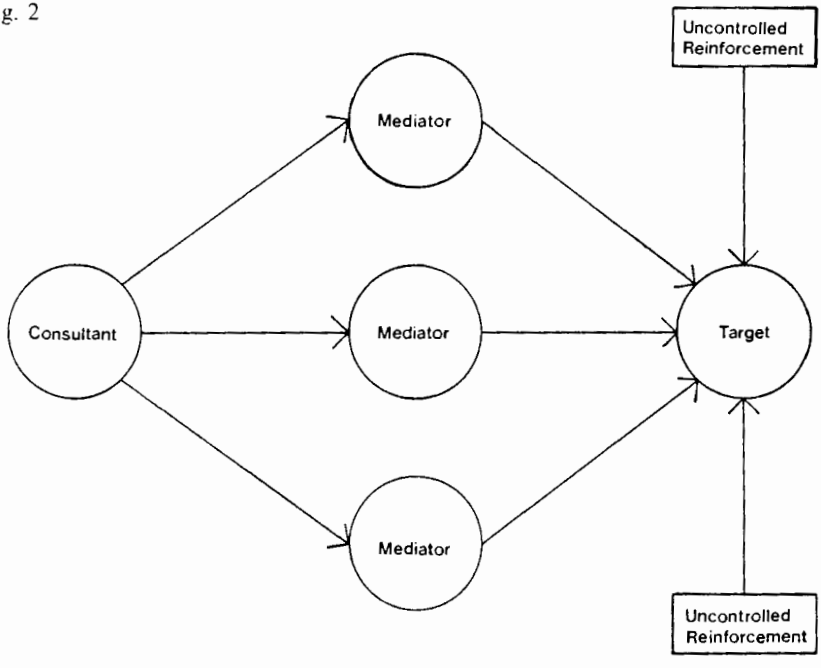

Figure 2. Sources of reinforcement for the Mediator.

It is generally held that optimal learning takes place under positively reinforcing conditions, rather than under conditions of punishment. This principle should be taught to the Mediator by the Consultant, and be utilized in interaction with the Target. Indeed, the effects of the reinforcement in changing the Target's behavior may prove equally reinforcing to the Mediator.

The Consultant, Mediator, and Target are capable of switching roles within the triad. The position of each member is determined by the problem, which in turn identifies the Target.

Vocal Management and the Triadic Model

Because specific vocal behaviors such as yelling, loud and excessive talking, and imitating toys through voice are characteristic of school age children who have hyperfunctional voice problems, such children make ideal candidates for triadic intervention. Their natural environments consist primarily of the school and home. Both provide situations for vocal management and identification and selection of individuals who could be effective Mediators.

Following evaluation, the first task for the speech clinician (Consultant) is to identify the vocal behavior(s) to be modified. Initially, a behavior should be selected that is both obvious to the child (Target) and amendable to rapid change. Specific situations where this behavior is most likely to occur should be noted. The child should be informed as to how the abusive vocal behavior can be modified, and the probable improvement in voice that will result if the suggestions are implemented. Possible tangible reinforcers for vocal

improvement should be discussed. The Consultant's or speech clinician's and more particularly the proposed Mediator's role should be explained to the child. The child should understand that the Mediator will be monitoring his/her vocal behavior for eventual report to the clinician. A contract similar to that proposed by Johnson (1976) can be written in which the abusive behavior is described and the goal and methods for modification are outlined. The formality of a written contract signed by both the child and clinician may add further impetus for behavior change.

Secondly, the clinician must identify and consult with individuals who could be the most willing and effective Mediators for the child. Teachers and peers at the school as well as parents and siblings at home could be possible mediating sources. The advantage of employing children and adolescents as Mediators must not be overlooked. The influence of the peer group at various stages of development can be a powerful factor in behavior change.

Following identification of the Mediators, an overall explanation of the triadic paradigm with particular emphasis on the Mediator's role should be offered. The vocal behavior to be modified, along with situations in which it would probably occur, should be described. Along with monitoring voice in specific situations, the Mediator should also be asked to record instances of the behavior, perhaps through the use of hand or wrist counters. A teacher can monitor during recess, and a parent can observe vocal behavior during dinner or play at home. Adult Mediators may provide feedback for vocal behavior through graphs, numerical indices, or recorded comments. A child Mediator, however, may find it easier simply to tell the Target how often a behavior occurred during his/her time or situation.

Adults will receive social reinforcement from members of the triad and others in the environment for their role as Mediators, whereas children may have to be tangibly reinforced in order to serve effectively in this position. The nature of reinforcement for a child Mediator should be decided early in program development.

Finally, the speech clinician should meet with all Mediators and the child to review the nature and goals of the program prior to its implementation. A reinforcer for attainment of the goal should be chosen from those suggested previously. The clinician should establish periods when he/she will meet with the Mediators to review their records and observations, and the child to verify changes in vocal behavior. During these sessions, new or alternative goals can be developed along with means of accomplishing them. Table 1 summarizes the hierarchy of activities in the triadic model as applied to voice management in school age children.

Table 1. Summary of activities in the triadic model as applied to vocal management.

Step	Function
1	Consultant evaluates speech, identifies vocal behavior(s) to be modified, counsels Target.
2	Consultant identifies and counsels Mediators, establishes reward contingencies with Mediator's where necessary.
3	Consultant meets with Target and Mediator's to review program, determine reinforcer and establish review time. Implementation of program.

Conclusions

The Triadic Model appears to be an effective means of facilitating behavior change in a non-clinical setting. When applied to voice management in children, it provides a framework for orderly use of a variety of clinical techniques in the child's natural environment.

The application of the triadic paradigm to other communicative intervention strategies, particularly laryngectomy rehabilitation, has been discussed elsewhere (Hartman, 1974). Research is needed to compare the long term results of the triadic approach to the more traditional methods of treating communication disorders.

Address correspondence to:

*David E. Hartman,
Department of Communicative Disorders
College of Saint Teresa
Winona, MN 55987

Doreen M. Arcus,
Department of Communicative Disorders
College of Saint Teresa
Winona, MN 55987

*At the time this report was written, the senior author was an assistant professor in the Department of Communicative Disorders, College of Saint Teresa, Winona, MN. As of August 10, 1978, Hartman holds a post-doctoral fellowship in the Section of Speech Pathology, Department of Neurology, Mayo Clinic, Rochester, MN. Requests for reprints may be sent to him there. Ms. Arcus is an instructor and the Clinical Coordinator in the Department of Communicative Disorders, College of Saint Teresa.

REFERENCES

References

Baynes, R.A., An incidence study of chronic hoarseness among children. **J. Speech and Hearing Dis.**, 31, 172-176 (1966).

Bingham, D.S., Van Hattum, R.J., Faulk, M.E., and Taussis, E., Program organization and management. In Public School Speech and Hearing Services. **J. Speech and Hearing Dis.**, Monogr. Suppl. 8, (1961).

Boone, D.R., **The Voice and Voice Therapy** (2nd ed.). Englewood Cliffs: Prentice-Hall (1977).

Deal, R.E., McClain, B., and Sudderth, J.F., Identification, evaluation, therapy, and follow-up for children with vocal nodules in a public school setting. **J. Speech and Hearing Dis.**, 41, 390-397 (1976).

Drudge, M.K.M., and Phillips, B.S., Shaping behavior in voice therapy. **J. Speech and Hearing Dis.**, 41, 397-411 (1976).

Freedman, S.R., and Garstecki, D.C., Child directed therapy for a non-organic voice disorder: A case study. **Lang. Speech Hearing Serv. Schools**, 4, 8-12 (1973).

Hartman, D., Triadic intervention and laryngectomy rehabilitation. **Ohio J. Speech and Hearing**, 10, 33-39 (1974).

Holbrook, A., Rolneck, M.I., and Bailey, C.W., Treatment of vocal abuse disorders using a vocal intensity controller. **J. Speech and Hearing Dis.**, 39, 298-303 (1974).

Johnson, T.S., **V.A.R.P. Vocal Abuse Reduction Program.** Logan, Utah: Utah State University (1976).

LaGuaite, S.K., The use of hypnosis with children with deviant voices. **Int. J. Clin. Exp. Hyp.**, 24, 98-104 (1976).

Low, G., Crerar, M., and Lassers, L., Communication centered speech therapy. **J. Speech and Hearing Dis.**, 24, 361-386 (1959).

Moncur, J.P., and Brackett, I.P., **Modifying Vocal Behavior.** New York: Harper and Row (1974).

Senturia, B.H., and Wilson, F.B., Otorhinolaryngic findings in children with voice deviations. **Ann. Otol.**, 77, 1027-1041 (1968).

Shearer, W.M., Diagnosis and treatment of voice disorders in school children. **J. Speech and Hearing Dis.**, 37, 215-221 (1972).

Silverman, E.M., and Zimmer, C.H., Incidence of chronic hoarseness among school aged children. **J. Speech and Hearing Dis.**, 40, 211-215 (1975).

Tharp, R.G., and Wetzel, R.J., **Behavior Modification in the Natural Environment.** New York: Academic Press (1969).

Wilson, D.R., **Voice Problems of Children.** Baltimore: Williams and Wilkins (1972).