A Critical Evaluation of
Therapeutic Approaches to Aphasia

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Therapy approaches are supposedly derived from a theoretical view of the disorder to be treated. Ideally, a theoretical base leads to a rationale for therapy which in turn leads to specific goals and techniques. Even when a clinician is unaware of the theoretical base involved, the therapy strategy chosen has an underlying model which affects the direction and constraint of therapy (Schultz, 1972).

Over the years, literature on aphasia therapy has stressed actual techniques to be used with the aphasic, with little reference to the rationale behind the technique (Mills, 1904; Agranowitz and McKeown, 1964; Griffiths, 1970). While helpful to the aphasiologist concerned with treatment, and even though a rationale can sometimes be inferred, this lack of an expressed rationale interferes with the full evaluation of proposed techniques and also with the emergence of new techniques from the old.

In the 1950's and 1960's, however, therapies were proposed by various aphasiologists which arose from more detailed and explicit rationales (Wepman, 1951; Taylor, 1963; Schuell et al, 1965; Edwards, 1968; Taylor and Anderson, 1968; Holland, 1969). Two particular theoretical views of aphasia served as the basis for these rationales; the loss view and the interference view. These two views in turn led to differing approaches to therapy (Schuell et al, 1965; Lenneberg, 1967).

In the loss view, the assumption is that the loss of brain tissue automatically carries with it the loss of acquired function and therefore the loss of specific information. (Brown, 1958) This cause-effect view, where a pathological cause has a clearly defined effect, is typical of medical models of behaviour, and is a legacy from the time when physicians were the major researchers in the area of aphasia. When rationales are based upon this loss model, the major goal of therapy is generally the replacement of "lost information," such as vocabulary, rules, transformations, etc. (Taylor, 1963, Holland, 1969) and thus leads to the so-called learning approaches.

In contrast, the interference view holds that there is no loss of specific function but that the operation of functions is

lessened as a result of the brain damage (Lenneberg, 1967; Schuell, 1965). This leads to a therapy model in which the emphasis is on the action of the patient. The therapy is not determined by what is lost but rather by the inner activity which the therapist wishes to stimulate (stimulation approach).

This dichotomous separation of therapeutic strategies into learning and stimulation, while arbitrary and often unclear, is accepted by most clinicians in the field. For the purposes of discussion, one can say that the loss view leads to a learning approach to therapy while the interference view leads to a stimulation approach.

It is recognized that though accepted, the above description of the two therapy approaches is an over simplification based on extremes of rationales. It is meant to represent two ends of a theoretical continuum upon which therapy is based, and not necessarily to define particular therapies. Generally, activities within any therapy session lie somewhere between these two extremes. But in order to examine existing therapeutic techniques, and to develop new rationales, it is necessary to define and understand the ends of the continuum. One of the secondary purposes of this paper will be to attempt to clarify which distinctions are real and which are not. One point should be noted here. Several types of phenomena are grouped under the rubric "learning" (Powers, 1973). Learning can involve memory, problem solving, and/or reorganization. Many authors use terms such as learning, teaching, and so forth while claiming to use a stimulation approach (Wepman, 1951, 1968). A basic argument of this paper will be that the distinctive difference, the important opposition between the two therapy approaches is not in whether one is "learning" and the other is "stimulation". Rather, we will propose that both approaches involve learning, but are based on two opposing theories of the learning process. Inherent in this argument is the concept that the role of the therapist evolves from the chosen theoretical base.

Although there is a need for a detailed and searching examination of the loss and reduction theories of aphasia mentioned above, such an examination will not be presented as a separate section in this paper. My intention is to concentrate this discussion upon the theoretical bases of learning and stimulation approaches within the confines of the therapy situation. This hopefully will serve as a foundation for a later paper which will propose a theoretical base for a new rationale for aphasia therapy.

LEARNING APPROACHES TO APHASIA THERAPY

There are two major theories of learning, the cognitive theory and the stimulus-response theory (Hill, 1963). Cognitive theorists are largely concerned with the active participation of the individual with his environment. They are often involved with consciousness and the motivation of the learner as well as environmental stimuli.

The stimulus-response theorists treat learning as a matter of connections between stimuli and responses. The primary emphasis in therapy, therefore, is often upon the stimuli with the implication that control of the stimuli will control the learning behaviour and the response (Brien, 1968). The early behaviorists took as a model of scientific research the methods utilized in physics. They believed that, as in physics, one establishes fixed experimental conditions, manipulates one or more variables and observes the consequent effects upon behaviour. Implicit in this particular method is the belief that the immediate physical cause of what an organism does, lies outside that organism, and the best the organism can do is to modulate the connection from the stimulus to the response. (Powers, 1968). The appropriateness of such a model for human behaviour has been of increased concern to psychologists involved in the area of cognition and in the investigation of cognitive disorders. (Gillis, 1971; Putnam, 1973) While it is true that no science can proceed without systematic assumptions, it is essential that these assumptions be held up to scrutiny before they are accepted as a basis for scientific thinking. (Mcleod, 1947)

STIMULUS-RESPONSE BASED THERAPIES

Stimulus-response theory, whether explicitly stated or not, is the basic rationale contained in many of the programmed instruction techniques. These techniques are based upon certain assumptions: a) aphasia is representative of something lost (Taylor, 1963;Edwards, 1968), b) language behaviour may be viewed on a stimulus response basis (Taylor and Sands, 1966); c) the lost language may be relearned through a teaching methodology (Taylor and Sands, 1966; Taylor, 1963; Edwards, 1968).

One of the avowed purposes of S-R oriented clinicians is to provide a more "scientific" basis for therapy through rigid control of the variables much as one attempts to control the variables in a laboratory situation. Thus the structuring of the content of therapy becomes the most important element in the therapy (Taylor, 1963) (This assumption is, of course, not limited to stimulus response based therapies only. Other educational approaches to therapy which are neither S-R or cognitive based approaches, will depend to a great extent upon the control of the materials or "task continua". Rosenbek et al, 1973)

Such attempts at control within programmed instruction for aphasics can lend themselves to a misinterpretation of what is actually present in the therapy situation. For example, as one way to control the stimuli certain programmed therapy approaches do not allow the therapist to speak (Taylor, 1963; Filby, Edwards, and Seacat, 1963). This was seen as eliminating or controlling a variable (interaction with the therapist) that might have some interfering effect. No consideration appears to have been given to the fact that the lack of speech by the therapist is, in itself,

a stimulus, one that can be interpreted by the patient. This
interpretation in turn will depend upon the patient and cannot
be controlled. As Gyr and Willey (1971) point out, it is the
whole situation, including the "orienting-investigatory reactions
of the motorically active organism which are crucial to the
neurological encoding of this whole stimulus situation" (p. 173).
There is some evidence to support the claim that the aphasic
interprets the actions, or lack of them by the therapist. Stoicheff
(1960) found, as would be expected, that aphasics did worse
when given discouraging instructions than when given encouraging
instructions. However, when given "non-evaluative" or neutral
instructions, their performance was neither so good as nor so
bad as the other two conditions. She also reported that the general
behaviour of this middle group was not so uniform as the other
two. These differences were explained as dependent upon the instruc-
tions. In other words, the patient interpreted the neutral instruc-
tions, which had an effect upon their behaviour.

REDUCTIONISM AND PERIPHERALISM

There are two basic assumptions within stimulus response
theory, reductionism and peripheralism, which can be related to
therapeutic approaches to aphasia and specifically to those approaches
involved with programmed instruction.

Reductionism. Reductionism is the "attempt to explain a complex
interrelated whole in terms of its simpler elements or parts or in
terms of elements belonging to a lower level of phenomena" (Sloáne,
1945, p. 217). Basically an analysis into component parts, it is
a reflection of the development of behavioural research methods
from the natural and mathematical sciences. In essence, it states
that the whole is equal to the sum of its parts. Thus a word may
be viewed as a number of lower level phenomena such as phonemes.
To learn to produce the word, the patient must first learn to
produce the individual phonemes (Sarno, 1968). There is a great
deal of doubt as to the applicability of this concept, the
equality of the whole and the sum of its parts, to human behaviour
and especially to that most complex of human behaviour, language.
A whole can have qualities over and above its elements. Just as
the human is more than a collection of limbs, organs, nerves,
and so forth, so something like the word is more than a sum of
particular phonemes. The complexity of an utterance is decided
not just by the number of phonemes or words but by the interactions
involved within an utterance. It is the interaction of processes
within a complex organism which is of the utmost importance in
human behaviour. In our attempts to understand and describe this
behaviour we may use constructs like phonemes or words as tools
for discussion of particular systems within the organism but it
is self defeating to view them as final reduced elements. Reduc-
tionism, while it may make possible a concise diagram of behaviour,

distorts the nature of the interactions involved in behaviour, and thus distorts behaviour itself.

This particular bias is responsible for two basic assumptions in programmed aphasia therapy: complexity may be determined by the number of units, and one step must be mastered before going on to something larger. Thus, the length of the printed word, and therefore its complexity, is determined by the number of letters within that word (Filby, Edwards and Seacat, 1963). In a programmed instruction therapy based upon this principle, the aphasic would have to "learn" three letter words before progressing to four letter words, and so forth. These two assumptions ignore certain other aspects involved in determining difficulty or complexity. The word "of" may be more difficult for an aphasic than the word "automobile" for a variety of reasons. In this case, the number of letters in the word would have very little to do with determining the relative difficulty of the word.

Larger units often may have elements of redundancy that smaller units do not. Thus a smaller, supposedly more fundamental level may in fact be more difficult for the aphasic. The phrase "cup of coffee" is longer than either "cup" or "coffee" yet clinical experience has shown that the phrase may be simpler. In this case the phrase itself is a meaningful unit, much as a single word is. Goldstein (1948) noted that sometimes sentences are better understood than single words. While he related this to an impairment of abstract attitude, he did state that it was necessary to analyze the demands of the particular speech utterance. Schuell (1965) reported that certain patients appeared to handle longer utterances better than shorter ones. She attributed this to the greater redundancy present in the longer utterance. This would serve to illustrate two factors: first, it is further evidence that the smaller is not necessarily more fundamental than something larger; secondly, the organism, including the impaired organism, actively uses various aspects of the signal.

This particular assumption is not limited to those who present a loss view of aphasia. Wepman (1951) for example recommended that single words, starting with nouns, be the first step in therapy. Schuell (1965) implied this in setting "recognizing single words" as the first subtest on the Minnesota Test for Differential Diagnosis of Aphasia.

The requirement that patients first learn to imitate phones prior to imitation of words (Sarno, 1968) is a further illustration of this bias. The imitation of the phone is a purely artificial construct since phonemes exist within words and not in isolation. The idea that the motor production of individual phones must be mastered before the concatenation of those phones into a meaningful unit has no justification outside atomistic reductionism. Even in the development of language, the child speaks in meaningful units long before mastering the phonology of the language. Linguistic elements do not represent sequential levels of learning. The inappropriateness of this type of staircase ordering of behaviour

was recognized in a later article by Sarno et al (1970) when they pointed out that their severely impaired subjects were sometimes able to do the so-called higher level tasks before they could do the lower level tasks.

Peripheralism. Peripheralism is "a viewpoint or faith that holds that psychological processes fundamentally may be conceived as relatively simple or mechanical links between peripheral events or receptor stimulations at one end and effector activities at the other end" (Leeper, 1946, as quoted by Scheerer, 1954).

In programmed instruction therapy with aphasics, peripheralism may be reflected in two ways, in the basic rationale for the program and/or in the development of the program itself. Thus the tremendously complex phenomena of aphasia could be traced to one break in the stimulus response chain, disordered sensory discrimination (Edwards, 1968). Sarno's (1968) description of her programs illustrates the effect that peripheralism can have upon therapy. On a word level, the pattern of complexity was seen as single words with nouns first, then the introduction of numbers to form a two word combination of nouns and numbers, and finally, introduction of color to produce three word combinations such as "two red books." The oversimplification which results from peripheralism is quite evident here. Language is not just the linking together of words, nor is complexity determined by the number of words. In the phrase "two books", you have the introduction of morphological inflection which, while redundant, is mandatory in English. The role that inflection plays in aphasic error production has been illustrated in part by Martin et al (1975).

Peripheralism arises naturally from the reductionism inherent in a natural science based experimental model. If, as mentioned before, the approach to human behaviour includes a "the whole is equal to the sum of the parts" concept, the relationship between the parts is minimized.

COGNITIVE THEORIES OF LEARNING AND STIMULATION APPROACHES TO THERAPY

Unlike stimulus-response theory, a cognitive theory of learning per se has not been used explicitly to provide a basis for an aphasia therapy rationale. It is a premise of this paper that although unstated and often with its potential unrealized, a cognitive theory of learning can be viewed as a frame for the stimulation approaches to aphasia therapy. If this is done, a case may be made that the usual expressed dichotomy between the two approaches is a false separation. That is, both approaches may be viewed as learning approaches. However, this does not mean that there are not radical and important differences between the two in terms of techniques, therapeutic interactions, and evaluation of the effectiveness of therapy.

In attempting to relate stimulation therapies to cognitive theory, certain concepts are of extreme importance. There are

three processes which are often grouped under the general heading, learning: memory, problem solving and/or reorganization. While each process is interrelated, for example memory is involved with problem solving, a particular therapy approach may have as its primary underlying goal one of these three processes. The therapies described by Sarno et al (1970) could be classified as primarily memory oriented learning since the goals were the reproduction of content. The therapies described by Wepman (1951) and Schuell et al (1965), while they are generally classified as stimulation, could be understood as learning approaches since their primary purpose is to reorganize a system already reorganized by brain damage. In this sense, the dichotomy between "learning" and "stimulation" approaches is false, since they both may be viewed as learning. However, the dichotomy is valid in the sense that the goals may be radically opposed.

With an emphasis upon memory, the emphasis in the therapy situation must perforce be on the information contained in the presentation. With an emphasis on reorganization, the emphasis is upon the action which is elicited within the organism. Here is where major difference between learning and stimulation approaches lies. Reorganization of the organism, not reproduction of stimuli, is the major goal of a stimulation approach.

Powers (1973) described reorganization in the following way; "Reorganization alters behaviour, but does not produce specific behaviours. It changes the parameters of behaviour, not the content". (p. 179) It is here that we find one of the major differences between programmed therapy approaches and stimulation approaches. In the programmed learning approach there is an attempt to produce specific behaviours through an emphasis on the content. An argument may be made that while memory and information may be the primary underlying factors in S-R approaches, reorganization is a goal for them as well. There is certainly truth in this. However, the difference lies in the underlying theory and the resulting interaction or lack of it, between the patient and the environment. As mentioned earlier, S-R theorists view the organism as a relatively passive entity, acted upon by the stimuli in the environment. The cognitive theorist holds an opposite view of the role of the organism in the learning process. In what is called the "constructionist" view, (Gry and Willey, 1971) the organism actively obtains input from the environment for manipulation within the organism, rather than just passively receiving it and being acted upon. Powers (1973) defines behaviour as the process whereby organisms control their input sensory data. Neisser (1967) stated that cognition "refers to all the processes by which sensory input is transformed, reduced, elaborated, stored, recovered and used" (p. 4). It is in the contrasting views of the organism that the most basic differences between the so-called learning and stimulation approaches lie.

Attempts by authors such as Goldstein (1948) and Schuell (1965)

to describe types of symptoms of behaviour represent efforts to catalogue the reorganization which has taken place as a result of the insult to the nervous system. Once this reorganization has taken place, the type of participation, so necessary to a cognitive view of learning, is affected. The important aspect to be remembered here is that learning from an experience, a situation, a structured environment, or even a teacher, involves the active participation of the learner. This participation is affected to a greater or lesser extent by the brain damage in aphasia. However, participation, and thus learning, can take place. It is here that the stimulation approaches to therapy have their strongest base in cognitive theory, even when it has not been recognized as such. When the stimulation therapists talk about learning the necessary "integrations" (Wepman, 1951) or stimulating complex activity in the brain (Schuell et al, 1965), they are in essence attempting to describe the reorganization that results from interaction of the organism with the given stimulation. In this sense, the stimulation approaches to therapy are also learning approaches, but they are based upon a cognitive theory of learning as opposed to the S-R theories.

Wepman (1951) recommended and outlined techniques that dealt directly with certain aphasic behaviours. In his early work he appeared to use instructional techniques within a framework of stimulation. Important in Wepman's work however, was the continual emphasis upon the total environment, including the patient's self view. This evolved naturally from Wepman's rejection of the view of aphasia as a speech or language disorder. He held that aphasia is "a disorder affecting the patient's total reaction pattern due to a disturbance of the integrating capacity of the cortex" (1951, p. 85). Wepman's emphasis upon the role of the therapist and his disdain for teaching machines (1968) were again, a major aspect of the stimulation techniques he proposed. Even when recommending a technique which was suspiciously like programming, it was always with a rationale that was based upon a specific patient's specific behaviour (1951,p. 108-109). He felt that the therapy should be directed toward aiding the brain in its "process of reintegration" (1951, p. 169). In a later article (1972) Wepman proposed an approach to therapy, which, while it might seem to be a departure from his formerly held ideas, actually represented a logical conclusion to them. He proposed a principle of "indirect" therapy dealing with ideas, which appeared to be encouraging another means of maximizing the participation of the organism.

Schuell stressed that "treating aphasic subjects is relationship therapy from beginning to end". (p. 319) Like Wepman, Schuell and her associates recognized that the total environment which included those around the aphasic and his self view contributed to his recovery or lack of it. An important aspect of the treatment recommended by Schuell was an emphasis upon the rationale for

particular techniques; "A good clinical technique is only a device for accomplishing an end...it is the why that matters..." (p. 333).

It must be admitted, however, that the rationales for stimulation therapy are often vague, nebulous, and difficult to describe. As mentioned earlier, this may be one of the reasons for the popularity of certain of the S-R approaches. They are easier to handle and work with. It may also be the reason that an author such as Taylor (1963) views certain stimulation approaches as not therapy at all. It certainly is a valid criticism to point out that much of the rationale for stimulation therapies is unclear, ill defined, and open to sharply contrasting interpretations.

Obviously I am sympathetic to the so-called stimulation approach to therapy. However, there are very definite inadequacies to this approach as presently described. As Schuell said, the why is important, and yet it is in this very area that the proponents of stimulation techniques fail. There are very few good explanations of the "whys" of their techniques.

Time limitations constrain elaboration of this point. However, one short comment may help to illustrate the vagueness which is sometimes present.

While Schuell and her co-workers give a cybernetic system as the basic model from which they are working, it is not always clear how feedback theory applies to the recommended techniques.

Let us conclude with this comment. I feel that at the present time, rationales for so-called stimulation approaches are inadequate and need further definition, while S-R based therapy approaches limit the possibility of self action, and thus of learning, on the part of the aphasic.

SUMMARY

I have attempted to present a comparison of two generally accepted approaches to aphasia therapy, the so-called "learning" and "stimulation" approaches. I have proposed that each of the approaches finds its primary theoretical base in either of two theories of learning, a connectionist (S-R) theory or a cognitive theory. One premise therefore is that the distinction between the two therapies does not lie in whether one is learning and the other is not. Rather, they both are learning based. The differences between them lie in the basic view of the disorder, the theoretical rationale for the therapy, and the basic processes which are emphasized within the therapy. All of the preceding will serve to determine the course and technique of therapy, the role of the therapist, and the eventual evaluation of the success or failure of therapy.

A secondary purpose of this paper has been to serve as a foundation for a discussion for another proposed rationale for therapy with aphasics which will be presented at a later date.

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