A PROPOSED RATIONALE FOR APHASIA THERAPY

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A rationale for any type of therapy must arise from some stand on the nature of the disorders to be treated. I am not speaking of classification systems, per se, although classification systems do reflect a view or model. Rather, I am speaking of an overall, theoretical view. Schultz (1972) pointed out that therapy strategies have underlying models which affect the direction and constraint of therapy even when the clinician is unaware of the particular model he is using.

Generally there are two overall views of what aphasia is. The first is the "loss" view which holds that there is a loss of language or of some part of language (Taylor, 1963). The assumption here is that the loss of brain tissue automatically carries with it the loss of acquired functions (Brown, 1958). This view has led to therapy techniques based upon learning models. Included in these approaches to therapy would be the various developmental, educational, and programmed learning approaches.

The second overall view of aphasia might be called the "interference" view. In this case it is believed that there is an "interference with skills" (Lenneberg, 1967, p. 207) or a "reduction of efficiency" (Schuell et al, 1965). This view produced therapy which is generally considered as stimulation.

Lenneberg pointed out that the distinction between the two views leads to different approaches to language therapy with aphasics. The therapy approach to be proposed here will be called a "process approach." While it can be viewed as generally consistent with an "interference" view of aphasia and with a "stimulation approach to therapy, it is felt that it is different in thrust and emphasis from previously offered stimulation rationales.

 PROCESS APPROACH TO THERAPY: A SYSTEM IN OPERATION

The two major proponents of a stimulation approach to aphasia therapy were Wepman (1951) and Schuell (Schuell et al, 1965). Wepman asserted aphasia was a disorder affecting the patient's total reaction pattern due to a disturbance of the
integrating capacity of the cortex. Schuell et al. claimed there was a general language deficit which crossed all language modalities as a result of a lesion in the brain that interferes with processing verbal messages. Both these definitions are "interference" views of aphasia.

Both authors stated that the recovery process was not a "learning" process but rather a stimulation of already acquired skills. In their proposed approach to therapy, stimulation was a means of causing events to happen in the brain. Therefore, according to Schuell et al., the primary role of the clinician was to communicate with the patient and thereby stimulating disrupted processes to function maximally. They recommended that this be done by emphasis upon auditory processes and upon control of such factors as length of stimulus, word frequency, etc., to maximize the patient's responses. There is no disagreement with the basic thrust of the definitions offered by Wepman or Schuell, but there is a different emphasis in the proposed process approach.

Language behaviour is viewed here as a form of cognitive behaviour. Aphasia, therefore, is viewed as a reduction in efficiency of the action and interaction of those cognitive processes which support language. As Neisser (1966) put it, cognition is "all the processes by which the sensory input is transformed, reduced, elaborated, stored, recovered and used" (p. 4). The term process in this paper means a system in operation. The use of the phrase "those cognitive processes which support language" makes an important distinction for the rationale. This definition implies there is no impairment at a particular linguistic hierarchical level. Rather, there is an impairment of the interaction of processes which support, or make possible, linguistic production.

Aphasia therapy in this approach is an attempt to manipulate or excite the activity of certain cognitive processes, not in the hope of curing aphasia, but of enabling the individual organism to achieve its maximum potential. Certain premises from the foundation of the proposed rationale. The first of these is that while we may isolate single processes for identification or for discussion, no process which supports language can operate individually. However, hypotheses may be formed as to which processes are of major importance within a language task, and as to what may be the interaction between and among these processes. Upon these hypotheses therapy must be planned and evaluated.

The proposed process approach to therapy may be considered as a stimulation approach in the sense that it is the activity within the organism initiated through inter and intra personal stimulation which may be therapeutic. The "may be" is to be
stressed since one of the points to be made is that interaction with the environment and/or intrapersonal activities and attitudes may have a deleterious as well as a beneficial effect upon the patient's progress. The major difference between this stimulation approach and others is in the emphasis upon the interaction of processes.

There are two overall types of interaction involved: interaction of the individual with his environment; and interaction among cognitive processes. Therapy must be based upon a recognition of these interactions and not upon an error orientation, that is, correct or incorrect, which is basically diagnostic in nature. The judgment of a response as an error comes from a comparison to a reference which is usually some sort of arbitrary norm. The response itself, however, is the product of many interactions of hierarchically arranged processes (Powers, 1973). Another basic premise of this paper is that responses made by an aphasic are not just the result of a failure of a particular system such as retention span, but are the resultant outputs of interacting processes within the impaired organism. Therefore, a therapy which is founded upon a correct-incorrect continuum, whether it be divided into plus-minus or more complex gradations will distort the therapy situation since it ignores the processes which produced the response.

While a specific model of language or aphasia will not be offered at this time, there are implications for model construction in the proposed rationale. These implications arise from the two aspects of language which will be the major focus of the discussion, language as social behaviour, and language as a cybernetic entity. The first demands interpersonal interactions, the second, intrapersonal interactions.

**LANGUAGE AS SOCIAL BEHAVIOUR**

Language is simultaneously a code and a behaviour. As a code it can be described and examined in terms of elements which are arranged in hierarchically ordered layers (Liberman et al., 1967). These elements may be called features, phonemes, words, rules, and so forth, but they are part of a whole, a whole which is certainly greater than the sum of its parts and is shared by members of a speech community. It is a code which must be learned, and is learned as a part of normal development. While we still know very little about the development of language in the child, we do know that the elements of the code are not learned sequentially. That is, one does not learn the phonemes, then the words, then the syntax, etc.
There does seem, however, to be some sort of sequential order of importance pertaining to communication. The normal child will communicate long before he masters the complete system with utterances that, while they may be considered incorrect when compared to the adult system, are meaningful and are syntactical within the environmental context, (Bloom, 1970). Even the deaf child who, for obvious reasons, does not learn the code develops a means of communication. It seems evident, therefore, that one of the primary realities of language is as a social process even during language learning. It is a social phenomenon involving an individual with his immediate environment, generally in the form of interaction, with other human beings. It may seem so self evident as to need little or no mention. While it may be self evident, it certainly needs to be emphasized. It is the one aspect of language that is most often neglected in our dealings with aphasics. Our tests are task and information oriented, our therapies are often the same. As an example, there is one proposed therapy program in which the clinician is forbidden to speak with the patient (Taylor, 1963). Also, evaluation of the patient progress usually depends not upon the patient's success in spontaneous conversation but upon test scores, almost the antithesis of social intercourse. How often have we heard, or said, "his test performance does not match his performance in real life?" And how often has that been ignored in favor of the test score as being somehow more real or factual?

There are three basic considerations when attempting to consider the language process as a social process: the role of the individual himself within the environment; the role played by those around the aphasie; the environment itself.

It has been said that the aphasie patient must be treated as an individual (Wepman, 1951, Schuell et a1, 1965). Frequently this attention to the patient is in terms of his impairment. Thus a therapy may be oriented toward Mr. A's word finding difficulty, or patient B's memory problem. Awareness of such problems is essential and basic to decisions in therapy, but there are further, more important considerations. A major consideration is the roles the person performed prior to the stroke, and how those roles are affected by the subsequent aphasia. Griffiths (1970) indicated rather sketchily how considerations such as this were of major significance in her treatment of Patricial Neal. In her role as mother, Miss Neal was expected to speak to one of her children who was doing badly in school. Here, demands were made upon her to communicate, to speak within a real and important environmental situation. At the same time it was recognized, again in her role as mother, she would be incapable of supervising a group of children at a birthday party.
The second basic consideration in the social process is the role played by those around the aphasie. Everyone speaks differently to different people. One will speak one way to a priest, a second way to a physician, and still another way to a child or a grocery clerk. The same holds true for the aphasie. He will behave differently in many ways, including in his language behaviour, with his wife, with his physician, with his therapist, and so forth. And yet, in our therapy we are most often interested in whether he can name something, in whether he can tell us what a thing is used for. This concept of the importance of those who are around the aphasie is not a new one. Wepman (1951) stressed it. And yet, it is still of paramount importance for a rationale for therapy, partially because it is so seldom taken into consideration in setting up therapy or when evaluating the efficacy of therapy. Often the clinic situation is one that is unreal, unrelated to anything in life, since it consists of tasks which test rather than tasks which bring about interaction.

This leads naturally into the third basic consideration, the environment itself. The amount of support, stimulation, and demands upon communication within an environmental situation may be deciding factors in the success or failure of therapy. This is true in many disorders of communication other than aphasis. At the Veterans Administration Hospital in New York, we have found that the laryngectomee who lives alone in a furnished room, with no relatives and either no job or a job that makes very few communicative demands upon him, does not learn esophageal speech. The regressive and depressing effects of hospitalization have been well documented (Goffman, 1961). Yet the patient often spends a large part of his early therapy time in a hospital setting. In our evaluation of the patient's progress (or lack of same) very little consideration is given to such compounding factors. If language is a social process, and there is no possibility of social interchange in the environment of the aphasie, how can we decide what is successful or non-successful in therapy? And even more important, how can we plan a therapy without taking this into consideration? While many of these factors are not the primary duty of the clinical aphasologist, they are essential to any rationale for aphasis therapy and certainly to any evaluation of the success or lack of same in therapy.

LANGUAGE AS A CYBERNETIC ENTITY

Implicit in the concept of a language system as a cybernetic entity is a rejection of dichotomous sensory-motor views of language performance. "What an organism senses affects what it does, and what it does affects what it senses." (Powers, 1973, p. 41). Such a rejection of linear divisions of language behaviour is not new in the study of aphasis. Many authors have objected to such a simplistic division of the perhaps most
complicated behavior of man, (Head, 1926; Schuell et al, 1965). Language behavior is the result of the total interaction of various processes rather than the result of the sum of these processes. Again, it must be stressed that it is the interaction which is important, and the interaction which must be the basis of our therapy with the aphasic.

As mentioned earlier, it is impossible to isolate any particular language process in any task. All therapy tasks involve many different processes and systems operating together to produce a whole, the response. What will be proposed here is that there is an hierarchic integration of language processes, the manipulation of any one of which will affect all above and below it in the hierarchy. Again, hypotheses may be formed as to the interaction between and among the processes within this hierarchy, and therapy techniques devised which utilize such interaction.

For our purposes, perhaps the most important aspect of such interactions is in its effect upon the performance of aphasics. Langer (1970, p. 133) stated that the most advanced processes, the manipulation of any one of which will affect all above and below it in the hierarchy. Again, hypotheses may be formed as to the interaction between and among the processes within this hierarchy, and therapy techniques devised which utilize such interaction.

For our purposes, perhaps the most important aspect of such interactions is in its effect upon the performance of aphasics. Langer (1970, p. 133) stated that the most advanced processes, within a progressive hierarchic integration, functionally regulate lesser systems. As examples, the presence of meaning in a stimulus can favorably affect phonological performance by an aphasic subject (Martin, 1972) while the presence of morphological inflection in a stimulus can have a deleterious effect upon phonological performance (Martin et al, 1974).

The important factor here is that in any therapy task many processes within a hierarchy are active and will have an affect upon performance. The answering of questions is perhaps an even better example, not only of the complexity of interaction involved in any task, but of the implications for therapy. Much of our therapy, and almost all of our testing and diagnosis, consists of questions. We are likely to view the task involved in the question as a single entity such as "naming" or "describing function" and so forth. Lindsay and Norman (1972) in their discussion of the structure of memory have pointed out the immense number of steps involved in answering a simple question. A question is analyzed and a decision is made as to whether the question is legitimate or not; a retrieval strategy is set up; the information in the request is combined with partal
solutions to form new questions and to continue the search. Even within each of these steps there are further steps. The decisions as to whether a question is legitimate or not depends upon processes which analyze the message to determine if the relevant information exists, (What is Beethoven's phone number?), whether it is likely that it has been stored (What is Leonard Bernstein's phone number?); what would be the effort required for retrieval (what was the first phone number you ever had? and the probable success of retrieval (what is your phone number?). A negative decision at any one of these points can result in ending the whole procedure.

Thus it may be seen that what may be viewed as a single task involves many processes, each of which interacts with the other. It is in the interaction and interdependence of these processes that the cybernetic nature of language becomes germane to therapy.

**Feedback Systems.** The first aspect of a cybernetic system which comes to mind, and the one most considered in therapy, is feedback. The term feedback is frequently used synonymously with what Annett (1969) calls "knowledge of the result." In this paper, that particular form of feedback will be called "learning feedback" (Powers, 1973). It is suggested that while learning feedback has a place in therapy, the emphasis upon it to the exclusion of other feedback systems may have a deleterious effect upon the aphasic and hamper the establishment of valid therapeutic tasks. Another form of feedback, "action feedback" (Powers, 1973) will be proposed as a more important aspect of language functioning and of language therapy. Action feedback is that feedback which occurs concurrent with behaviour.

Much of what we view as aphasic behaviour may be a learned adaptation to the aphasic's changed condition. After his stroke, the aphasic finds himself unable to do things that were automatic and simple for him prior to his illness. Now, he cannot remember the names of simple items; he wants to say table and chair comes out instead, or perhaps he produces a response that he recognizes as gibberish. The people around him may not understand him and often are too busy to wait while he works out what he wants to say. They usually begin to ask questions which can be answered by "yes" or "no", or to give him words when he has difficulty. Here can be seen the beginnings of the deleterious effect of learning feedback in both intra- and interpersonal situations. It is quite easy to characterize the patient's response as word finding difficulty, or related response, or jargon, or whatever particular label we wish to apply. However, the effect of his response upon his own evaluation of himself, in other words, the effect of learning feedback may be of the utmost importance upon both his performance and his gains from therapy. The patient can develop an error
expectancy, a mistrust of his own responses. This error expectancy can go in two major directions, either toward a greater passivity on the part of the patient, perhaps even a complete withdrawal from attempting to communicate, or towards a pre-planning, overself-monitoring type of behaviour.

This condition, the error expectancy, can be further exacerbated by the therapy which is meant to help the aphasic. Correctness of response is the goal and major yardstick in most therapy sessions. When feedback is considered or utilized, it is learning feedback with its indications of correctness or incorrectness. This appears to be related to learning approaches to therapy. There seems to be a belief that if the wrong response is allowed to stand the incorrectness will be reinforced, or a belief you must have one thing mastered before going on to the next. What is proposed is that this overmonitoring of responses by the aphasic whether as a result of his intrapersonal awareness of error or as a result of the interpersonal awareness given by the environment, can only have a deleterious effect upon his performance. Most language processes are automatic, below the level of consciousness (Pick, 1973). Unfortunately, much of the therapy that is done with aphasics brings automatic, unconscious activities to the level of consciousness, thus destroying their spontaneity, and perhaps their validity as acts of communication. The harmful effect of over self-monitoring has been amply demonstrated in the area of stuttering. If over self-monitoring can have such a disastrous effect upon speech functioning when only fluency is involved, what can be the effect upon the processing of speech by the aphasic.

Action Feedback. As mentioned earlier, a basic point of this rationale is that each response made by the aphasic is the product of several processes interacting. It does not matter if the response is correct or incorrect, since the response is not just the result of a malfunctioning system, but of functioning systems. What is important for therapy is that some response be made. Schuell et al (1965) stated that the primary role of the therapist is to elicit responses. Pick (1973) not only emphasized the automaticity of most language processes, but also pointed out that improvement is gained through practice. We are claiming that therapy tasks may be constructed so as to give "practice" to several cognitive processes. The action feedback obtained by concurrent behaviours will enable the performance of a particular system to influence the performance of another system and thus improve performance. For example, the effect of meaning upon phonological performance has already been cited (Martín, 1972). Schuell (1965) also pointed out that articulation improved as vocabulary increased, or as words became familiar. Therefore, a therapy task such as the repetition of meaningful units increasing in length might have as one of its goals the improvement of articulatory performance as well as the increasing of retention span. This would in turn change the procedures for evaluating the patient's progress within therapy.
APPLICATION OF THE RATIONALE

While the presentation of particular therapy techniques is not a major part of this paper, the application of this rationale to a particular task may illustrate its usefulness.

The particular therapy task to be analyzed as an illustration is the technique of requiring the patient to answer rapid alternating questions. An example of the types of questions and the areas covered in the questions can be seen in Appendix A. It must be emphasized that this is not meant to be an exhaustive analysis of the processes involved in this or any task, but is meant only to serve as an illustration of a possible way to plan and analyze therapeutic tasks.

As has been stressed repeatedly in this paper, there are always several processes involved in any therapy task. The first requirement of therapy then is the analysis of the task to determine which component processes are present. The following is not meant to indicate any hierarchy of importance in therapy. The decision as to which process must be the focus of therapeutic attention and manipulation may be determined by various factors. Some of the ways in which the task can be modified for different goals will be discussed under each process.

Switching Behaviour. Wepman (1951) pointed out that there was a marked and constant change in what he called "non-language behaviour characteristics during therapy." (pp. 81-82). Many of the non-language behaviours he discusses (pp. 26-33) we consider as behaviours that are essential to language functioning. Aphasics often have difficulty in "switching behaviour" (Wepman, 1975; Goldstein, 1948). In this particular task of rapid alternating question the aphasic is forced to switch because of the unrelatedness of each question. Thus the task remains the same but the content changes each time. This of necessity involves some intrapersonal switching behaviour. Interpersonal switching behaviour can be elicited by using two therapists to ask the questions. If the patient gives differing responses, whether correct or incorrect, the switching process is still being tapped.

Monitoring Behaviour. Two types of monitoring behaviour, interpersonal and intrapersonal, are tapped by this task. Disturbances of concentration and attention are frequently a major characteristic of aphasic behaviour (Wepman, 1951). Some patients have difficulty in switching from attempts to produce something (intrapersonal), to attending to a stimulus from the outside (interpersonal). In this task the patient must attend
to the therapist in order to respond. The time of his response as well as the nature of the response depend upon his monitoring of the stimulus given by the therapist. Again, this may be modified by various modes of presentation, such as two therapists.

Interpersonal monitoring occurs since the patient has the opportunity to monitor his own response. As already discussed, the aphasic often has a tendency to overmonitor his own production. This may be a result of the patient's own awareness of error or it may result from the correctness oriented environment in which he finds himself, e.g., a therapist who constantly corrects his error production for fear he may "learn" something wrong. No matter the origin of the behaviour, it may be extremely destructive to the patient and to the therapy situation. The patient's error expectation increases, his reactions are delayed while he checks his responses and reviews possible alternatives, and the time involved now taps the retention span difficulty which is generally a major part of the aphasic's difficulty (Schuell, 1963). The error expectation of the patient then becomes a self fulfilling prophecy. Overmonitoring behaviour must be discouraged from the very initiation of therapy. This particular task may be used to modify if not eliminate some of this overmonitoring. If such modification is one of the goals of therapy, immediacy of response would be stressed. Again, correctness or incorrectness would be of secondary importance, although experience has shown that as the automaticity of response improves, the number of correct responses increases.

It should be noted that the questions listed in the appendix vary in difficulty. This is done so that the patient may experience failure at times, and yet be discouraged from dwelling on that failure. The adamant search for the correct response to the detriment of the continued flow of communication can be a result of overmonitoring behaviour.

**Scanning Behaviour.** This process is, of course, inextricably linked with attending and monitoring behaviour. However, of all the processes, this is the most relevant to the information in the stimulus. The patient must scan the incoming signal for the meaning of the question. If the question is "What do you shave with?" and the patient says "bathroom," there is an obvious relationship between the response and the question even though it is incorrect. The response itself may result from the action of other processes, but there has been a scanning of the question for content, even if it is inefficient. The patient's responses may be examined later to see if patterns can be observed which would give further clues to the operation of the total system. If he gives responses occasionally that appear to have no relationship to the question, there may be other factors operating such as residual perseveration.
RETRIEVAL PROCESSES. For the purposes of this rationale, we are assuming that long term storage is permanent (Shiffrin and Atkinson, 1969) and it is the efficiency of retrieval processes in aphasia which is impaired. As discussed earlier, there are many subprocesses in the total process that we call retrieval. Some of these may be manipulated by the manipulation of the materials. For example, in the questions listed in Appendix A the legitimacy of the question is never in doubt, and there is a high probability that the information is stored. The important factor here is that in the attempt to answer the question, the patient is activating highly automatic retrieval processes and is given the opportunity to, in a sense, practice the processes. Again, it would not matter here whether the response were correct or incorrect. If the primary goal of the exercise is the activation of automatic retrieval processes, the introduction of correctness factors by either the therapist or the patient defeats the purpose. This is not to say that if the primary goal of the exercise changes, the task would not change. But that decision is based upon the evaluation of the individual patient.

SUMMARY

This rationale is proposed as a basic first step in the definition of therapy suggested by Darley (1972). As a tentative first step, it will be subject to revision and re-evaluation as it is applied. The application of the rationale to a particular therapy task is meant to serve solely as an example of a way in which this rationale may be used to define what is involved in therapy and to define how a changing goal may also change the techniques. It is not meant to suggest that this task is more efficacious than others, that the processes discussed are the only processes involved, or that this is the sole manner of using the rationale.

The major points of the rationale are as follows:

1. Aphasia is a reduction, as a result of brain damage, of the efficiency of cognitive processes which support language.

2. Cognitive processes which support language have an hierarchical organization which is cybernetic in nature.

3. While single processes may be isolated for purposes of discussion, no process which supports language can operate individually.

4. It is the interaction between and among processes which is important to therapy.
5. Responses made by the aphasic are not just the result of the failure of a particular process, but are the outputs of interacting processes within the impaired organism.

6. Therapy must be based upon inter and intrapersonal interactions.

7. Most, if not all language processes or systems are automatic and unconscious. Therapy tasks which heighten awareness of performance and bring unconscious aspects to a conscious level may be detrimental to therapy.

Hopefully, this rationale will lead to a greater detail in the description of current techniques in aphasia therapy, a re-evaluation of these techniques, a greater clarity in the setting forth or short term and long term goals with individual patients, and the generation of more and better therapeuetic techniques.
BIBLIOGRAPHY


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APPENDIX A

Rapid Questions

1. What day comes after Tuesday?
2. In what season does it snow?
3. Name one thing you can eat with bacon.
4. Where do people wear bracelets?
5. Jack and Jill went up the __________.
6. Name 2 things that come from the sea.
7. What do you play poker with?
8. Name an Italian dish.
9. Tell me 2 animals found in a zoo.
10. What does Con Edison do?
11. Why would you go to a dentist?
12. What are the Beatles known for?
13. What do you wear on your head?
14. What is the climate like in the North Pole?
15. What is the opposite of far?
16. Who is Shakespeare?
17. What is Lassie?
18. The Hunch back of __________.
19. Name one monument in Washington, D.C.
20. Name one animal that doesn't have fur.
21. How many pennies are in a dime?
22. Tell me 2 parts of a face.
23. What do you put in an ashtray?
24. Name a part of an elephant.
25. How much is half a dozen?
26. Name 2 boroughs of New York City.
27. Who was Fiorello La Guardia?
28. What color is snow?
29. What language do they speak in France?
30. What nationality was Napoleon?
31. Do you take lemon in your tea?
32. What is the opposite of rich?
33. In what game do you need a puck?
34. What game is played with a ball?
35. What do you wear when it rains?
36. Where is the Bronx Zoo?
37. Name 2 sports.
38. Who is Lawrence Welk?
39. What do you call a minister?
40. Mary had a little __________.
41. What happened to Pinnochio whenever he lied?
42. When is New Year's Day?
43. Who puts out fires?
44. What do you catch fish with?
45. Who is Golda Meir?
46. What do you make with leather?
47. Name two fruits with pits.
48. What do horses eat?
49. Fly the friendly skies of ________.
50. What was Elvis Presley famous for?
51. What is a hooker?
52. What word rhymes with luck?