Levels of Reference for Aphasia Therapy

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At a recent conference in New York, Joyce West and I were asked to comment on what was "new" in aphasia therapy. We both came up with the same answer, "Not much!"

This was in no way meant, nor viewed, as derogatory to the field. Rather, it was a reflection of the almost overwhelming perspicacity and clinical insight of the early clinical aphasiologists. To this day, whenever I think I have discovered a new technique, or have had an amazingly fresh insight into a specific problem, I go back and read "Recovery from Aphasia" (Wepman, 1951) or Part Four of "Aphasia in Adults" (Schuell, Jenkins, and Jimenez-Pabon, 1964) and I invariably discover that it has at least been touched upon before.

However, this is not meant to imply that changes have not taken place, nor that there are not yet therapeutic pathways which need to be explored. We have much to do and a long way to go.

Paradoxically, this is even more true now that, finally, there is some indication that other professions are accepting what we have known for a long time; that therapy is helpful to the aphasic person. However, with this recognition has come the suggestion that it behooves the physician, in essence, to supervise the clinical aphasiologist (Benson, 1979). This has implications on many levels, far too many to list here. There is one implication that should be recognized and accepted, however. As concerned professionals, involved with the care and treatment of the aphasic person, we must strive for even greater precision in the delineation of our work, of its effect, and of its scholarly and theoretical significance. The last is important, for without it we become technicians to be supervised. But even more importantly, we need such precision so that we may give even more to the aphasic patient.

Much of our attention, quite rightly, has been focussed upon the need to demonstrate the effectiveness of our therapy. This still should be a major goal at all times. However, the means by which we demonstrate this effectiveness may require more attention to aspects of the development of therapy which have often either been ignored, neglected, or relegated to the researcher rather than the clinician.

(Just as an aside here, I feel that too often we make a dichotomy between researcher and clinician that really does not exist. Like the researcher, the clinician must constantly generate hypotheses, design a means to test these hypotheses, and then evaluate the hypothesis. The clinician does it in the immediacy of a clinical session rather than in terms of a controlled study.)

Darley (1972) in his paper, "The Efficacy of Language Rehabilitation in Aphasia" stated the following:

> One is led to the conclusion that any all-inclusive statement as to the efficacy of therapy would be ill advised. Apparently many statements are necessary--that is, separate statements about different kinds of aphasic patients and different dimensions. (p. 7-8)

(I think that it was interesting that Dr. Kertesz yesterday touched on some of these issues, especially the issue of type of patient. If, as he

stated, the type of aphasia changes as the patient recovers, then, of course, our therapy will perhaps have to change.)

Darley went on to specify some of the dimensions necessary for adequate evaluation of efficacy, and included among them the patients themselves, the terminology in use, the measurement of change and finally, the definition of therapy. He stated further "To study the effects of therapy, one must specify the procedures followed and clarify the rationale behind them." (p. 12)

It is with this last dimension that this paper wishes to address itself, at least in part. There will be little attention paid to the specification of particular techniques, since that is seen as the next-to-last stage in a rationale (the last being the assessment of the technique) and one which depends to a large extent upon the particular problems seen with a particular patient. Rather, this paper will attempt to suggest some guidelines for the specification of rationales (the plural is conciously chosen) and to propose a particular theoretical basis for these guidelines. I have prepared two other papers (Martin, 1979a,b) which outline specific rationales and include some techniques which arise from them.

Underlying Models in Therapy.

An adequate definition of therapy must evolve from a specification of the model underlying therapy. As has been stated in previous papers (Schultz, 1972; Martin, 1975; Darley, 1972) all therapies, including those dealing with the aphasic patient, derive from basic underlying models. This is true even if, unfortunately, the clinician is unaware of the specific model which is the foundation of the therapy in use.

Why is it necessary to specify the model from which the rationale and the resultant therapy are derived?

First of all, because each rationale must answer the following three questions:

What is the nature of normal functioning?
What is the nature of the disorder?
What is the nature of therapy?

The answers to these questions will depend, of course, upon the model in use. For example, the answers will be entirely different from the usual definitions in the study of aphasia if one used a psychoanalytic model. (Of course this is not meant to suggest that any sensible person would suggest psychoanalysis as a treatment of choice for the aphasic patient. However, what is meant is that one model which may be appropriate for one aspect of human behavior, including disordered behavior, and for answering the three questions listed above so as to develop a therapy, may not be valid for another disorder or another therapy. Holland (1978), for example, discussed the inappropriateness of the medical model as a means of evaluating communication disruption in the aphasic individual.)

However, to repeat, until we have answered the above questions in terms of a specified model, we cannot adequately delineate the rationale nor evaluate the effectiveness or validity of the techniques which arise from that rationale. There is a further function that the specification of the model underlying therapy can serve. It can serve as a kind of bridge, a "concious analytic device" (Shanin, 1972) whereby we evaluate our theoretical beliefs and the observations which occur in the clinical setting through a comparison of the expectations which arise from the model and the reality we see. In the round table led by Jay (Rosenbek, this volume) we discussed the valuable questions which can arise from

discrepancies between expectations and results.

Finally, the specification of the model can enable us to examine in a more objective manner the degree to which our observations and perceptions are influenced and controlled by the model which underlies our therapy. The old saw, "we see what we want to see" is nowhere more true than in the clinical setting. For example, several years ago I participated in a pilot project where deaf people attempted to teach sign language to aphasic individuals. We videotaped the sessions, and when a few of the clinicians observed movement errors by the aphasic learners, they commented on the "limb apraxia." Later, when the same clinicians were attempting to learn the same signs, and making the same errors, there was no mention of "limb apraxia."

It is important to remember, however, that a model is first and foremost a belief system. As such, it is basically a tool rather than a representation of truth. One danger with models is that they are often reified and then are subject to the same dangers that arise from all forms of belief based upon dogma. With this caveat in mind, let us look at some aspects of models which may help us in attempting to answer the three questions listed above.

Types of Models

There are basically three types of models; the physical model, the logical model, and the theoretical or conceptual model (Shanin, 1972). The first, the physical model, gives a physical representation to an idea; for example, a scale model representing molecular structure. The second, the logical model, consists of a closed set of interrelated entities or definitions which satisfy a number of axioms of formal logic (Shanin, 1972). The third, the theoretical or conceptual model, is different from the first in that it depends upon symbols such as language, and is different from the logical model in that it attempts to represent some form of reality and therefore can be evaluated for validity through empirical means. Theoretical models, therefore, can be defined as "...closed systems which provide a meaningfully selective and symbolic representation of reality" (Shanin, 1972, p. 8). It is this last, the theoretical or conceptual model, which may be the most heuristic for the articulation of a therapeutic rationale.

Aphasia therapy has been discussed according to the theoretical view of the disorder and the therapy itself (Darley, 1972; Martin, 1978). Usually this has been in terms of the "loss" model in which there has been a loss of function or information and in which therapy is viewed as teaching or learning, or in terms of a "reduction of efficiency" model, where function and information are retained, but the organism is seen to operate at a lower level of efficiency. In the latter case, therapy is seen as a form of stimulation.

These are valid approaches to the specification of both the disorder and the therapy. They have been very productive in generating techniques with which to interact with the aphasic subject. However, neither of these views provided a very clear answer to the question, "what is the nature of normal functioning?" To provide that answer, clinical aphasiologists turned to the psychometric model, perhaps the most prevalent model serving as the basis for aphasia therapy.

With the psychometric model, normal functioning is defined as that which is determined by the norms on the test. The disorder, therefore, is defined as the amount and type of deviation from the norm, while therapy, in turn, is defined as the attempt, through whatever means, to bring the

deviant response as close to the expected response as possible. Therefore the goal of treatment becomes an attempt to bring the client back to normal, with degree of improvement or efficacy of treatment being defined as the amount of movement toward the defined norm from the position viewed as deviant. Again, this has been a productive means of generating techniques with which to treat the aphasic subject. I would like to suggest an alternate framework in this paper.

General Systems Theory

The theoretical approach which will serve as the basis for specifying possible models which might provide answers to the proposed questions is General Systems Theory (Miller, 1978; Buckley, 1968; Bertalanffy, 1968). In essence, this theory states that the universe may be viewed as a hierarchical organization of systems. Each level is a system that is contained within, and makes up part of a higher level system, and is, in turn, composed of interacting lower level systems.

One may choose one particular system as the chosen level of conceptual awareness, or the level of focus. The level thus chosen would be the system, while the system within which it would be contained would be considered as the suprasystem, while the systems whose interactions compose it would be the subsystems.

For example, a molecule of water might be viewed as a system. The subsystems could be considered as the two parts of hydrogen and one part of oxygen whose combination create water, while the supra system within which it is contained might be a lake, a river, a puddle, and so forth. However, one could shift the level of awareness and examine the hydrogen or the oxygen. At that point the molecule of water becomes the suprasystem, the hydrogen or oxygen becomes the system, and new subsystems must be defined. In other words, it is the chosen level of awareness, the focus of attention, which determines the system. Essential to this idea is the concept of interaction. In other words, a system is defined not only in terms of the subsystems which compose it, but in terms of their interaction. Implicit in the interaction is the concept that a change in any component will of necessity cause a change in other components (Miller, 1978). This has been described previously as essential to therapy (Martin, 1978).

It is simple enough to define such levels in terms of physical entities such as the molecule of water. Let us see how we might use this approach to answer the three basic questions posed earlier in terms of aphasia therapy. Let us take the aphasic person himself as the chosen level of reference, the aphasic person as a processor of language.

Within this level, the suprasystem could be considered as the communicative interaction, while the subsystems could be defined as the cognitive processes which support that information known as language. We now have a series of reference points by which we can answer the three questions.

Within this framework, the first question, "What is the nature of normal functioning?" can be answered as follows: Normal functioning is the efficient action and interaction of the cognitive processes which support language behavior within and by the organism. The second question, "What is the nature of the disorder?" can be answered as follows: The disorder is constituted by the reduction of the efficiency of action and interaction of the cognitive processes which support language behavior. The answer to the third question" What is the nature of therapy?" might be: It is the attempt to manipulate and to excite the action and interaction of the cognitive processes which support language behavior within

and by the organism so as to maximize their effective usage. (It is recognized that other answers might be reached from the same frame of reference. These are offered solely as possibilities. This is seen as an advantage of systems theory, however--while setting limits of investigation, there is room for modification and change within the model.)

What would be the effect upon answering these questions if we chose a different level for attention in the therapy process? Suppose, for example, we wished to examine the communicative interaction. As mentioned above, a change in the level of reference will necessitate a change in the underlying models and different answers to these questions which have been posited as essential to the specification of a rationale.

In this case, the supra system might be seen as the immediate environment, the therapy room, the conversational setting, and so forth. The subsystems whose interaction make up the system would be the participants within the interaction. We can begin to see here the importance of specification of the levels of reference in terms of therapy. A therapy directed toward the subsystems which process language is going to be different from that which is directed toward two organisms in a communicative interaction. In the former, an approach such as that suggested by Kathy (Haaland, this volume) would be appropriate, while it would be inappropriate in the latter, as will be discussed below.

With the communicative interaction as the level of reference, normal functioning could be considered as the maintenance with maximum efficiency, by both participants, of appropriate sender-receiver roles in a conversational exchange, with the exchange determined by cultural and social norms. The disorder, then, would be considered as the disruption of an interaction in which one of the participants is aphasic, through the failure of either or both participants as a receiver or sender in the exchange. Therapy could be defined as the attempt to maximize and improve performance of both participants as receivers and senders in the situation where one of the participants is aphasic.

One can see how, if the focus is communication, it will be necessary to offer a slightly different approach than if the focus were information processing by the aphasic person.

This approach makes some immediate demands upon the clinician. First, the subsystems whose interaction makes up the system must be identified. Second, their interaction must be specified. Third, techniques must be developed which will manipulate both the action and the interaction of the subsystems. For example, if you are focussing upon the aphasic person as a language processor, it will be necessary to identify, or at least hypothesize, about the cognitive processes which support language.

Again, this is not necessarily so new. Schuell (Schuell, Jenkins, Jimenez-Pabon, 1964) for example, did just this when she identified auditory retention span as a component which was often reduced in aphasia. However, she did not specify the action or the interaction of auditory retention span in reference to other subsystems. One effect of this for example, was that her stimulus lengths were defined by number of words. We now know that other factors, such as syntactic complexity, play an important role in the functioning of auditory retention span.

We have a head start, in a way, in the identification of the processes which support language behavior. Kathy (Haaland, this volume), for example, used Wepman's (1951) list of non-language characteristics as a starting point for her discussion of information processing in aphasia. Examine his list and see how many of those behaviors, such as attention, switching,

and so forth are absolutely essential to language processing. And how many of those behaviors are actually the focus of attention in our therapies?

We must turn to the work of the cognitive psychologists for further identification of the subsystems whose interaction is necessary to processing. There is a wealth of information available in the recent work on coding systems within the normal (Melton and Martin, 1972). And finally, we can obtain a great deal of information about processing in aphasic impairments through a rereading of the work of the past great clinical aphasiologists. As stated earlier, there is very little that has not been touched on before.

It is easier, in a sense, to identify the subsystems in the communicative interaction. They are quite simply, the organisms participating in the interaction. However, this identification is still important. Remember, the system is defined both by its component subsystems and by their interaction. A communication interaction will have different characteristics if the participants are the aphasic patient and the clinician, or the aphasic husband and his wife, or even the aphasic patient and a clerk in a store. The specification and description of the differences in such interactions, based upon the differences in the participants, is one of the tasks facing the clinical aphasiologist.

The development of particular techniques, or perhaps more importantly, the use of these techniques, can and should arise naturally from the above definitions. We have many techniques. In fact some of you in the audience have written manuals of techniques to use with the aphasic person. The important issue at this time is not just the development of new techniques. With the specification of the rationale, that becomes limited solely by the imagination of the clinician. The important question is how do we use these techniques? How do we apply them? Hopefully, we can provide the answers to these questions through the specification of the rationales (again a concious use of the plural) which evolve from our identification of level of reference, and the analysis of the interactions involved at that level.

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Discussion

Q. What information do you have that test scores do change under varying kinds of conditions such as who the patient talks to?

A. I didn't say that test scores change under varying kinds of conditions--I said in an earlier discussion that test scores are inappropriate to determine communication efficiency. In this paper I said communication efficiency would change depending upon whom the aphasic is communicating with.

Q. What evidence do you have for that?

A. Aside from all the literature on communication? There is one study with aphasics were clinicians rated aphasic persons lower in communication abilities than did the patients' wives (Helmick, Watamori, and Palmer, 1976). They interpreted this to mean that the wives needed counseling as to how badly their husbands were impaired. I have offered an alternate interpretation (Martin, 1977). It seems to me that it makes more sense to think that quite naturally these men would communicate more effectively with their wives. In any case, the communication was different.

Q. But that is only generalizable to wives. What about others?

A. I am sure all of you have had the experience of the aphasic person in a group session relating how upsetting it is when the physician or the ward personnel don't stop to listen. Right there we have evidence that there is a difference in a communicative interaction. Remember, I stressed that communication effectiveness does not depend upon the aphasic person alone. One of the difficulties, of course, is that there is very little objective evidence dealing with this, since we have not,

for the most part, examined communication effectiveness in interactions involving the aphasic person. There is a great deal of literature in other areas, schizophrenia, for example, to support this concept.

Moderator. I think Holland (1978) spoke of this also at an earlier conference.

Q. How would you measure this, Damien, so that we could be as successful as others in treating neurosis and schizophrenia?

A. It's interesting that you should immediately equate success with measurement—a further example of the model affecting perception. Again, it depends upon your definition. If you are speaking about the cure of schizophrenia, there has been none, of course. Like aphasia. I have lots of ideas on how to look at it—all of them very expensive. The first thing is to get away from the idea of measurement in the sense of testing. I think I would rather say we could assess, evaluate, and describe. We could do it, for example, by videotaping sessions and charting and examining the simultaneous and sequential behaviors of the clinicians. We might do the same thing in terms of the aphasic person's interaction with different individuals. We could use techniques similar to those used by Lois Bloom (1970) where the context was recorded along with the utterance and inferences drawn from that, not from a test where we set something up and we expect them to do something exact. It is important to remember that communication is not defined as the successful transfer of an intended message--however, that is the basis of the standardized aphasia test. There is a certain task, a certain expectation, and they (the aphasic patients) must do that. Muma's papers discussed this extensively (Muma, 1975, 1978).

Q. I think Albyn's paper yesterday addressed this subject (Davis, this volume).

A. I think that many of the things I am suggesting are already done by clinicians but are not recognized by them as therapy. This is one of the major points I am trying to make. We need to specify different levels of focus for therapy so that we can plan, examine, and evaluate everything that we do. Very often the clinician is sitting in the room, talking to the patient and this is most valuable therapeutic action they can do. But often it is not even recognized as therapy by the clinician because they are not writing something down, they are not tabulating numbers.

Q. How does this differ from stimulation therapy such as Wepman or Schuell propose?

A. I don't think it differs that much. My beliefs are certainly within that school of thought. Schuell said something to the effect that the clinician does something to cause complex events to happen in the brain. I am suggesting that through the kind of definition of level of attention that I am suggesting we can better specify what we are doing, why we are doing it, and possibly we can make better inferences about what is going on in the processing. For example, we may want to affect articulation skills. It is more important to hypothesize what we think is involved in articulation, how our techniques affect those involved processes, and so forth, rather than merely to describe the techniques used.

Q. I guess I am reacting to your comment that nothing has changed. Operant conditioning in particular has moved far, far away from looking at simple stimulus-response. They have come up with self regulatory therapies which will have a great impact on what we are doing with aphasic patients. I also think that the days when we hide behind discussion of theoretical models are long gone. We just can't do this any more. We have to get down and collect the data. It's not impossible.

A. First of all, I am afraid you misquote me—I did not say nothing has changed. I said nothing is new, but there have been changes. I agree with you that we can learn a lot from operant conditioning, expecially about the ordering of stimuli. I disagree completely with your last statement. The collection of data outside a theoretical framework, solely for the purpose of collecting data is busywork. It is the theoretical framework which guides the collection of the data even if, as I mentioned, one is unaware of it, which enables one to interpret the data once you collect it, and enables you to revise and evaluate your thinking.

Q. All we have been doing is looking at theories. How many give us data?

A. Well you can start with Anderson in the early forties (Anderson, 1944, 1945, 1946) and go from there. Especially after the Second World War—Certainly with Wepman, Schuell, and Martha Taylor Sarno, all of whom gave us theoretical models as well as their data. That's what made them so valuable.

Q. I don't understand how your statements about precision go along with your objections to measurement.

A. Unfortunately, in a situation like this, you are often forced to "take a stand" and then the difficulty is you will end up defending what you never said. I have no objection to measurement <u>per se</u>. It is a very useful tool. But precision does not exist in measurement alone. You can aim for precision in description, in the statement of a problem—in many areas—and achieve it just as successfully. I think it is a mistake to think that precision is only contained in measurement. That's a result of the reductionism mentioned by Larry. I am only making a plea for precision in other aspects of our therapy, not just in the description of techniques.