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Communication disorders presentations include the following: expectations of the teacher of the deaf for audiological and psychological services to the young deaf child by Doin E. Hicks; questions and answers on stuttering therapy by Frank J. Falck; the knowledge of words of a deaf child by Toby Silverman; and a comparative study of the modality and traditional treatment approaches to articulation therapy by Anne Carroll. An abstract on the employment environment by Stanley Ainsworth is given. A panel report on communication disorders, specifically attention, discusses a longitudinal study on the primary years by Vilma Falck and gives specific suggestions relevant to the use of language. This unit of reports is available in microfiche. (WW)

SELECTED CONVENTION PAPERS

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THE EXPECTATIONS OF THE EDUCATOR OF THE DEAF FOR AUDIOLOGICAL AND PSYCHOLOGICAL SERVICES TO THE YOUNG DEAF CHILD

by

Doin E. Hicks

Early severe deafness manifests itself in communication disorders which are among the most serious known. Levine (1960) has characterized succinctly the problems of those faced with this handicap in the following description:

> ....here is found the closest modern equivalent to the linguistic state of preverbal man. To be born without the ability to hear is to be born without the natural ability to acquire verbal language; without verbal language, normal human development is blocked.

The development of a language symbol and a means for its transmittal are basic to man's ability to move freely in a modern society. When the development of a language system is impeded by early deafness or when speech and hearing problems preclude facility in communication, serious educational problems may be anticipated.

A considerable body of knowledge exists regarding the education of the deaf — some aspects not too well defined, others frought with controversy; nevertheless, there have been accomplishments in which the profession can take pride. Presented with a deaf child of normal ability and without additional handicaps the educator can with some assurance provide a rather promising educational prognosis. The problem is in defining deaf "normality", and, perhaps, deafness itself.

In our traditional approach to quantifying the potential of deaf individuals we use, in the main, instruments which compare the deaf with hearing persons of the same age. This is particularly true in the areas of perceptual skills, personality, and social maturity.

Silverman (1964), in a brilliant keynote address to the National Workshop on Improved Opportunities for the Deaf, warned against being beguiled by the deceptive simplicity of the question, "What is Deafness?" He amplified the discussion as follows:

> What really is deafness? Is it a number on a decibel scale that describes the severity of hearing impairment? Is it a disease like mumps or measles or meningitis? Is it a piece of tissue in the auditory system that would be judged to be abnormal is viewed under a microscope? Is it an affliction to be conquered by the ingenious scientist? Is it the burden of a child whose parent hopes persistently and fervently that the scientists wil be successful, and soon? Is it a special mode of communication? Is it something that is encountered occasionally in the man or woman whose fingers fly and whose utterances are arythmic and strident? Is it a cause to which

> diligent, skillful, and patient teachers have committed themselves for generations? Is it the agony of isolation from a piece of the real world? Is it the joy of accomplishment that mocks the handicap? Is it the bright mind and the potentially capable hands for which the economy has no use because they are uncultivated? Is it a crystallization of attitudes of a distinctive group whose deafness, modes of communication, and other associated attributes, such as previous education, that they have in common, cause them to band together to achieve social and economic self realization? Of course, it is all of these and more, depending on who asks the question and why.

If the subject of deafness itself presents a dilemma, what of those children who have physical, mental, or emotional handicaps in addition to deafness or those who seem to hear yet do not develop speech and language as they should? We have several currently fashionable terms to describe the latter child, such as "language delayed" or "perceptually impaired." Though opinions differ, various estimates indicate that the number of children in our schools for the deaf who have handicaps in addition to deafness may be as high as 30 to 40 percent.

In light of the foregoing discussion, is it any wonder that the educator is awed by the tremendous task of prescribing educational procedures and programs for the deaf child?

The educational management of the deaf child is a task of too much importance and complexity for the educator to attempt alone. Many disciplines impinge upon and contribute to educational planing for the deaf child. The two that, perhaps, are of greatest importance — and certainly basic to sound educational management of the deaf — are audiology and psychology. Time and space limitations preclude here any attempt to describe all the ways in which these disciplines could or should be utilized maximally by the educators. Among the numerous aspects of interdisciplinary activities, many are important enough to warrant exhaustive treatment; i.e.:

1. Training programs for personnel in each of the areas

2. Services provided deaf clients in speech and hearing centers

3. Services considered routinely necessary in the school setting

4. Attitudes and interprofessional relationships.

A new area in education has emerged, however, that is demanding the attention of all who work with deaf children -- infant education. This area is new only in the sense that it has not heretofore been attempted on a systematic and mass basis. Many clinics for years have attempted diagnosis and beginning habilitation for deaf infants, but such services have reached only a small fraction of the young deaf population. The need and the demands for such services are becoming increasingly well established.

Suggestions for Planning Diagnostic and Habilitation Procedures

What follows are suggestions as to how the educator, the audiologist, and the psychologist might pursue the difficult task of planning diagnostic and habilitation procedures for the young deaf child. Such planning can well begin during the first year of life and certainly should begin during the second year.

It is to be understood that the physician's role is paramount both in providing initial information relative to physical condition of the child and in approval for diagnostic and therapeutic procedures to proceed. The family members of the deaf infant cannot be overlooked, as their contribution to and cooperation with the educational enterprise is most essential to its success.

The educator faces myriad problems in planning for and working with the young deaf child. Educational methodology for the deaf infant is not well defined. Shall we use merely a downward extension of those principles and techniques which have proven valuable with beginning deaf students of 4 to 6 years of age, or shall we seek entirely new approaches for use with the very young? Linguists speculate that young children have a predisposition for learning speech and language, the patterns of which are unlike those we traditionally teach deaf children. Eminent neurologists such as Penfield and Roberts (1959) have pointed out the importance of acquiring language during the first few years of life and have suggested that if language is not learned early, it may never be learned. Myklebust (1964) has stated that early training of deaf persons may offset any adverse effects deafness has on the formation or structure of intellect although the relative effects of heredity and training on mental operations are not known. The prospect that deaf children, through use of amplification and with training in infancy, may learn to use residual hearing to an extent not previously thought possible is intriguing. Ciwa Griffiths (1966) in her recent book even suggests that hearing thresholds may be improved through early training. The uses of various types of amplification such as selected frequency, broad frequency, and transposition of frequencies each have their implications which the educator must attempt to assimilate and use to advantage within the context of a long range educational program.

Rates of expected progress in learning for the young deaf child are not well established. The frequency and duration of formal instructional sessions too are still a matter for conjecture. We inject all hearing children into the same educational mold at age 5 or 6 and expect that they will emerge years later as individuals differing from each other to a far greater extent than upon entry. Surprisingly, it works. It may be, however, that for the deaf infant of one or two years of age, we need a highly individualized program and one in which we don't attempt to normalize educational outcomes. Observation has led this writer to believe that motivation plays a vastly greater role with the young deaf child than many of us are prone to believe, particularly with regard to the use made of impaired sensory channels.

What, then, should be expected of the audiologist and psychologist as we plan for the hearing impaired infant? Certainly we can ask the audiologist to substantiate the presence of a suspected hearing loss and make some quantifications relative to its nature and to amplification that might be appropriate. Likewise, we can expect the psychologist to make some estimate of the child's intellectual functioning and provide some insights into his emotional status, motor abilities, and social maturity. But are we to stop here in our use of the abilities and talents of these highly trained professionals? Most of us do.

Special Considerations in Planning Programs for the Young Deaf Child

As this discussion basically concerns service to deaf persons during the first few years of life, some special considerations are in order. The audiologist is ordinarily the first person to whom an infant is referred after being suspected of having a hearing deficit. This referral, of course, should come from or be cleared by the family otologist. This places great responsibility on the audiologist as the intial contact with the hearing impaired infant

and his anxious parents. Indeed, the handling of the child in the test situation and the parents in the interview counseling sessions can have a great bearing on the work of those to follow. It is highly desirable that the audiologist who deals with hearing impaired infants and their families have some special background for doing so. No attempt is made here to prescribe training procedures for audiologists. It is, however, gratifying to educators attempting to work with the very young deaf child to see recognition being given to specialists in pediatric audiology. Also encouraging is the development of programs for newborn infant testing and the maintenance of high risk registries relative to hearing impaired infants.

Few educational programs are geared to accept deaf children younger than age two to two and one-half. Most of the assistance given children and their parents prior to that time falls the lot of the audiologist. These activities may include:

1. Initiating a series of testing sessions with the child, aimed at quantification of information relative to the deficit

2. Providing loaner amplification on trial bases, with specific permanent amplification being suggested when it appears warranted

3. Assisting the parents with plans to provide a home environment conducive to the child's making good use of amplification

4. Assisting the parents in establishing some expectations for the child

5. Referring the child and/or parents to psychologist, social worker, educator and other professionals. However, the audiologist should continue to work with these other disciplines as a team member, especially in the area of auditory training and specifically in sequencing exposure to sound so that it is consistent with what is known about prelanguage development.

During the first two to three years of the hearing impaired infant's life, the psychologically oriented professional probably can be of greatest assistance in the area of parent counseling. Certainly some formal testing may be attempted and much additional information can be gained by observing the child in a variety of situations, but it is during this period also that parents usually need assistance most. The clinical psychologist or psychiatric social worker is best equippped to guide the parents in dealing with their feelings -- usually strong feelings of guilt, anger or fear that color the views they hold of themselves and of their child.

The above is not meant to imply that the speech and hearing clinician cannot or should not do parent counseling. Most such clinicians perform this function and do so creditably. It is desirable, however, to have support and assistant from the counseling specialist. The clinician must appraise each case and make the determination as to when his requisite skills might be insufficient to attempt the modification in patterns of adjustment which seems needed.

When children with hearing impairments have had appropriate amplification and auditory stimulation from infancy, and when their parents have learned to deal realistically with their feelings about themselves and their child, the task faced by the educator is made easier. The process of educating both parents and child can then proceed without interruption.

Let us explore now the desirability of the educator becoming involved

while the child is undergoing diagnostic procedures and while the parents are first attempting to come to grips with the responsibility of rearing a hearing impaired child. Why not place the child in group diagnostic therapy upon first suspicion of a communications deficit? Such a group might be comprised of six to ten children ages one to three meeting twice weekly for two to three hours. The therapists for such a group would ideally be a teacher of the deaf and a speech pathologist. The therapy would be diagnostic in nature, aimed at determining general abilities, observing auditory behavior, and conditioning children so that they would respond accurately in the formal testing situation. The audiologist and psychologist should be frequent observers of such sessions. Parent training and counseling should be carried out concurrently with the therapy sessions.

By the end of a specified time, perhaps two to three months, each child would have been seen individually and as frequently as necessary both by the audiologist and by the psychologist. A staffing of each child at this time to review findings would reveal progress toward diagnosis and provide program direction. Some children might need to repeat the diagnostic therapy process; others might be recommended for immediate enrollment in a school for the deaf and still others might be recommended for additional therapy of a different nature, such as psychotherapy or language and speech stimulation. Such a program as described could be carried out in any urban hearing and speech clinic within realistic financial and staff requirements.

The cost of educating a deaf child is staggering -- from two to five thousand dollars a year depending on location and type of facility (whether day or residential). If we are to spend such sums on a child's education -- not to mention the highly skilled manpower required -- then surely such an investment should be solidly based in the blue chip stock of early, accurate diagnosis and training.

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STUTTERING THERAPY: QUESTIONS AND ANSWERS

by

Frank J. Falck

Can Stuttering Be Cured?

There is no need to think in terms of curing stuttering. Stuttering is behavior; it is something a person does. You do not try to cure behavior; you change it. If a person does certain things which interfere with the normal speech processes, he is stuttering. If he does not do these things, he is not stuttering. The goal in a therapy program is to change, modify, or eliminate the behavior we call stuttering.

It must be remembered however that stuttering includes a great variety of behavior, all of which must be changed. This means that the mental as well as the physical or mechanical aspects of the speech disrupting movements must be altered. The mental aspects include the person's fears and anxieties about speech, his doubts about himself as a speaker and as a person, and his attitudes concerning his relationship with other persons.

The word "cure" is not avoided for any reason other than that it is misleading. Actually, the majority of stutterers are, or have been, seeking a cure. This seeking is part of the confusion surrounding this whole problem. The person seeking a cure still has not accepted responsibility for the behavior he exhibits; to him, it still is the mystical something that happens to him. He has not yet been able to realize or accept his role in the perpetuation of this frustrating behavior.

The next logical question, now that the word and concept of cure has been attended to, is: can stuttering be eliminated? The answer is yes, however this answer has to be qualified. If the question is really asking whether some persons can have their habits changed to the degree that speaking is no longer a feared situation, and speech is produced within the normal limits of fluency, the answer is yes. If the question is asking whether <u>all</u> stutterers can reach that point, the answer must be theoretically yes, practically no. That is to say that, from a theoretical point of view, there is no reason which would necessarily prevent any stutterer from losing membership in the stuttering fraternity -- the laws of learning apply to all. From a practical point of view, it must be recognized that for some stutterers the habit patterns will be so strong and so generalized that complete elimination of all aspects of the stuttering problem may be less likely. Even in these cases a logical goal (and one well worth working toward) is speech which is fluent enough so as to not interfere in any way with conversational attempts. This goal <u>can</u> be reached by all.

When the habit aspects of stuttering are considered alone, it is obvious that the earlier therapy is started the more success should be expected. When the psychological or emotional aspects of stuttering are considered, the same conclusion is apparent. If therapy, directed at the removal of the stutterer's confusion about his speech and himself, is started early enough, the habit strength involved is not so formidable an obstacle. If therapy is not started early enough, the proportions assumed by the habit strength (even considered purely from a mechanical point of view) are fantastic when compared with any other behavior which an individual learns.

Let us consider the situation involved (again from a purely mechanical point of view) -- an admittedly impossible and impractical approach clinically -- when we examine the strength of the stuttering habit in an adult who has stuttered for 20 years or more. In that amount of time it is quite likely that he has stuttered a million times or more. This is a great deal of practice to put into the learning of something. No wonder the habit is strongly entrenched. The stutterer has worked hard to develop the dubious distinction of being an accomplished stutterer. It is doubtful whether many of our finest musicians have put that much work into learning to be accomplished musicians. They surely have not all thrown themselves into the learning process with as much emotion as is involved each time the stutterer "blocks." Each successful playing of the correct sound in response to the cue of the written musical note is not rewarded as strongly as is the successful completion of a stuttered word or phrase. The musician practices many hours by himself before performing in public. The stutterer "performs" every time he has to communicate verbally, and each performance is an emotionally loaded one.

The statement that stuttering can be eliminated is an important part of the dynamics of a therapy program. When the stutterer sees how his frustrating behavior is of his own doing, how it was learned, and how it can be unlearned this newly defined "cure" becomes a realistic goal worth working toward.

What Are the Steps in a Therapy Program?

In the same way that the development of a stuttering habit follows a logical sequence, the unlearning process also proceeds through a step by step series of events. To be successful, the elimination of stuttering behavior has to include the following:

1. Removal of the basic confusion regarding stuttering behavior

2. Breakdown of the learned stuttering patterns which are confusion directed, panic motivated, and interfere with normal speech

3. Reinforcement of the learned (stimulus response, signal action) patterns of normal speech, including the development of a tolerance for "normal" speech nonfluency

4. Minimization of primary causes of excessive basic nonfluence, psychological or neurological

5. Reintegration of the personality to permit a "normal speaker" self image.

Naturally, the amount of emphasis at each one of these steps will vary according to the person's age and the degree and type of involvement. Sometimes it may be difficult to identify each step as a separate entity as there appears to be a merging together so that the basic sequence is obscured. However, in any case where a child or an adult has successfully and completely unlearned stuttering and is again a normal speaker, these factors have been appropriately accounted for in one way or another.

The first and most important step, which has been ignored too often in the past and is being ignored too often in the present operant conditioning vogue, involves the removal of the basic confusion which exists in the mind and behavior of the person who has learned to stutter.

As stated previously, stuttering is learned behavior. It is about as strong a habit as a person can develop. However, like any learned behavior, those things that a person does which are the stuttering, those things which need to be changed, can be changed. The stutterer must understand and accept this or the chances that therapy is going to be successful will be very slim. Acceptance must be based on genuine understanding of the processes by which stuttering was learned and the processes by which it can be unlearned and replaced with more appropriate, socially and personally acceptable patterns of speech. It is not enough for the acceptance to based on the authority of the therapist.

The stutterer must understand what his role was in the process which led to the development of the confusion directed, panic motivated behavior he fears and dislikes. He must also understand the role he has to take in the process of changing this behavior. Only then can confusion be eliminated and the way cleared for the next therapy step.

This second step involves the breaking down of the learned stuttering patterns which interfere with normal speech. Stuttering behavior consists of certain mental and physical responses to specific signal stimuli. These responses occur automatically and habitually because they have been rewarded or reinforced to the degree that they are the most likely reactions to occur in response to these signals.

In order for these responses to be changed, it is first necessary that they be identified. The complex behavioral pattern of stuttering must be analyzed into its many mental and physical components. The stimuli which act as signals must also be identified as completely as possible. Then the more appropriate actions, those resulting in normal speech patterns, must be identified so they can be substituted for the unwanted ones which are the stuttering.

Normal speech patterns have to be reinforced through repetition and the subsequent reward that accompanies fluency. Normal speech patterns have to gain the dominant position in the hierarchy of possible responses to stimuli such as previously feared words, or sounds, or situations. This normal speech has to ultimately include certain amounts of nonfluency which the speaker learned to tolerate and to which he must not overreact.

Any causes of excessive degrees and amounts of nonfluency must be minimized as a separate and important step to make easier the task of reverting to a speech pattern acceptable by speaker and listener alike. These causes may be basically psychological, basically neurological, or a combination of both. Appropriate therapy might include language skill development, stress situation desensitization, counseling or psychotherapy, and even general physical coordination training.

The last therapy step can involve a fairly extensive amount of effort or it may must seem to come about automatically with progress through the first four. This involves the adoption by the person of a self image as a normal speaker. When this is accomplished, therapy as a systematic process of behavioral modification and change can be considered to be completed.

What Specific Therapy Techniques Have Been Found To Be Most Useful and Effective?

The most useful overall technique is the essential one involving the

removal of confusion from the person as to what stuttering is, why he stutters, and what can be done about it.

The basic approach used involves comparing stuttering to other kinds of learned behavior to demonstrate that it is not a mysterious something that happens but rather that it is composed of a series of things that the stutterer does. A meaningful and actually very appropriate analogy is used in initial sessions which helps throughout therapy as reference to it can be made whenever it seems appropriate. The analogy involves a description of a board or plank a foot wide and a dozen feet long. While the plank rests on the ground one could understandably walk its length with no trouble as a fluent walker. But walking the length of the plank when it stretches between two 30 story buildings would not result in the same degree of walking fluency. The plank would be the same, the person would be the same, but the overall effect would be quite different. The stutterer can easily understand this and can generalize to speaking situations where he walks the plank, so to speak, hundreds of times each day.

Analysis of the stuttering behavior itself is useful. Detailed comparisons between what is done when stuttering occurs during the saying of a phrase and how that same phrase is produced during a sample of normal speech are made. This is done systematically. For example, the first step in saying the word "stuttering" normally involves placement of tongue in relationship to teeth in such a way that the next step of delivering an unvoiced air stream past them results in the s sound. The tongue then is raised to momentarily interfere with the air stream. This begins the t sound which is completed as the tongue tip is quickly dropped producing the necessary plosiveness. As the tongue begins its descent, voice is produced. This results in the necessary ə sound. The rest of the word can be analyzed in the same way.

If a person blocks on this word,it is quite likely that he deviates from the normal sequence in not producing the voice on time following the t. If this is the case, this deviation from the sequence of necessary actions for the production of normal speech can be demonstrated and the person can determine for himself what he is doing wrong. This helps give him a chance to reduce the problem to a size he can reasonably expect himself to handle. He is not battling "stuttering" -- a seemingly overwhelming task -- he is working on getting himself to produce the correct bit of behavior in the sequence of behavioral actions with which he produces speech and thereby communicates.

Imitation of the blocks to bring them to a conscious, understood level is quite useful. If the person can successfully make himself block, he has discovered what actions he is taking which lead to the speech interruption and it gives him a direction for further deconditioning activities.

Negative practice is somewhat similar and also useful. Having him repeat his blocks again helps break the pattern if he understands what he is doing. It is generally suggested that the block be interrupted rather than completed all the way through so as to break the stimulus response reward cycle as much as possible.

Voicing entire phrases as one continuous sound train has been very useful. The person is reminded that while a phrase like, "I went to the movie yesterday," is written as six separate words it is usually spoken in one unhurried, voiced, breath stream with little if any complete disruption of voicing, even at the so called unvoiced sounds. Choral speaking helps to get the person into this technique if he has difficulty controlling his own efforts.

Slow, deliberate speech is encouraged during early practice efforts. Slowness for the sake of slowness is not the desired effect; the person is encouraged to articulate slowly enough to allow the correct bits of behavior to be carried out that are necessary for the ultimate production of speech which is as near normal as possible. In keeping with the idea of getting rid of some of the mysteriousness generally associated with stuttering, the person is reminded of the similar types of slow deliberate actions necessary to assure a lack of errors in early typing or piano playing learning activities. This helps encourage the needed patient during the unlearning and relearning process and tends to minimize the "normal" desire to want immediate results, especially when stuttering is explained as understandable behavior. The piano playing example also helps when the person is reminded that knowing the names of each keyboard note does not make a pianist. A large amount of practice must follow "insight" to make the behavior automatic.

Considerable success has been achieved with some stutterers using a desensitization process that employs imagination in place of actual situation participation. The person, after having learned what he is actually doing that interferes with normal speech, reproduces situations, tensions, and conflicting thoughts in his imagination and then, using appropriately paced deliberateness, works his way through the block. This is done with simple blocks and simple situations first and then he is worked up further on the scale of difficulty of feared situations.

Other specific techniques are of possible use in the unlearning process. Many of the therapy suggestions that fill the literature can have value as long as they are applied within the framework of proper learning principles and are used with a person who understands their purpose in the overall therapy plan.

ABSTRACT

THE EMPLOYMENT ENVIRONMENT

by

Stanley Ainsworth

There are many ways in which the employment environment influences the effectiveness of speech therapy. Some of these are fairly obvious, for example, the size and attractiveness of the physical facility, the availability of equipment and materials, and the availability of outside resources have all been mentioned. Less frequently mentioned is the availability of resource personnel and the extent to which the functioning clinician utilizes these individuals. Although each type of employment environment offers unique opportunities for the clinician employed there, the clinician must often take the initiative to make certain that the advantages found in the environment are fully utilized. For example, the hospital environment offers rich medical resources and extensive medical information plus the cooperative effort of the other paramedical personnel to be found there. The university environment offers rich resources in terms of the availability for consultant help, particularly in the field of speech pathology and audiology, but also in such areas as psychology, social work, linguistics, deaf education, mental retardation, etc. The public school environment offers perhaps less in the way of

medical information and consultation but does offer a great deal of information relating to intellectual functioning and family background. Most important, the clinician has the child available throughout the day if she is able to procure the cooperation of the classroom teacher.

The success of the speech and hearing program is related at least in part, and perhaps in large measure, to the extent to which the clinician is able to make full use of the particular employment environment in which he or she finds himself and the extent to which those advantages missing from other environments are minimized.

THE DEAF CHILD'S KNOWLEDGE OF WORDS

by

Toby R. Silverman

In August of 1967 a project was begun on the reading vocabulary of the deaf child, which will run through August of 1970. While there are many factors related to reading, this study deals with only one such factor--the vocabulary the deaf child brings with him to this task.

The major source of information for the deaf child is in the form of printed material, such as texts, trade books, children's magazines, and children's newspapers. Consequently, skill in reading is far more crucial for him than for the hearing child, whose information comes from a much wider variety of sources--auditory as well as printed.

No teacher of the deaf needs to be told that the majority of her charges are poor readers--she lives with this fact. There are many reasons why. In the current study we have started with the observation that the deaf child is far below his hearing peer in reading comprehension (Furth, 1966). Reading comprehension, in turn, is related to vocabulary knowledge (Seashore and Eckerson, 1940). We have, at present, little systematic information on the reading vocabulary of the deaf child. Such information would be of value to educators of the deaf, who struggle each year to find, modify, or create reading materials for their classes.

Most standard educational materials cannot be used as is. Such materials are presumably constructed in conformance with graded vocabulary levels, i.e., a second grade text is written in a vocabulary that second graders are presumed to know. Such vocabulary levels are obtained from three major sources: The Dale-Chall List of 3,000 Familiar Words (Dale and Chall, 1948), the Dale-Eichholz Lists (Dale and Eichholz, 1960), and the Thorndike-Lorge Word Count (Thorndike and Lorge, 1938).

In the Dale-Chall List, the authors presented lists of words to a sample of fourth grade children who were asked to check off the words which they "knew." Vocabulary tests were then constructed from a pool of these words and subsequently given to children at various grade levels. The level of each word was then defined to be the grade at which 67 percent of its members chose the correct definition. A more comprehensive list of over 17,000 words was later compiled by Dale and Eichholz (1960). In the case of the Thorndike-Lorge Word Count, vocabularly level is presumed to be related to the frequency of occurrence of words in various types of printed material.

Educators of the deaf who use such standard educational reading materials have found it necessary to simplify the vocabulary of these texts, since the materials in question have been constructed for use by hearing children, and they are inappropriate for use, without extensive modification, with deaf children. Thus, a teacher whose major concern should be content is forced to evaluate the vocabulary of the texts she wishes to use. If she wishes to teach a fourth grade history unit on the founding of our country, she must rewrite a large portion of the text and teach a number of new words. Such terms as "political suppression," "taxation without representation," etc., must be explained to the deaf child using much more simplified vocabulary. The task of continually editing material of this type is, at the very least, bothersome. A more efficient solution would be to construct reading materials in conformance with the graded vocabulary levels of deaf children. It must be discovered what vocabulary level can be reasonably expected of the eight year old deaf child, the eleven year old deaf child, etc. If there is made available a pool of known words at such age levels, texts can be written where the focus is on content and where a minimum of rewriting is required.

The objective, then, is to reorga ize the bulk of the Dale-Chall and Dale-Eichholz vocabulary lists in order to arrive at a set of age graded vocabulary lists reflecting the actual vocabulary of the deaf child at various ages.

We have started constructing vocabulary lists from a word pool of some 15,000 words on these lists. Obviously, no child can be asked to respond to every word. Instead, each child will respond to 200 words, which will be randomly selected from the larger word pool. Each of these 200 word lists is constructed in the manner of a standard vocabulary test, such as is normally given in the achievement testing at the end of each school year. The instructions are printed on the test itself as well as on practice items, so that no extensive instructions are required.

To obtain a large number of responses to each word by children at all ages from eight through 17, large numbers of children are required. Last spring, each of the 104 schools for the deaf in the United States were contacted for cooperation in this study. The response has been overwhelming. At last count, only four schools have refused to participate. There should be, therefore, a large enough sample with which to work. All children between eight and 17 years of age will be included, regardless of the dB loss or presence of secondary disabilities, because our results should reflect what deaf children in schools for the deaf know. This is the population to be serviced, not just "typically deaf" children.

At the end of a three year time period, a compendium of words known by deaf children will be published and made available to educators of the deaf. Prematurely, a word of caution should be issued. This is a large scale study and as in all such projects its utility is relative to individual situations. No teacher will be able to pick up the compendium and say, "I have eight year olds; therefore I'll prepare my materials from this list and my children's reading problems will be over." Many will cringe and wonder why their charges don't know half the words on their age list. Others will boast that their children's vocabulary skills are far beyond those of the norm. Still others will feel that, since deaf children live in the hearing world, we should teach to the norms of the hearing world. Each is a legitimate observation.

Given the most extensive vocabulary, there are still other crucial reasons why reading may be impaired. The child may have inadequate linguistic skills, i.e., his performance with various linguistic rules may be faulty.

This is quite an important matter, and for a fuller explanation the reader might wish to consult the work of such modern linguists as Noam Chomsky (Aspects of the Theory of Syntax and Syntactic Structures); George A. Miller and Frank Smith (The Genesis of Language); and U. Bellugi and R. Brown (The Acquisition of Language, Child Development Monograph, 1964).

The child may lack the conceptual background or experience necessary for understanding certain kinds of printed materials. His perception may be faulty. His memory may be impaired. The list is almost inexhaustible. Neither an individual child nor an individual school should be pitted against the norms. The lists are only descriptions of what the average deaf child of a given age knows. School, regional, and individual differences still exist. Even more important, the lists should not become a goal. Much useful time can be wasted on the relatively meaningless activity of vocabulary building. Words are part of activities. The question of whether an eight year old deaf child "should" know the words on the eight year old list is not a subject under investigation. The teacher must ultimately decide what to teach. The list can provide hints on words which may be used to define other words.

For us in the Research Department the lists should prove extremely useful. In devising many of our tests we, too, must know if certain words are within the vocabulary of the children we test; the lists will give a better estimate.

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ABSTRACT

THE SPEECH CLINICIAN: HIS PERSONAL QUALIFICATIONS

by

Phyllis Gildston and Harold Gildston

For the price of some distortion of the whole, it is possible to fractionate the "clinician" and study the pieces. Academic training, clinical practicum, and on the job experience hone and polish the already educated mind,

enabling it to deal effectively in communication problems. But at the center, supporting and uniting the many parts, vibrates a nonprofessional core, the ego, which joins meaningfully, although indirectly, in the therapeutic process. Physical appearance, dress, age, sex, social class, and that tenuous totality of minutae called "personality" also have a hand in shaping therapy--particularly from the point of view of patient responses--and thus contribute, ultimately, to success or failure. The values and biases of the clinician determine not only his personal attitudes toward patients but are usually instrumental in the selection of therapeutic techniques and materials. Hence the clinician's personal qualifications function, at least in part, as unknowns in any prognostic equation.

PANEL: COMMUNICATION DISORDERS: A LONGITUDINAL STUDY:

SCENE IV: PRIMARY YEARS

by

Vilma T. Falck

Scene IV in the series, entitled Communication Disorders, A Longitudinal Study, followed sessions which had already considered Douglas (a child with disorders of speech, hearing, language and learning) during the pre-, peri-, and postnatal period as well as during the preschool years of growth and development. The fourth session considered Douglas at the level of the primary grades.

In order to make the program as meaningful as possible, it was decided to pick one particular subject--Attention. Basic to the problems demonstrated by a child with disorders of communication may be faulty attention. It cannot be assumed that information made available to the child will automatically be recorded in the central nervous system. In order to remember, to discriminate, to code, to sequence, to categorize, to build up associations--it is necessary first of all to be able to attend to appropriate stimuli.

Attention in the newborn is, to a large degree, reflexive in nature. Selective attention is a process of gradual inhibition (or gaining control) of these automatic responses to the degree that ultimately the intensity of the stimuli is not the criterion upon which selection is based. Instead, selection results from a developed ability to filter out irrelevant signals and focus on the ones appropriate to the time, place, and situation.

Some children need more help than others inhibiting what we consider to be the extraneous stimuli at any given point in time or space. They need help in marshaling their filtering and selection processes. They need help in being able to initiate and to continue this selective perception. They can be helped to develop these skills.

Certain techniques found to be useful in this overall process of developing and inproving the ability to selectively and appropriate attend were presented by a panel representing four fairly typical environments in which Douglas might be found:

1. In a regular class of 30 children where one or two Douglases might be found by chance selection alone

2. In a class in a special school where there might be a liberal sprinkling of Douglas like children

3. In individual tutoring

4. In a clinical classroom of selected children where all might be like him.

Regular Classroom

Representing a program in a regular classroom, Dorothy Melvilie, of the Burlington Public Schools, described individualized instruction in a heterogeneous first grade at the Smith School, Burlington, Vermont. Her program originally began as a Federal Project in Individualized Reading but presently encompases individualizing instruction in other areas.

It is felt that this program is successful because the child does not have to compete with the group. The program is self pacing. Each child proceeds at his own rate and his own ability level. In addition, the program is tailored to the individual needs of each child. Through individual conferences with the children, the teacher becomes well acquainted with the needs of each child and how he learns best. She then capitalizes on her knowledge for further individual instruction.

The program allows each child to select his own reading materials. Self selection allows him to enjoy reading books that interest him which in turn motivates and helps build self image. The atmosphere is one of child discovery, offering freedom to move, a variety of experiences, and plenty of time to think and discover.

Provision is made for an intensive phonic program for those students who benefit from such instruction. Some children learn to read in ways unrelated to formal instruction, therefore other activities are included. Community experiences, trips or guest speakers, or the children's use of a variety of special equipment, e.g., recording on tapes, preparing original transparencies for the overhead projector, operating the filmstrip projector either in small groups or individually, or the use of carrels for individual work and concentration provide much variety from which specific solutions for the problems of special children can be found.

Structured activities of sixth graders with first grade children for half hour sessions each day (storytelling, dramatizations, dictation of original stories, or just talking with them) are an integral part of the program.

In this regular classroom environment, it is possible to summarize the whole learning experience of each child by saying it is total involvement in some form of learning activity at the child's own level each day.

Classroom In A Special School

Pauline Bosworth, also of the Burlington Public Schools, described a special project being conducted in the Lawrence Barnes School in Burlington, Vermont. The project is trying to meet the needs of 80 Primary children with a concentrated program in an ungraded situation. Thirty of the children were first graders last year who had not succeeded at all in reading. The remaining fifty children were last year's kindergarteners whose performance was

predictive of failure in a regular first grade. Evaluations made by the Gesell Measurement of School Readiness indicated four and one-half, five, and five and one-half year levels of maturity. Lawrence Barnes was described as an inner city school with the usual slum cultural patterns and problems. Thirty-five of the children had birthdates later than September 1, so that simple chronological age is also not in their favor.

This program is trying to counteract adverse influences in these ways:

1. Small classes with not more than 15 children

2. Availability of good food (a well balanced meal served to every child every day)

3. Perception training as readiness for learning stressed

4. Field trips, many concrete experiences, much exposure to good stories and music, many opportunities for speech and discussion provided each day (since oral language development is seen as a strong deficit with most of the children)

5. Daily speech therapy sessions held for those who need them.

Four Teacher Aides from the New Careers Program are included in the staff. They share in play area and bus supervision, serve lunch, prepare audiovisual materials and art projects, and have, in a few cases, even given baths. Their role in interpreting the program to parents is being explored. They are recruited from the poverty group; some of their homes are in or near the district served.

Mrs. Bosworth explained that at this point it would be premature to predict the ultimate outcome of the project. While gains in skills, in self image, and in content material are readily seen, having to face the definitely limited capacity of many of the children is a problem. Another complication is that parents are unhappy over the arrangements--the children are bussed away from the regular building to a church educational wing, separated some distance from the neighborhood. Parents are distrustful of the slowed down presentation of academic matter and think of the perception training, field trips and audiovisual aids as play experiences. Badly needed staff planning time is being used to develop better public relations.

Individual Tutoring

Madeline Miles of the Center for Disorders of Communication, University of Vermont, described a tutor training program as one way to help meet the special education needs of children who live far from therapeutic and special educational services or where the number of special teachers is not great enough to keep pace with the demand for that service. At this time, turning to supportive aides or tutors might be most appropriate.

Who are the tutors? They might be parents, they might be teachers, or they might be just mature, warm hearted neighbors with lots of common sense and a little time to devote to this service. These persons come to the Center for Disorders of Communication in Burlington, Vermont for training and guidance.

The goal with tutors is not formal teacher preparation. The Center does

not feel it is developing highly skilled therapists with sound theoretical background to transfer from case to case. The goal is to give to each tutor some methods or specific techniques that are applicable to a particular child with whom she is working. The tutor is given the opportunity to observe a series of lessons and then is given specific and rather detailed lesson plans which put into writing the techniques she has seen demonstrated. Following the lesson, plans are discussed, and then a brief demonstration by the tutor for the therapist takes place so that any last minute confusion can be clarified. The tutor then returns to the home community with the child and is on her own for a brief period. In most cases this is initially about a week and then both the tutor and the child return for continued instruction and further lesson plans. Gradually the space between visits is lengthened as the tutor becomes more familiar with some of the required techniques and the general teaching approach. No tutor is left completely on her own until it is felt that she can cope adequately with the situation between rather widely spaced recheck dates.

The Center for Disorders of Communication in Burlington has been working with this tutor training program formally for the past two years and informally with parents prior to that time. The results have, in the majority of cases, been gratifying. Children for whom no other source of help was available have been receiving and profiting from this type of tutor training program.

Clinical Class

A clinical class for children at the Center for Disorders of Communication in Burlington, Vermont, located in a University Hospital complex, was described by Elizabeth Holloway, of the Center. This class, part of a total program for children with communication disorders, consists of a primary level group of children referred from many different sources.

The class is a small homogeneous group with a maximum of ten children which meets five hours a day, five days a week. The children all have normal intellectual potential but have a variety of communication disorders of speech, hearing, language, or learning. Some of them have come from lower level kindergarten classes from within the Center, others from public kindergarten or some have failed first grade in the regular schools.

The parents of the children selected for this class have a great responsibility to work with the staff in many different areas. Home assignments are incorporated into lessons, and work is planned so that new behavioral patterns learned in school can be carried over into the home. This requires cooperation and participation from the parents. In addition, since the Center is not a neighborhood school, parents are responsible for a great deal of transportation.

A therapeutic approach which emphasizes the importance of attention and specifically planned activities to help the children develop their ability to attend to appropriate stimuli forms the background for this class. At all times the teacher must control the structured environment with carefully planned activities, materials,and time. Integrated techniques from speech therapy, remedial reading, education of the deaf, and other disciplines are programed to help the children compensate for their very specific language disabilities.

Extensive diagnostic and supplementary services are readily available for the children in this class and are routinely utilizcd. These services

allow continuing communication and encourage pooling of suggestions to help each child. Although each child has his own special problem and is treated accordingly, the children have in common the capacity to learn in a small structured language learning situation that can be provided by this clinical class.

Discussion

To provide a commonality of terminology and thinking about Douglas, a film (PACE: Programing Appropriate Communication Experiences), produced at the Center for Disorders of Communication in Burlington, was presented. The film essentially described and demonstrated the structure and function of a primary level clinical class for children with communication disorders. Emphasis on attention through the use and control of environment, materials, and activities, illustrated in the film, led to a panel discussion of attention as a goal for learning. Each of the panel members discussed how the demonstrated techniques could be used in their situations as well as other techniques more applicable to their environments.

It was conceded that the problem of gaining and maintaining attention was more complex than what might be considered necessary for setting up conditioned responses to appropriate or attention getting signals. For years, teachers have known about the value of a bell, a light, piano chords, or clickers. The use of familiar signals as the initial part of a stimulation (e.g., calling a child by name prior to delivering a verbal message or the use of key phrases such as "Now Hear This" prior to making announcements) is a technique to get attention. The problem is how to develop and maintain appropriate attention in order to make sure that learning experiences will be more successful.

Structural and Environmental Techniques to help maintain and develop attention were suggested as follows:

1. Standing nearby or sitting with a child

2. Putting a hand under the chin or on the head to get a child to look at you

3. Providing materials with which the child can cope (e.g., half sheets of paper, less typed copy so there is less stimuli per page, fewer word cards at a time, half assignments)

4. Using novel stimuli to increase attention (e.g., varying oral presentation by whispering, using lip reading clues or using amplification, regardless of the status of peripheral hearing)

5. Limiting the time available for work; establishing short working periods appropriate to and coordinated with the length of the task

6. Alerting children to the activities of the day so they have a sequence of visual reminders, which can be crossed off as work is, or should be, completed, so that they can learn to monitor their schedule

7. Using carrels to limit environment

8. Giving an individual child a physical break from the classroom environment when he needs to get away (under control of the thoughtful teacher in collusion with the child so this does not become a problem. This might be

combined with a trip to a separate room where Bobo, a sand filled clown, would accept aggressiveness)

9. Building into every class day frequent opportunities to change positions, (e.g., requiring purposeful movements by interspersing a brief period of physical exercises, such as two deep knee bends, for all children as they stand beside their desks. This can be done on signal, possibly four to six times a day. All children in this way are given a mechanism for release of the buildup of electrical energy)

10. Pacing physical movements between work activities so that required attention to tasks is effectively broken into small units during which concentrated seat work can be demanded.

Ideas relevant to the use of language were also discussed:

1. Giving simple, slowly paced directions and timing responses in such a way as to consider translation difficulties a child might have, since a child might need thinking time before being able to carry out action

2. Repeating instructions for reinforcement

3. Requiring the child to paraphrase, or even repeat the needed steps, before expecting him to carry out required action

4. Standardizing instructions so that the child can more readily predict with success what will be required

5. Organizing the day so the child always knows what to do, allowing the child to become totally aware of the day's program.(Since children forget what to expect, they need to be constantly reminded that, for instance, "In two minutes we will do something else." As mentioned, putting an outline of activities or visual clues on the board should help)

6. Implementing the systematic use of multiple commands in daily work. (It was felt that by kindergarten level, most children could follow up to five commands)

7. Requiring delayed responses by teaching a word and lengthening the amount of time required before the word is returned

8. Giving each of several children a separate word and requesting the children to place themselves appropriately to develop a phrase or sentence. (This activity could be preceded by giving each child a number to demonstrate more easily the idea of arranging themselves in sequential order)

9. Utilizing games of directions and descriptions. ("I went on a picnic and took ____ ____ ____," e.g., all [b] words; a bag, beans, ballon, bathrobe, bathing suit, boat)

10. Retelling stories and describing sequences from visual clues (e.g., verbal accompaniment to the Julie and Jack stories, developed originally as material for Deaf Education by Sister Mary Walter, St. Johns School for the Deaf, Milwaukee, Wisconsin. All participants supported liberal but legal appropriation of teaching materials from all areas of special education for use in any environment by any teacher. Interchange of materials between various disciplines is an obvious method of curriculum enrichment)

11. Listening to tape recordings which require comprehension and subsequent action which must always be checked for accuracy by the teacher

12. Developing new uses for old games (e.g., teacher writes a sentence on the board which is hidden from sight. First child is given sentence verbally and it is passed from child to child with the end result compared with original on board. Variations to make the task more difficult would be to use sequences of numbers, and delay and control the time before sentence is transferred to the next child. For instance, the child must do three deep knee bends in between or he must wait until a bell rings to transfer sentence).

Specific suggestions pertinent to the use of visual or auditory stimulation to help develop attention were presented as follows:

1. Encouraging the child to pay attention to missing details (e.g., what part is missing in a picture, what item is missing from a tray of objects)

2. Employing a modified tic tac toe pattern in which a different geometric design is used to be copied by the child in the appropriate place following a brief visual exposure. (Elaboration is possible through variation of design, time of exposure and spatial orientation of each figure, i.e., triangle facing left, triangle facing right, etc.)

3. Developing attention to a pattern of stimuli, then noting which part has been changed; also requiring a verbal description of the change can be encouraged

4. Modulating rhythm and intensity in hand clapping patterns which one child initiates and others follow

5. Requiring child to attend to one out of three children who talk simultaneously

6. Timing motor response to oral commands (e.g., "Put your hands on your head, shoulders, knees, toes, knees, shoulders, etc.").

The participants agreed that at the present time, regardless of a preferred method of helping Douglas which would be based on placement in a clinical or special classroom and/or providing individual help, he is most likely to be found in a regular primary grade classroom. They summarized by suggesting that the teacher support a child in such a setting by:

1. Demonstrating an awareness of his successes (e.g., rewarding his efforts by a trip to the principal's office or to another class, sending commendation home to his parents noting his successful efforts)

2. Giving appropriate responsibilities which will require participation but at which he can succeed

3. Setting realistic goals which are previously discussed with him

4. Pacing an individualized program for him so he can experience success

5. Assigning children in the classroom to help each other. (Both children will benefit and the technique is useful for peer levels as well as by pairing, e.g., sixth grade and first grade levels).

A COMPARATIVE STUDY OF THE TRADITIONAL AND MODALITY TREATMENT APPROACHES TO ARTICULATION THERAPY

by

Anne Welch Carroll

One ongoing concern in our profession has been the enigma of articulation treatment. A recent study by the Council of Speech and Hearing Consultants in state departments of education in 43 states showed that articulation problems still make up eighty percent of the case load of the 7,300 public school speech clinicians surveyed (Carroll, 1967).

Recently we have begun to see studies concerning the effectiveness of articulation therapy. For years we assumed we were doing a good job, but little was done truly to measure this. Studies have begun to shed some light on the subject and the importance of the stimulability variable in predicting articulation improvement for subjects from advanced grade levels. Some studies over the past years have attempted to determine the efficacy of speech therapy for elementary age children with articulation disorders. Spriesterbach and Curtis in 1951 described the heterogeneous nature of articulation disorders which McDonald (1964) cited as a source of error in research dealing with such problems.

An analysis of existing procedures in treating articulation disorders has led this author to take a close look at the process of treatment and to attempt to relate this logically to the developmental process within the child.

Until very recently, treatment programs for articulation disorders have neglected the child's individual approach to learning. Rather, one might say that we have tried to mold the child to the treatment program instead of the program to the child.

Like the proverbial blind men with the elephant, we have often drawn conclusions and generalizations concerning treatment about the "whole" based on whatever portions we have measured in our diagnostic workings; however, sad to say, we ofter have overlooked a common sense approach to treatment based upon the child's style of learning.

While we might like to understand and measure "the whole child," there are many reasons why we really cannot. We do not have the required range of skills as individual members of any given profession; we do not have available all the instruments or time to run the gamut of those we do have. Perhaps most crucial, we are presented (whether clinicians, researchers, or both) with specific questions to answer relevant to the settings in which we work. Thus we concentrate our effort on measuring or describing characteristics of the individual and his environment which appear relevant to these chosen variables. Such focusing is essential; it is only through a series of careful measurements of finite elements of behavior that the "whole child," or even the whole of the disorder, can be understood and a proper treatment program prescribed.

It has been said that learning to listen, to comprehend, to remember and recall, to formulate and express in an oral symbol code, and eventually to read and write in this same code is probably the most difficult and complex task a young child undertakes. The therapy program must be designed to help the child learn oral language through his specific combination of sensory,

intersensory, memory, or motor abilities (Myklebust and Johnson, 1964).

It is to be remembered that whatever the age of the child, the development of a concept usually follows the order of perception, integration, association of ideas, and expression (Myklebust and Johnson, 1964).

It would appear that an adequate diagnostic evaluation should include an observation of the child's learning and behavior styles, modality strengths and weaknesses, as well as articulation difficulties, including spontaneous speech production, sound discrimination, deep testing of misarticulated sounds, stimulability in nonsense syllables (Carter-Buck), and intelligibility.

Upon reviewing the importance of modality, intactness, and level of involvement, the rationale for the present study was established based upon three possibilities of improvement in articulation through a modality approach to treatment: (a) the child might learn best through the unisensory approach to therapy, (b) the child might learn more rapidly through the multisensory approach, and (c) the majority of children still learn to correct articulation errors most rapidly through emphasis upon auditory training.

An attempt was made to investigate two types of approaches to therapy for speech handicapped children diagnosed as having articulation disorders and to compare the results of this treatment.

It was hypothesized that speech handicapped children given the traditional approach would show less improvement in articulation and less carryover into general speech habits than would the children given the modality approach over a two year period of time.

Method

Subjects. The 100 subjects selected for inclusion in this study were randomly selected from a larger population of 258 children having articulation problems who were awaiting entrance to a public school therapy program. The original screening of the subjects was done by four speech clinicians in two suburban school systems.

The children who met the following criteria served as subjects in this study:

1. "Normal intelligence" as determined by the recent Lorge-Thorndike group intelligence test
2. CA between six and eight years
3. No previous experience in speech therapy
4. No impairment on visual or auditory acuity
5. No evidence of severe or moderate dental malocclusions or "tongue thrusting"
6. Two or more defective consonant sounds determined to be in error if misarticulated in either the initial, medial, or final positions in words (the Warnock-Medlin cards were used as the testing instrument for this purpose)

7. Misarticulation of 70 to 155 phonetic contexts on consonant sounds according to McDonald's deep test of articulation (1964).

Assignment of Subjects. The 100 subjects were divided into two groups and an initial comparison of 11 variables showed only one to be statistically significant; however, this was attributed to chance and not considered significant for purposes of the present study. The mean chronological age was 6.5 years, and subjects came from families of middle to upper socioeconomic status as determined by the Occupational Scale. There were 73 boys and 27 girls with the usual articulation errors ("r," "th," "s," etc.).

Treatment. One group received the traditional approach to speech therapy with heavy emphasis upon ear training, and the other group received therapy based on the modality approach. For purposes of this study, the modality approach was defined as the sensory channel most intact for input.

In the modality group there were 36 boys and 14 girls. Seventeen of the above were given the auditory approach, 17 the auditory visual, and 16 the auditory tactile approach.

In the traditional group there were 37 boys and 13 girls.

The modality approach was determined by a review of the cumulative records and the Illinois Test of Psycholinguistic Ability (ITPA). The above determination was made by six clinicians not involved in the initial survey in conjunction with a team of specialists composed of a school psychologist, clinical psychologist, pediatrician neurologist, diagnostic teacher, building principal, social workers, and this author. Concerns in the modality approach treatment program included:

1. An awareness of input before output

2. An awareness of differentiating meaningful units and associating these with the appropriate verbal symbols as well as the aspects of simultaneity and repetition

3. Vocabulary varied according to needs.

The modality group was divided into two subgroups with each of the four clinicians seeing 25 children in groups of two to three, three times per week in 30 minute sessions. The instruction period covered 25 weeks each year. The clinicians related groups at the end of each semester in order to help control the teacher variable.

The effects of the two types of treatment were compared by means of a pretest posttest battery. Each of the groups was administered the Peabody Picture Vocabulary Test, McDonald's deep test of articulation, Wepman's Test of Auditory Discrimination, McGrady's Memory for Sentences Test, and the ITPA after the first year of treatment and again after a second year.

Reliability. Each of the six clinicians who served as raters had three or more years of experience using McDonald's deep test and the ITPA. A series of five training sessions was held to increase the intergroup mean agreement of raters prior to the pretesting. The range of correlations for the reliabilities of the raters was from .88 to .98 with a mean correlation for all raters of .92. Each of the raters tested the same subjects at the time of the pre- and posttesting. Raters were not familiar with the subjects tested, and care was taken to insure that the raters had no knowledge concerning which

subjects had received the traditional approach to treatment or the modality approach.

The rationale for speech instruction basically stressed speech behavior as a complicated, learned motor skill which becomes automatic through practice (Elbert, Shelton and Arndt, 1967).

The treatment approaches began with the usual sound in isolation from context, proceeded through the sound in syllables, the sound in sentences, and finally in conversational speech. Treatment was built around the key word and the success approach.

Results

Comparison of Direct Individual Difference Scores. During the pretest posttest period, both groups made significant improvement in articulation as revealed in the direct individual difference scores at the .05 level.

Comparison of the Speech Handicapped Groups. A comparison of articulation based on the pretest posttest difference scores between the two groups of speech handicapped children revealed that the children given the modality treatment showed significant improvement in speech over those given the traditional approach.

All the children made significant growth in the auditory decoding, vocal encoding, motor encoding, and auditory vocal sequential subtests of the ITPA.

Significant differences between the groups, however, were observed on the visual decoding and visual motor association subtests with those given the modality approach showing the greatest improvement based upon the pretest posttest group difference scores, as well as auditory memory.

Both groups made significant increases in the mean total language age scores on the ITPA. However, those given the modality treatment approach showed an increase of 10.5 months and the traditional treatment group, 8.9 months. Mean improvement for the modality approach group was 38.9 and 24.4 for the traditional. The second year showed an increase in language age scores of 11.2 months for the modality treatment approach and 8.3 months for the traditional treatment group over the previous year.

Tabulation and Analysis of Data. Because the same subjects were involved in the pretesting and posttesting, a direct difference method analysis was employed followed by a t test to determine the level of significance of change between the two testing periods for each group. The direct difference t statistic was used to show both the direction and amount of change between the pretests and posttests.

Standard t tests were computed to determine the statistical significance of the pretest posttest difference means between the two groups of speech handicapped children.

Discussion

The results of this study tended to give support to the hypothesis which predicted that children given the traditional ear training treatment would show less improvement in articulation therapy than would children given the modality

treatment approach. It was interesting to note than 28 percent of the children given the traditional treatment approach and 49 percent of those given the modality treatment were dismissed from treatment as having made satisfactory progress. The results of the second year were comparable.

The basic premise underlying this study was that the clinician must be aware of the child's style of learning and plan his treatment program accordingly. Clearly, treatment approaches should include an awareness of the child's learning style, and the clinician should ask himself:

1. What are the child's areas of strengths and weaknesses?

2. What kinesthetic, visual, or auditory modality (or modalities) did this task require?

3. What other situations does he approach in the same way?

4. What is common to them all?

The communication program for a particular child should be designed to help him learn through his specific combination of sensory, intrasensory, intersensory, memory, and motor skills.

It would appear that the therapy program should emphasize the specific disability area, but use the intact language areas to strengthen the deficient areas. If the child has trouble understanding what he hears, visual or even kinesthetic cues may be incorporated within the auditory exercise to increase the probability of a correct response.

However, one must be careful not to overload the sensory channels but, rather, to utilize the one or two appropriate channels. The area of auditory visual integration and the intrasensory approach is still in need of much investigation.

The trend toward an increased awareness of the stimulability variable as well as approaches to learning should have a positive effect on treatment approaches in articulation therapy.

In essence, the clinician diagnoses the child's learning style by noting the areas of disability and the level at which the child can successfully perform. Remediation is the introduced to alleviate the deficiency.

Evaluation does not stop, however, with the beginning of the remedial or educational process; evaluation is an integral and ongoing part of the remedial program. If an activity proves ineffective, it must be recognized as such and replaced. No diagnosis is infallible, and no one activity helps all children. An ongoing evaluation attests to the accuracy of the initial diagnosis and provides information on the effectiveness of the remedial program.

An effective ongoing evaluation is something only the clinician can perform. One of our primary goals in education is to decrease the liabilities and increase the assets. But, sadly, we have all been guilty of labeling and forgetting the inter- as well as the intradifferences among children with articulation disorders.

Implications

What implications does this heterogeneity in children's learning approaches have for research in treatment? Obviously, it has many. However, until we begin to apply diagnostic instruments effectively, we will not be able to describe handicapped children in those terms that impinge directly on learning; we will continue with singular characteristics and treatment. Once research in learning characteristics begins to bear results and we can begin to classify children in accordance with shared learning abilities and/or disabilities, we can then begin to identify specifics in subject matter and teaching systems that are relevant to the characteristics of the children. Differential treatment should be a natural outgrowth of differential diagnosis, medical, language, or educational. As Binet in 1909 stated, "After the evil, the remedy: after exposing defects of all kinds, let us pass on to their treatment."

The results of the present study suggest several other possibilities for future research:

1. That the procedures of this study be replicated and include a larger sampling

2. That a long term longitudinal study is needed

3. That the operant conditioning approach to treatment be given further study.

Few approaches to the problems associated with conditioning and learning have received as much attention in the past several years as the experimental analysis of behavior, or operant conditioning. From its inception in experimental psychology, the experimental analysis of behavior has extended into diverse areas, including speech pathology. Operant conditioning principles have been utilized in considering stuttering, disfluency, and aphasia.

Certainly these principles have value for guiding the speech clinician in his clinical activities. It has been suggested that an operant conditioning approach frequently divides clinical activities into three chronological steps: (a) obtaining baseline measures of the behaviors of interest, (b) behavior modification, and (c) extension of stimulus control. These steps appear analagous to diagnosis and evaluation, treatment, and carryover.

Another aspect is that more research is needed in the schools where articulation disorders appear to prevail. For many years it appeared that research was the purvey of speech clinicians in institutions of higher learning. However, we are now beginning to see an interest in public schools as more districts have added research directors who direct the total research efforts of the school.

In speech pathology the basic needs still exist for practical research in survey methods, predictive (i.e., prognostic) techniques, therapeutic approaches, scheduling problems, and dismissal practices.

Meaningful research is both possible and desirable within the framework of the public schools, although problems with implementation are to be anticipated. Some of the pertinent difficulties are time, funds, merit of project, and the need for cooperation with other professional groups. Collaborative effort of the clinician and people actively engaged in research in the area, and also the availability of facilities for the collection, reproduction, and dissemination of data are required.

A Look to the Future

Looking to the future, we see that an analysis of both clinician and patient needs is the prerequisite to developing and applying strategies for continued upgrading of programs for those with articulation disorders. Real understanding of the patient with a speech disorder, his specific kinds of deficiencies, and the distances between self expectations, adaptation skills, and functioning level is essential. The particular teaching strategies and methods which will reach a patient need to be reviewed and evaluated. Continual striving toward understanding and improving knowhow for therapy and diagnostic skills is paramount for working with patients of various abilities, attainments, and aspirations.

The rapid growth of speech pathology taking place today will be further enhanced by federal, state, and private funding. At the same time, there is a substantial need to bring closer together those who work in schools and those who work in clinics, hospitals, training institutes, and private practices, and eventually bring to bear our collection of knowledge and help to discover the enigma of articulation disorders.

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