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COMMUNICATION AND MENTAL HEALTH

An Investigation of the Verbal Styles of Individuals
Manifesting Different Modes of Emotional Adjustment

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by

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"Language most showeth a man; speak that I may see thee."

Ben Jonson

CHAPTER ONE

Introduction

The overwhelming utilization of language in the minutiae of daily living makes this aspect of man's behavior a vital area of study. The importance to our mental health of understanding the communications of one another is underscored in the following paper and, in the investigation carried out, the analysis of the structure of spoken language is felt to be as urgent a matter as the analysis of content. The problem, outlined in much greater detail below, deals with the manner of speech of individuals manifesting different modes of adjustment. Particular emphasis is also placed on the situation in which the individual is adjusting. Some time is first spent, however, in discussing the contributions of various approaches to the general problem of language and personality. While an attempt is made to keep this brief, it is felt that the length of the following discussion is a necessary concomitant of the originality of the investigation, as well as of the importance of the contributions.

A suggestion to the effect that mathematics will prove to be the source of an international language which would eliminate misunderstanding between peoples of different nations was seriously considered in a recent speech.¹ The value of this mathematical language would be in its preciseness; symbols of startling clarity would replace words

1. This suggestion was made in a speech by Prof. W. E. Restemeyer in the 17th Annual University of Cincinnati Applications of the Physical Sciences Series, March 1952. Many similar suggestions have been made in the past.

of many meanings. The various attempts at formulating a common tongue, however, have not been restricted to mathematics; the list includes Esperanto, Ido, Novial, and Occidental, to name a few. The motivation for the creation of these and other artificial languages has been the need for some auxiliary language to communicate ideas and feelings which are not widely disseminated at present.

A different approach, of a more immediately pragmatic nature, growing out of many years of psychotherapeutic experience, stresses the advantages of pictorial symbols and analogies for communication (17). This language, too, is aimed at preciseness of expression and clarification of understanding. Erich Fromm, its proponent, feels that this type of symbolic language is the only adequate universal language which has ever been developed. He feels that in it, the marked difficulty in the verbalization of feelings and sensory perception is bypassed.

It is questionable whether any of these suggestions will gain world-wide support to the extent of replacing current languages, or even of serving as secondary modes of communication. Nevertheless, the persistent attempts on the part of the many disciplines sharply pinpoint the ever increasing feeling of the importance of interpersonal and intercultural understanding on a verbal level.

It is beyond the scope of the present paper to discuss intercultural difficulties in communication, other than to note that they not only exist, but represent a focal point of international misunderstanding. Intracultural and interprofessional misunderstandings

similarly have been held to stem from difficulties in communication. Thus, it would seem that language is a barrier to unified scientific and cultural endeavor, as well as serving, perhaps, as the only vehicle of unification.

For example, in an experiment reported by James Cunningham (8), the difficulties inherent in interdisciplinary communication clearly were shown to block understanding. A recorded therapeutic interview was played back to a group composed of psychologists, residents in psychiatry, and social workers, who were asked to abstract the dominant themes, affects, and important concepts involved in that particular interview. Startlingly different reports were handed in; the results varied significantly among individuals and between professional groups. In some comparisons, it was difficult to determine if the abstractions had been made from the same material. The barriers to effective interdisciplinary communication were seen to stem from individual biases, problems inherent in language itself, and differences in training. The importance of the conclusions inferred from this simple demonstration is self-evident, when one considers that language is the basic tool in research, diagnosis, and treatment.

The role of language on an interpersonal level has equally dramatic impact, if not ramifications of more far-reaching scope. While verbal¹ tools are certainly not our only means of communication, they are without question our most important. Everyone, in his day-by-day

1. The word "verbal" is used in this paper to refer to spoken language, as contrasted with written.

adjustments, is so affected by them, and so affects others, that an understanding of communicative processes is here considered basic to an understanding of human behavior. In the process of growing up, the organism is subject to a mass of impinging stimuli, toward which he eventually reacts selectively. From the press of gestures, attitudes, and words to which he is exposed, a self-system is structured wherein the overwhelming bulk of information is acquired through verbal means. Personality differences may become apparent later through the mechanism of response to these symbols. The child, in effect, chooses terms which suit his feelings and reacts to others in ways which express his needs. At every stage of development, however, expression is subject to direction and control from varying environmental forces. The organism, to be understood, must conform to a large degree to socially accepted symbols and, in order to establish meaning, the symbols must relate in part to some action which is also subject to control and approbation. Failure to adapt then may often be traced to difficulties in relating word to action, and internal inconsistencies may occur in the development of values and attitudes.

Yet, for all of its importance, there is a dearth of experimental data concerning interpersonal communication, although there is a plethora of theoretical material. Studies of normal language development (3, 37) for the most part have failed to throw light on the processes underlying the acquisition and use of the idiosyncratic jargon that differentiates one individual from another. Learning theory has yet to deal effectively or adequately with the problem, although attempts

are being made (11, 44). For all of its central importance in psychotherapy, the problems of communication have been touched on only very lightly (1, 14, 18, 19, 25, 45, 59). George Gardner, a psychoanalyst, has phrased it as "the psychotherapeutic process . . . assumes a heavy reliance upon the use of verbal exchange . . . devices by both the patient and the therapist" (19, p. 676), but he does not elaborate further. In the diagnosis of aberrant behavior, for the most part, only gross distortions have been studied (40). The significance of gesture and movement in communicating has also attracted some attention, but not to any great extent.

It remains apparent, however, that the most fundamental factor differentiating human beings from lower stages of animal development is our capacity to speak, as we know it. This precondition for human achievement has been the focus of much discussion, and it is the general thesis of the present investigation that difficulties in individual adjustment are related to distortions in interpersonal communication. Thus, mental health is conceived of, in part, as a function of the degree to which an individual can be understood by significant people in his environment, and feels he is understood, and the degree to which he can understand them.

Distortions in interpersonal communication may stem from the communicator, the communicant, or from the mode of communication. The zeal with which linguists promote international language as a panacea, however, tends to cloud the basic issues. That is, no mode of interpersonal communication can be divorced from the distortions arising

from motivation, affect, and personal values; the most urgent difficulties are on a psychological level. Similarly, it does not seem that so personalized a mode of communication as posited by Fromm can serve to forward common understanding. What we have, then, is a situation in which abstract impersonal language is impossible; in which personalized communication is equally unfeasible; and in which the language which we do use gives rise to much misunderstanding. From the almost inextricable conglomeration and welter of facts and theory, we choose briefly to review four approaches to the general problem of communication and mental health which seem to be most relevant. Of these, three - namely, Cybernetics, General Semantics and Social Psychology - appear to have certain shortcomings in their resolutions of communication difficulties. The fourth approach, called Communication Theory, in which frame of reference the specific experimentation to be reported here is conducted, seems most conducive to forming an adequate descriptive scheme.

CHAPTER TWO

The Contributions of Cybernetics, General Semantics, and Social Psychology

A. Cybernetics

Based on the fundamental viewpoint expressed earlier, that communication is basic to unity, be it of personal action and thought, or of the physical and social sciences, there has grown a science known as cybernetics. Originally launched by Norbert Wiener in 1947 (64) as part of some theoretical formulations concerning computing machines, it has advanced rapidly to the status of a full-fledged field of endeavor with much to offer to the mother sciences from which it sprang. Cybernetics is concerned with that part of communication which confines itself primarily to the study of steering or governing mechanisms. It is, in effect, the study of those messages concerned with control of one sort or another. Wiener's view (9, p. 411) that, for the purposes of exposition, all organizations may be considered as having similar fundamental characteristics, and that, therefore, the machine may be studied as the "end all" of human functioning, need not be the subject of discussion here. The exceptionally pessimistic results of such a view (65) are indeed enough to make one search avidly for and study the differences between man and machine. Nonetheless, communication, or the transmission of and reaction to messages, is certainly a major area of study for the cyberneticist as well as for the social scientist, and it is the science of cybernetics from which we may draw two key

concepts: information and feedback - the first not unique to cybernetics, but receiving an interesting exposition in cybernetic writings, and the latter, an avowedly unique contribution.

Information is a concept taken over from telephone engineering (67) and enlarged upon in cybernetics and psychology. It is that name applied to "the content of what is exchanged with the outer world as we adjust to it, and make our adjustment felt upon it" (65, p. 124). This does not apply to the events of adjustment themselves but rather to the patterns or relationships between events. It is the nature of this information that it can be counted and measured; such is the task of cyberneticists and, more recently, social psychologists. We shall see later that this concept in different garb has become the core of the framework within which we choose to work. For the present, it is sufficient merely to mention its origin and to enlarge upon its definition. Components of the concept of information include rate and scope of transmission, coding and storage of elements or memory functioning, recall of stored items, and learning. These and other areas of study receive much elaboration at the hands of the interested sciences, and it is not without some temerity that these concepts are applied to problems of social organization, will, value theory, and consciousness. In brief, the study of the transmission and storage of that which we call information is seen to be part of the study of the process of adjustment, and, as such, is integral to the thesis proposed initially in this paper.

The other sine qua non of adjustment is characterized by functions

subsumed under the designation of "feedback mechanisms". This notion was first proposed in 1868 and has found practical application in all steering or governing equipment. Feedback is the name given to the operation of reinserting the results of a performance into the system from whence came the original performance, thus modifying future performance. One of the simplest and best known examples of a feedback mechanism is the common household thermostat. This is a device which modifies its behavior on the basis of the results of its previous action. In other words, response of the thermostat is based on the input of information relating to the temperature of the room which was originally "caused" by the thermostat itself. Similarly, the automatic pilot of an airplane is essentially a governor, operating on information obtained concerning deviations from a set pattern. Examples of human feedback mechanisms are legion; they are characterized by the subsequent change or continuation of any behavior depending on the knowledge of that which has gone before. The most common examples are those of learning reactions. Others, even more complicated, are those of involuntary learning reactions which have been described by physiologists as homeostasis. These feedback mechanisms are indeed "absolutely essential for the continuation of life" (74, p. 135). It seems apparent that the complete understanding of these mechanisms is a vital, integral part of understanding human behavior and adjustment patterns. Insofar as feedback mechanisms are operative in language styles, they are appropriate points of study for this investigation.

The description of the human system in terms of computing mechanisms is interesting and stimulating. The human life is held to be

analogous to a single run on a computing machine, and many comparisons are made on this basis. The distinctions between functional and organic disorders in the machine may be highly relevant to human pathology; the description of psychopathological states and the physical and functional therapies in terms of machines may similarly provide us with many valuable insights. Particularly does the concept of overload throw light on the occurrence of insanity. This concept deserves a very thorough experimental screening, implying as it does that mental illness is related to the amount of information which an individual attempts to master rather than the kind. Too, the contributions of cybernetics in the field of sensory prosthesis cannot be underestimated. However, the serious drawback remains that cybernetics as such is not interested in person-to-person communication and adjustments, except insofar as the human being is similar to and not different from the machine. This represents a serious restriction in the study of interpersonal communication, as the human being cannot be fully understood as merely a special sort of machine. Yet, this is what cybernetics does; it is Wiener's feeling that "society can only be understood through a study of the messages and the communication facilities which belong to it; and that in the future development of these message and communication facilities, messages between man and machines, between machine and man, and between machine and machine, are destined to play an ever increasing part" (65, p. 9) (emphases are mine). In no place is there any mention made of interpersonal communication between man and man. It is apparent that it is the study of the communication

between humans, or interpersonal relations, which must be the focus of any attempt to deal effectively with human ills, and it is for this reason that we must turn to fields other than cybernetics for a more exhaustive approach.

B. General Semantics

The over-all reaction to that body of facts and theory known as General Semantics is one of the greatest paradoxes of our time. On the one hand, it is dismissed with a wave of the hand and a shrug of the shoulders: "Oh," one is likely to hear said, "that is a semantic problem". With this, lip service is paid to the cogency of the problem, and its solution is neatly bypassed. Or, the statements of the General Semanticists may be put to severe task in a specific, not usually relevant, situation, and a straw man set up which is then demolished. This is an instance in which all of the contributions of General Semantics are dismissed by concluding, after all, that it is simply nonsense that all problems are merely verbal. On the other hand, General Semantics bids fair to become a cult, far beyond even the slavish devotion of those who have held Freud's words to be unmodifiable. Thus, we may observe instances wherein the principles of General Semantics are applied unthinkingly to any and all problems.

To the conclusion reached by people like Dunham (12) - that it is ridiculous to assert that there are no problems in general, but just semantic ones - we wholeheartedly agree. But we cannot agree that a semantic issue "immobilizes all areas of thought" (12, p. 240). Nor can

we agree that General Semantics is free from defect and has the status of either a religion or a world-wide panacea. It is possible, however, to examine the basic tenets of General Semantics as propounded by Korzybski (34, 35) and others (22,23,28,29,30,43,47,51) and, as we did with cybernetics, carefully and critically inspect exactly what it is that General Semantics has to offer in the field of communication. It is not our intent here to try to resolve the question of whether or not the Korzybskian complaints strike at the heart of Aristotelian thinking, or the question of which is the more valuable or superior system. We will, instead, try to clarify the contributions of General Semantics, as such, to communication and to the thesis stated in this paper.

Much like the propositions stated by Bridgeman (5, 6), the semanticists recommend operational definitions of things to arrive at a valid construction of social science concepts. Thus, any concept or word which is used must correspond to a set of performable operations, or there can be no unambiguity of meaning. It is Bridgeman's feeling that differences in the meaning of words stemming from differences in the operations of experience used to derive these words, is what leads to much misunderstanding. He feels that operational thinking will reform conversation. Alfred Korzybski, thinking along the same lines, posited three principles upon which he bases his General Semantics (34): the principle of non-identity, the principle of non-allness, and the principle of self-reflexiveness.

The principle of non-identity is probably the most important to

us here. It states simply the somewhat obvious but often overlooked thesis that the word is not the thing it signifies, but that people behave as if it were. A corollary of this is that word identity does not insure thing identity. The principle of non-allness stems from the one of non-identity. It holds that no matter how much you may know about some occurrence, thing, or quality, you cannot say all about it. The principle of self-reflexiveness is similar to the concept of feedback in that it states that people react to something and then react to their reaction, etc.

The distinction between semanticists and General Semanticists is the General Semanticist's interest in the semantic effects on behavior. In a hierarchal manner, we may define grammar as dealing with word to word relationships, or syntax, logic as dealing with the relationship of different statements, semantics as dealing with the relations of the words and statements to their referents, and General Semantics as dealing "not only with words, assertions, and their referents in nature, but also with their effects on human behavior" (51, p. 132). It is the Korzybskian thesis that many problems in human behavior may indeed become nonexistent, or at least only trivial, if we come to recognize the errors we make in not applying his three principles to daily living. His interest in this relationship between language and experience, and the misunderstanding arising between the two, is what led him and his students to formulate their "science". Much is made in their writings of the three so-called laws of our language as originally postulated by Aristotle: the law of identity, the law of

contradiction and the law of the excluded middle. Many convincing arguments are given to show how and why the three antithetical Korzybskian principles were derived. Thus, in addition to the pathological examples arising from "identity" thinking, or the fact that a label or name for something can never fully describe the unique constellation which it is, they point to difficulties in either-or thinking and doing verbally what cannot be done empirically, e.g., making mind-body distinctions. Whether the complaints can rightfully be laid to Aristotle's door is not in question here but, since communication is the most important avenue of maintaining human integration, it does seem worthwhile to think in terms which will make for more flexibility and recognition of nuances, as does General Semantics.

The major premisses of General Semantics, revising as they do the need for categorizing and thinking in either-or, black or white terms, and emphasizing an holistic or "electro-colloidal" approach may be accepted as meaningful contributions to a science of communication.

It is exactly at the point at which the General Semanticists differ from other semanticists, however, that weakness in the total program becomes apparent. In their attempt to apply semantic thinking to behavior, there is a weak point in the structure. The method they advocate most usually for curing semantic ills is the use of extensional devices: the "application of them automatically brings about an orientation in conformity with the latest scientific assumptions" (35, p. 172). These extensional devices include indexing, to make us cautious about generalizing and to bring individual differences into

the foreground; the dating of events; chain indexing; and others which are designed to make for operational thinking. It is felt that the added caution leads to delayed reactions and, hence, facilitation of thalamo-cortical integration. The program described in Science and Sanity (34), of retraining humans toward more sane "neuro-linguistic habits", was put into action by Kelley (32) in the last war. He speaks glowingly of psychotherapeutic successes in four and five hours of treatment with the use of the extensional devices. The patients were of all psychoneurotic reaction types and the treatment consisted of lectures followed by question and answer periods. For Kelley, there was no doubt about the value of his treatment: "the value of... (this)...therapy was almost immediately obvious. In addition to accomplishing everything that individual therapy had done, it produced a sort of crowd psychologic reaction. The group reactions tended to push each patient toward recovery" (32, p. 191). Unfortunately, the value of this treatment is not as obvious to others as it is to Dr. Kelley. Done by psychiatrically untrained physicians, "each in his own peculiar way" (32, p. 194), there is no evidence that either lasting results were obtained or that a greater than normal remission rate was achieved. There is no evidence cited that would lead one to believe that lectures incorporating extensional devices are more efficacious than any other type of lecture.

It still remains for the General Semanticists to show how they attempt to ~~restrain~~ toward greater sanity. It is hoped that the present investigation will work toward remedying this defect, but in the

different framework to be proposed in the next chapter.

C. Social Psychology

Some of the most exciting and stimulating work in communication is being done by social psychologists. Primarily, they are investigating the factors which affect changes in opinions and attitudes, and the extent to which different communication methods hinder or facilitate problem-solving (15, 24, 26, 41). In rather fascinating setups, called communication nets, which permit experimental control of the channels of communication, different problems are presented to small groups and varying nets are used. The efficacy of each net is then compared with the other nets for the different problems, and the several factors are isolated which make for superior performance. In other experiments, the effects of preparatory communications on the modification or development of subsequent attitudes in frustrating situations are studied.

Also worthy of mention is the excellent work done in prejudice, stereotypy and modes of mass communication, all of which are in the special province of the social psychologist. We are especially brief in this section because it is too early to fully evaluate the results of these experiments. However, it seems to us that, over and above the very valuable contributions in social communication, these findings fall heir to the same difficulties as did General Semantics, namely, in their application to individual behavior. It seems apparent that misunderstanding arising from the use or misuse of words and the

shadings or nuances of meanings attached to the same word, is a highly personal affair, rooted in individual experience. It then follows that the focus of research should be on the personal, experiential level.

From the three approaches discussed thus far, then, we gain valuable insights and concepts with which to work: from General Semantics, the idea of maladjustment as a difference between language and reality; from cybernetics, the insights concerning certain types of communication systems; and, from social psychology, the feeling of the necessity of adequate and accurate communication for social progress. They contribute to the general orientation of the present study, but cannot themselves fulfill the varied needs of an adequate science of interpersonal communication. The approach to be discussed next goes much further in meeting these needs.

CHAPTER THREE

The Relevance of Communication Theory

Our survey of Cybernetics, General Semantics, and Social Psychology has revealed that, regardless of their contributions, there is still the need for a system which will meet the demands of application to behavior and treatment, and which can also focus on interpersonal as well as intrapersonal and cultural relationships. We feel that the need is met, by a conceptual system which, in addition, affords the parsimony involved in discussing physical disease, functional illness and cultural maladjustments all in one universe of discourse: the best model for this system, we believe, is communication. The body of knowledge subsumed under it is designated by the term communication theory, as described by Ruesch and Bateson (54). This theory not only embraces much of what has been reviewed in the previous chapter, but has a much greater, cohesive scope.

The universe of discourse in this frame of reference is the total social situation, which is established when two or more people enter into some interpersonal communication. Interpersonal communication is itself characterized by three factors: an expressive act of some kind by one or more persons, with the intent to communicate; the perception of this act by others; and the observation on the part of the original actor that his actions were perceived by others. Intrapersonal communication is possible insofar as past experiences may be thought of as an imaginary entity within the individual. Superpersonal (i.e.,

cultural) or mass communication is also conceptually possible.

In this system, the sense organs, effector organs, and other people all become parts of the communication apparatus, which has four general functions: to receive and transmit messages, and to retain information; to perform certain operations concerned with the past, present and future with the information it possesses; to initiate and modify physiological processes; and to influence and direct other organisms and events. To attain these ends, the five component parts of the communication system - source, transmitter, channel, receiver, and destination - all must function adequately. It becomes apparent, then, that a distortion in any one of these five parts of the system will lead to a disturbance in overall communication, i.e., some sort of pathology will result. One can then study the several distortions possible in the five areas in order to add to his understanding of pathological processes. The specific interest of the present investigation is in the variations in the transmission and, secondarily, the source of the message. In the next chapter, we will specify the problem to a greater extent, and here will briefly note what some of these problems can be and how this particular approach can be more helpful than those already discussed.

Communication theory does not only refer to verbal transmission of messages, although this is what we are here interested in. We may elaborate our initial thesis, of mental health being commensurate with the degree of understanding existing between and among people, by listing the various modes of communication that do exist. These include

gesture, intonation, facial expression, and other symbolic systems. These modes of communication are utilized in the many situations facing people: intrapersonal, interpersonal, and the group. One thesis to be tested, then, is that the mentally healthy person uses the various methods of communication which are available to him in the different situations, evidencing a flexibility which the mentally ill person cannot achieve. And, since, as previously mentioned, the acquisition and retention of information is the core of adjustment, the process of acquiring and retaining the necessary information must also be investigated. The process of adjusting one's behavior according to the information received about one's behavior, or feedback, is also paramount in the communication system, and should be studied.

If we proceed on the assumption that language is the common base or carrier of all these processes, then we may arrive logically at the point where it becomes a necessity to study the language styles of various peoples. We should note now, forecasting what is to come, that we must first be interested in the structure or formal aspects of language, and not necessarily the content or the information gathered by the technique. Actually, the two aspects are intimately related, and as one changes, so must the other. But it is immediately evident that the infinite diversity of content cannot be put to scientific test. It is equally evident that the structural aspects of communication can be put to scientific test.

If, then, all pathological phenomena are subsumed under distortions of communication, the question arises as to what is not

communication. We would like to deal with this question now, and in so doing, define our position further, although we depart briefly from context to do so. We have held that communication is the model which will best describe intra-, inter-, and superpersonal maladjustments (and here we differ from more vociferous exponents of communication theory, such as Ruesch, who maintains that the model is an immediately explanatory one, 54 p. 5). The value of communication theory lies in its unity of discourse and its scope of applicability. Although our own interest is in just one area of distortion, it is possible to study such diverse distortions as may arise in the person himself, in the channel of communication, or in the destination. Are there then no questions outside of the reach of communication? The answer, given so ably by Ruesch and Bateson (54) is in the affirmative: "where relatedness of entities is considered we deal with problems of communication; when entities are considered in isolation from one another, problems of communication are not relevant (p. 6)." We see, then, by working with this system, that we commit ourselves to a definite theoretical viewpoint; that is, we establish our interest as that concerned with relationships, and the effect of one person on the other. This comes to be our definition of communication: it is any and all processes by which one individual influences another, and the influence is perceived as such by the communicant. With Ruesch, we see intrapersonal influences as a special case of interpersonal relationship.

It is possible in communication theory, as outlined by Ruesch and Bateson, to describe the different modes of adjustment, as exemplified

by broadly defined entities, in terms of distortions in a communication system. Thus, the distortion of the schizophrenic is described as one of a disability in the interpretation of the messages he receives. He is unable to correct the information which he possesses, and "progressively builds a distorted model of himself and of the world. Such views result in progressive isolation, inasmuch as distorted information renders impossible appropriate interaction with others" (54, p. 88). The neurotic, in contrast, suffers a different distortion: "instead of correcting the messages which they transmit unsuccessfully,...(they)... essentially repeat the same message over and over in the hope that eventually it will be understood" (54, p. 89). The psychosomatic patients "still use the means of communication which prevailed in their early childhood...physical symptoms are...used for purposes of communication. Furthermore, these immature personalities tend to weigh unduly the information which they receive from their own body by means of proprioception, to the neglect of the information received from the outside world by means of exteroception" (54, p. 90). These are the hypotheses which we will put to test in the investigation of our general thesis.

We see that the problem of scope is more than adequately handled by communication theory. What remains is to show that this system can also resolve the problems of applicability to human behavior and treatment. This is done in the formulation of therapeutic principles according to communication theory, and we will discuss this in a later chapter. Suffice to say at this point that organic, functional and cultural 'diseases' may all fit into the concept of communication with-

out having to extend the concept to the point where it becomes meaningless or worthless.

"There exists really no fundamental difference between the psychotherapist who deals with the functional aspects of the interpersonal system, the social scientist who is concerned with the larger, superpersonal systems, and the physiologist who copes with the interaction of an organism with his surroundings in terms of physical and chemical events. To express this idea in more abstract terms, one can say that physiologist, psychologist, and psychiatrist alike are concerned with problems of order and disorder, entropy and the maintenance of the organism; the difference between these scientists is that the physiologist is concerned with the exchange of calories and chemical elements, and the psychiatrist and psychologist with the exchange of information." (54, p. 181)

The problems of getting this into some quantifiable form and of formulating more specific experimental hypotheses are dealt with next.

CHAPTER FOUR

Statement and Background of the Specific Problems to be Investigated

A. Statement of the Experimental Hypotheses.

Based alone on the extent to which language, written and verbal, is utilized in daily living, it becomes interesting to study the interaction of language and human nature. If we feel that different forms of adjustment are intimately related to styles of communication, the interest becomes a mandate. That personality and language are somehow related is probably an accepted fact; there is much evidence to substantiate the belief that the selection and organization of various patterns in the development of the self are definitely related to the structure and utilization of language. The burden of proof, however, that there are distinctive modes of communication, as reflected in language style, becomes the content of the mandate.

The attempts of General Semanticists to show that the difficulties in communication are due to the differences between language and reality have not been too productive, and extensional devices often become too burdensome to be of any real value; the cybernetic and social psychology approaches have tended to bypass the central problems; the present approach will be concerned directly with problems of verbal communication as an interpersonal level.

The experimental hypotheses are based on two generally accepted principles: one, that any major aspect of the human organism's

behavioral armamentarium is intimately related to the organism's attempts at daily adjustment; and, two, that adjustive behavior is in response to intra-, inter-, and superpersonal stimuli, or determinants, and may vary as the determinants vary, within its range of available actions. From these principles we derive three general hypotheses which we have touched on briefly in the foregoing chapters. First, that individual adjustment patterns are reflected in language behavior, and that individual differences are reflected in the structure of language as well as content. Second, that people having certain patterns of adjustment in common will have similar patterns of communication. Third, that the differences of the situations in which the individual finds himself are reflected in his language behavior.

The specific hypotheses to be tested are derived directly from the description of patterns of human adjustment in terms of communication theory¹ translated into terms related to language phenomena, and also follow from the general hypotheses noted above. Psychosomatic patients are described as emphasizing the data received from their own bodies, and utilizing the means of communication which prevailed in their early childhood. They are described as using physical symptoms for communication. The following hypothesis regarding psychosomatic patients are posited:

1. Regardless of the situation in which the psychosomatic patient finds himself, the extent of his verbalization and fantasy is

1. cf. pp. 21 - 22.

restricted.

2. Flexibility of expression is limited.
3. Language behavior is of a highly egocentric nature.
4. The structure of the language the psychosomatic patient uses reflects a high degree of conformity to societal standards.
5. Psychosomatic patients are time-bound in the past, i.e., they predominantly utilize the past tense in their speech.

People making a neurotic adjustment are described as suffering a different distortion of communication. They transmit the same message again and again, in hope that it will be understood eventually. Of these people, we posit the following:

1. Verbal productivity is quite high, particularly in social situations.
2. Language behavior is extremely rigid in the associative or expressive sphere.
3. Social situations do not produce a noticeable degree of change in egocentric behavior.
4. Conformity varies but is within normal limits.
5. They have a slight tendency to be time-bound in the future.

Psychotic patients are described as unable to correct the information they possess and unable to interpret correctly the messages they receive. Of these people, we posit that:

1. Extent of verbalization varies considerably, and in no discernible pattern.
2. Verbal behavior is marked by associative ease and flexibility

often to the extent of coining neologisms.

3. The verbal behavior of psychotic patients shows a greater degree of self-involvement than that of any other group.
4. Social conformity is at a minimum.
5. Psychotic patients are not bound to any particular time dimension, and, in fact, they are wont to shift time orientation rapidly within a given situation.

The mark of the clinically "normal" or asymptomatic individual is the ability to utilize different modes of communication in different situations. We hypothesize that:

1. Verbal productivity is relatively consistent, but varies with the type of situation in which the individual finds himself.
2. Manner of expression is quite flexible.
3. The degree of egocentricity manifested in verbal behavior varies with the situation.
4. Conformity is within average limits, but increases in a social situation.
5. Normal individuals are not bound to any time dimension, but time orientation is consistent in any given situation.

These specific hypotheses are, then, derived from our orientation in communication theory, and are related to our previously stated thesis that mental health is a function of an individual's ability to establish relationships and communicate with others. The operational definitions of the variables involved in the five areas of hypotheses are described in the next chapter, but before describing them, we shall briefly

review the specific experiments which are relevant to our hypotheses. It should first be stated explicitly, perhaps, that which is implicit in the above hypotheses: that is, of all the facets of human behavior in which communication plays a major role, we have chosen to study the social or interpersonal. We believe that by examining a continuum of 'socialness' we can best isolate and understand human behavior in its most important ramifications.

B. The Relevant Experiments and Investigations

The literature concerning the relationship of language and personality is fairly extensive, but is largely non-experimental. The few experimental studies have been suggestive of tendencies, but generally leave much to be desired. What apparently has been fairly well established is that there is some kind of a relationship between language behavior and adjustment, and that abnormalities of adjustment may be studied profitably through language productions, although this has not yet been done in any cohesive manner. There is no relevant study in the literature concerning language behavior under varied social conditions. Nor, outside of communication theory, has there been much concern with this particular problem, with the exception of Piaget's monumental descriptions of the normal socialization of language behavior (49) and some of George Mead's theoretical formulations (39). More careful studies based on these works, however, have failed to substantiate these formulations. There is, then, no need to attempt to duplicate Sanford's excellent review of the literature through

1942 (57), particularly as no directly relevant experiments are reported there either, but we can just mention briefly those studies which are tangential to our problem.

Experimental interest in the general problem can be dated to Galton's interest in what came to be known as the word association test. This was elaborated by Kent and Rosanoff, who did the first work in establishing some sort of norms (33) and by Jung. The work in word association since then has been quite varied, with the main emphasis on the personal, affective determinants of association (38, 66). In the 1920's, Pressey felt that there was a need for investigating other than intellectual traits, and decided to investigate individual differences in interests and emotional make-up through the medium of words. To these ends, he designed the Pressey X-O tests (50), composed of four tasks concerning "unpleasantness", "range of association", "ethical discriminations", and "emotional idiosyncrasy". From the four lists of words which the subject dealt with, Pressey computed a score of "total affectivity" and one of "total idiosyncrasy or deviation". He felt that the savings in time of administration and scoring, and the objectivity and simplicity of the scoring made the test worthwhile. It has proved to be of some value, although it has not been worked with extensively in recent years. A more recent revival of interest by psychologists in this area, though, has resulted in the varied forms of sentence completion tests, which are evaluated primarily on a content level. Also of a content or projective nature in this area is the work done by Skinner, Grings, and others with the verbal

summator technique (20). Other general experiments which are tangential to the problem under investigation are those in the area of set or influence of context on the perception of words (63).

More central to our own study were the findings of Fairbanks (13) that the personal pronoun 'I' occurs often enough to make up 8.4 percent of the speech of schizophrenics. This is compared to a finding of 5.0 percent in the telephone conversations of normals and 0 percent in technical bulletins. In another study, Allport, Walker, and Lathers (2) did better than chance in matching the unidentified themes of students with the students. However, when asked how they accomplished this, they could only answer that they succeeded intuitively. In similar studies, Vernon (61) also discussed the individuality of written expression and Sanford (56) studied two individuals intensively through both written and unstructured verbal productions. Neither could postulate any general laws because of the restricted nature of the sample.

In investigations of verbal style, as distinguished from written, the verb-adjective ratio has come in for much study. This is a measure related to an "action-qualifying" continuum, and is obtained by dividing the number of active constructions by the number of qualitative constructions. Buseman found a direct relationship between emotional instability and more active constructions (41); however, since the ratio changes as the task changes, it would be necessary to equate the verbal tasks, which was not done. Buseman's finding is in some conflict with what one would expect from the formulations of communication theory; in communication theory one would postulate a direct relation-

ship between activity and stability, not the reverse. This is an area for future study, perhaps with a continuum of 'active' situations, rather than varied social conditions.

Balken and Masserman (4), attempted to analyze the formal aspects of the language of the fantasies given to T A T cards by anxiety hysterics, conversion hysterics and obsessive-compulsives. They distinguished among these three groups on ten criteria, but did not clearly establish any sound bases for future differential work. Too, their total sample of only fifteen, the lack of any control group, and the absence of any systematic variation of the stimulus situation would tend to minimize their findings. Particularly is this so, since they themselves found other diagnostic entities to show the same results on their criteria.

CHAPTER FIVE

Experimental Procedure

As mentioned, it is felt because of the general theoretical orientation of the present investigation, that varying the social situation would prove most fruitful. In brief, then, the procedure was to vary the situation in which an individual finds himself, obtain his verbal production in that situation and, using certain criteria, compare his verbal behavior with other individuals who manifest different modes of adjustment.

A. Subjects of the Investigation

The subjects of the study were defined operationally in four broad categories, three 'clinical' groups and one control group, of 20 subjects each.

1. One clinical group was composed of individuals making a neurotic adjustment. These twenty psychoneurotic subjects were ones who had been so diagnosed in staff conference, and who had been accepted for treatment at Central Clinic, Cincinnati General Hospital. As defined in the new descriptive manual of Mental Disorders of the American Psychiatric Association (69), which is utilized by the hospital:

"Psychoneurotic disorders are those disturbances in which "anxiety" is a chief characteristic, directly felt and expressed, or automatically controlled by such defenses as depression, conversion, dissociation, displacement, phobia formation, or repetitive thoughts and acts. For this nomenclature, a psychoneurotic reaction may be classified as one in which the personality, in its struggle for adjustment to internal and external stresses, utilizes the mechanisms listed above to handle the anxiety created" (69, pl2-13).

2. Another clinical group was composed of twenty individuals who

employment, or just employed at the Kroger Company, Cincinnati, Ohio. By means of a checklist, those who admitted having had at any time psychosomatic, psychotic or neurotic reactions, or had sought psychological treatment, were screened out.

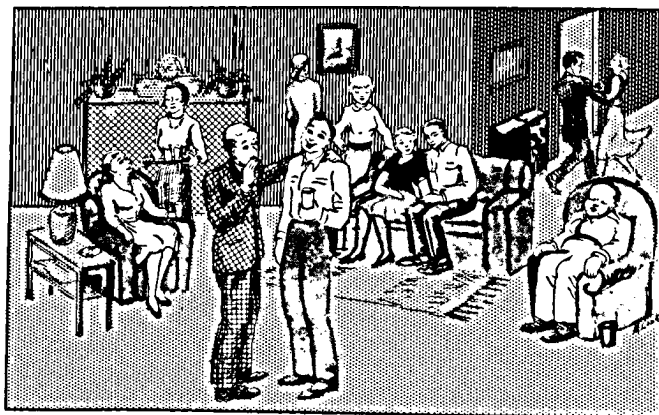
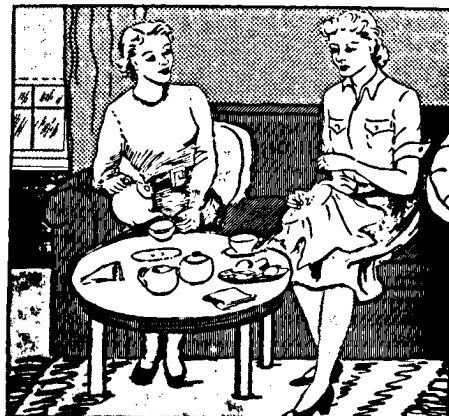
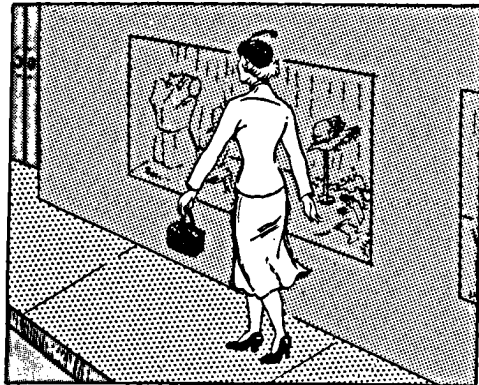
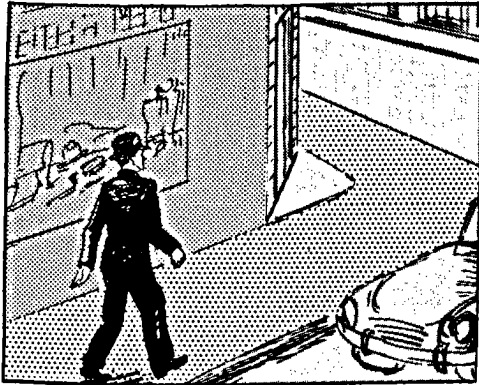
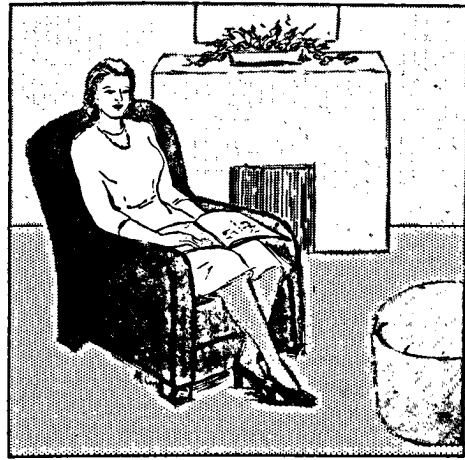
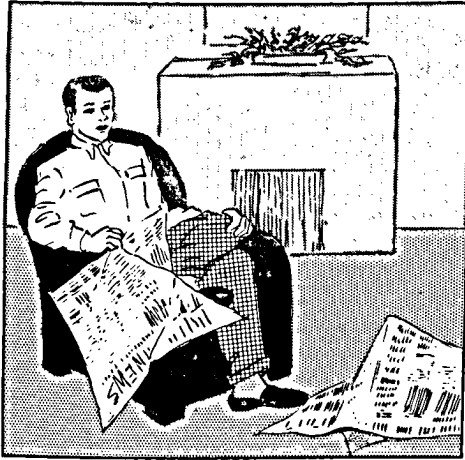
The APA manual also describes more fully each particular disorder classifiable under the main categories, and reference is made to it for further definition of the diagnostic entities studied in the present investigation. A more detailed account of the individual subjects in each group may be found in Appendix I.

While there was no matching of individuals, the groups themselves were matched for age, sex, amount of formal education, and socio-economic status. Age range was from 18 to 54 in the psychosomatic group; 18 to 50 in the control group; and, 18 to 52 in the neurotic and psychotic groups. Each group reflected the same span of socio-economic levels, and each group was composed equally of men and women. Each individual was also given the Otis Intelligence Test, Form A, and no significant differences between the means of the raw Otis scores were found. Specific details regarding these matchings may also be found in Appendix I.

B. Stimulus Situations

Actual physical placement of each subject in the different objective situations to be studied was not feasible, hence a technique was devised which attempted to approximate this.

Many drawings which depicted different social and non-social situations were prepared by the writer. In several informal pre-testing sessions, seven pictures were finally chosen as being most representa-



"The next thing you will be shown is a group of pictures of very common, ordinary, usual situations, in which you have probably been at some time or another. In fact, they are so commonplace and ordinary that, if for some reason you have not been in these situations, it requires no great stretch of the imagination to imagine yourself in them, which is exactly what I would like you to do. As I show you each picture I want you to try to place yourself in the situation shown, to make believe that you are the person or one of the people in the picture. Then, I want you to describe to me, as fully as you can, exactly what it is you are doing in that situation. What are you saying, thinking, doing and feeling? Remember, you in the picture. When you are finished with each one, hand it back to me and I will give you the next."

Any questions which arose at this point were answered with instructions designed to promote identification of the subject with one of the people in the picture. The pictures were shown to each subject in each group in an order determined by a table of random numbers (48), and no further remarks were made by the examiner once the testing had begun. The verbal productions of each subject were recorded on a Pentron Tape Recorder, and later made into typewritten transcripts. One person did the original typescripts which were then checked by two other people before the tape was reused.

The third component of the interview was the administration of the Otis intelligence test. The productions of the groups were then analyzed and compared on the criteria to be discussed next.

D. Criteria

The experimental hypotheses¹ are related to five different aspects of verbal behavior: Total productivity, flexibility of association, egocentricity, social conformity, and time orientation. The following vari-

1. of. pp 25-27

ables are the criteria used to compare verbal productions in the five areas:

1. The total word count for each subject's productions was obtained. Sub-totals for the social and non-social situations were also obtained.

2. The type -token ratio¹ was used as a criterion of richness of association and flexibility of speech. This ratio was first proposed by Wendell Johnson (28), and although much work has been done with it, there has been no study using it in a comparison of various clinical groups. The ratio is found by dividing the number of different words used (types) by the total number of words used (tokens). Every word of each verbal production was tabulated and sub-totals obtained for the number of different words used in responses to social situations, non-social situations, and a combination of all four situations. Three TTR's were then computed for each subject.

3. As a criterion of egocentricity of speech, ratios which took into account the relative use of first-person pronouns and second- and third-person pronouns were computed for each subject. A tabulation was made of each use of a personal pronoun, objective or nominative case; the compound personal pronouns; and, the possessive pronouns. A ratio of total first-person to second- and third-person pronouns was computed for the social situations, the non-social situations, and a combination of all four situations.

4. As a criterion of social conformity, a comparison was made of

1. To be referred to henceforth as TTR

the number of words used by each subject which are in the list of the first five hundred most frequently used words,¹ as measured by Thorndike and Lorge (60). A tabulation of these words was made for the productions in the social and non-social situations, and ratios computed of the number of words in the first five hundred to the total number of words used.

5. As a criterion of time-orientation, each verb-form used by a subject was assigned a weight of 1, 2 or 3, depending on whether it was in the past, present or future tense respectively. A total time-orientation value was obtained for each subject's total verbal production in all four situations by computing the total weighted score and dividing by the number of verb-forms he used.

For example, if a subject had used twenty five verb forms of which six were past, thirteen were present, and six were future, his time-orientation value would be 2.² If, however, of the twenty five verb forms, one was past, ten were present, and fourteen were in the future tense, the time orientation value would be 2.52.³

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1. These words are listed in Appendix II.
 2. 6 past x weighted score of 1 = 6; thirteen present x weighted score of 2 = 26; 6 future x weighted score of 3 = 18. Total weighted score = 50. Total weighted score (50) divided by the number of verb forms (25) is equal to 2.
 3. 1 past x weighted score of 1 = 1; 10 present x weighted score of 2 = 20; 14 future x weighted score of 3 = 42. Total weighted score = 63. Total weighted score (63) divided by number of verb forms (25) is equal to 2.52.

CHAPTER VI

Results

The results of the various comparisons of the four groups on the five criteria just outlined lend themselves readily to separate discussion by area of verbal behavior. This will be followed by an integrated analysis and appraisal of the results emphasizing the findings for each group, rather than for each facet of verbal behavior, and a synthesis of the total investigation. The implications of the results for psychotherapy, and the directions of future research, will also constitute part of the next chapter.

While no statistical comparisons were made between intelligence and any of the five criteria, a survey of the results reveals no direct relationship between intelligence and productivity, intelligence and pronominal usage, or intelligence and tense. Nor are the relationships between intelligence and TTR, and intelligence and the ratio of first five hundred words to total words, immediately evident.

Many interesting observations were made concerning the ease of identification of the subject with one of the people depicted. These range from ready identification with one person to tremendous verbalized ambivalence. For example, the response of subject 19, a paranoid schizophrenic, to card 3 was:

"This is me. I understand this as me. I'm in my home, I'd say, and uh, what I'd like to be my home, and I'm talking to one of my buddies or something."

This can be compared to the rather impersonal attitudes of subjects 73 and 16, another paranoid schizophrenic and a man with acute anxiety attacks.

"Okay, they're drinking. Drinking and smoking pipes in front of the television." (subject 73, card 3)

"Well, this one seems to be just a couple of old buddies who are passing the time of day and often the time of evening and possibly discussing some event that has happened or possibly discussing something that might be in their favor, one way or the other, that might happen in the near future." (subject 16, card 3)

One also sees conscious denial of identification and what might be termed unconscious denial. For instance, subject 2's¹ response to card 3:

"That reminds me - it doesn't even remind me of me. It's just a person walking around the square. Or walking down the square. That's all it does to me."

can be compared to subject 65's response to all of the pictures. While space limitations preclude quoting all of her production, a scanning of part of her response to card 2 reveals how this woman with conversion hysteria used words in an intellectual way to keep people and identification with others at a distance:

"Identify myself with this girl. Well, I would be looking at the window for one thing. Do the dots have any significance or are they just there because its this type of print? You just don't know? Oh, you know, but - And, well to me this looks like a reasonably normal picture, except possibly for the type of printing. I mean the type of photography where the small dots in the window, there is no distinction between, the dots on the glass are the same as the dots on the wall. I mean that would have been a little clearer to me. Identify myself with the person. Of course, identity, identifying can be done in various ways. The person looks normal in my mind. I don't see anything, the, too wrong, although she seems to be walking straight and this is going up and down like this. I mean, I notice the perspective on that. And then, oh, her walking in proportion to the perspective of the whole picture is what I'm talking about. And, this window here, I think it, it's, perspective is what I'm talking about, should be a little larger. I think I'm about done, but there is nothing unusual about this window display. The hat is there, and the gloves. Although, I think, where the little dots in this window are covering the pane of glass, it should be clearer to show that the, the way we see pictures of glass nowadays in the paper or anything is transparent with lines going this way instead of up and down. Well, I see one of the blocks in the sidewalk. To my mind it shouldn't be this way, if it's in relation to the perspective, it should be this way more. Because the picture on the whole is going this way, the drawing..." (Subject 65, story 2)

I. A paranoid schizophrenic

Subject 63, a young man with a schizophrenic reaction, on the other hand, placed himself entirely outside of the pictures in some cases:

"Here's a picture of us sitting down. Two, plain, sitting down reading. I'd probably be reading the paper. If I was in this picture? If I was in this picture, I'd have to be talking to either this gentleman here. I'd be picking up, asking, picking up a newspaper myself or go to over the window."¹ (subject 63, card 1)

"In this picture? I'd probably look at the signs. Different stores, I'd look in the stores, what's in the window. If that was, If I was in that picture I'd be probably coming either towards him or away from him. That wouldn't approximately be have to be me, ..."¹ (subject 63, card 2).

Subject 69, a woman diagnosed as a neurotic masochistic character disorder, shifted her identification in mid-stream, as it were:

"I certainly wouldn't be just walking along not looking at, I'd be looking at things to see what it would be that I'd like. I don't particularly like that hat in the window. But I would be looking at it. I like, she seems to be very sensibly dressed, or I seem to be very sensibly dressed in the picture." (subject 69, card 2)

Subject 69 also split her identification as well as sometimes shifting:

"There was a time when I did that too. Both of them. Being a hostess and being the guest. For a minute it looked like that was a baby dress. I made baby clothes." (subject 69, card 3)

Some of these findings will be discussed again in the section on pronominal usage. A more extensive analysis of ease of identification and the probable association with mental disorders, may well be an area for future research.

One other incidental finding was also quite interesting and may be a fruitful area for future research. In the tabulation of the productions of each subject, it became evident that there was a decided trend (in some subjects) toward alliteration. This just may represent a carry over

1. There is only one person in these pictures.

of ancient speech patterns, or, in some cases, may reflect a regression to more primitive linguistic habits.

A. Productivity

The total productivity of each group for the four stimuli, as well as a comparison of the productivity to the non-social and social stimuli separately, may be seen in Table I a. Table I b and I c show the significance of differences between the several groups.¹

Productivity ranges from the 2 words used by subject 48² in response to picture number 2, ("going shopping") to the 1268 words used by subject 65³ in response to picture four. Group productivity, as seen in Table I a, ranged from the 3922 words used by the psychotic group to the 9001 words used by the neurotics. The table reveals that while each group was more productive to the social stimuli, the neurotic group was much more so than any other group.

As hypothesized, those patients making a neurotic adjustment did tend to be most productive. Delineated by the tests of significance (Table 11b), the groups tended to fall into three disparate categories; the neurotic group tended to be the most productive; psychosomatic subjects tended to be second in productivity; and, the control and psychotic groups were least productive. The probability of real differences are of the order of .1 and .2, except for the difference between control and psychotic, where the P of greater than .8 reveals no significant difference between these two groups.

The surprising finding here is the relatively large productivity

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1. The individual analyses, upon which the groups are compared for all criteria, are listed in Appendix III.
 2. Of the control group.
 3. Diagnosed as a conversion hysteric.

COMPARISONS OF PRODUCTIVITY

Table Ia. Productivity of different groups in response to non-social, social, and total stimuli.

Group	Per Cent of Total to		Total Words
	Non-Social Stimuli	Social Stimuli	
Control	46.2	53.8	3985
Psychosomatic	46.3	53.7	5473
Neurotic	42.7	57.3	9001
Psychotic	45.4	54.6	3922

Table Ib. Significance of differences between mean number of words used by each group in response to all of the stimuli.

Groups ¹		Mean			t	p	
		1st	2nd	Diff., 1st-2nd			
C	N	199.2	450	-250.8	1.46	.2	.1
C	Ps	199.2	273.6	- 74.4	1.40	.2	.1
C	P	199.2	196.1	3.1	0.07	1.0	.8
N	Ps	450	273.6	176.4	1.03	.4	.2
N	P	450	196.1	253.9	1.47	.2	.1
P	Ps	196.1	273.6	- 77.5	1.46	.2	.1

Table Ic. Significance of differences, within each group between mean number of words used in response to the non-social and social stimuli.

Group ¹	Mean			t	p	
	Non-Social	Social	Diff., 1st-2nd			
C	92	107.2	-15.2	1.71	.2	.1
Ps	126.8	146.8	-20	1.60	.2	.1
N	192.3	257.8	-65.5	2.42	.02	.01
P	89	107.2	-18.2	1.62	.2	.1

1. C = Control; Ps = Psychosomatic; N = Neurotic; P = Psychotic

of the psychosomatic group. This would indicate that the constriction attributed to psychosomatic patients in communication theory must be sought out in other areas of verbal behavior. The approximately equivalent status of the psychotic and control groups is not unexpected, although their relatively restricted productivity can most profitably be thought of as attributable to two different mechanisms. The restriction of the psychotic may be due to his general uncommunicability: The air with which he responded to the stimuli was that of general unconcern. He gave all he could at the moment, and did not seem too affected by the testing situation. The control subjects, on the other hand, were clearly responding to both the test situation and the stimuli. For them, the restricting influences of a 'test' added to the usual restriction of strange situations, resulted in a constricted verbal output. This is consistent with most investigations of testing situations, in which it is usually observed that 'normal' subjects are most sensitive to the nuances of the examiner-patient relationship.

The differences in productivity between the social and non-social situations is approximately of the same order in the control, psychosomatic and psychotic groups (Tables Ia, Ic). They tended to be more verbose in response to the social stimuli. In table Ia we see that the neurotic group was relatively least productive to the non-social situations. In table Ic we note that the difference in productivity to the two types of stimuli is significant at a level between .02 and .01. This may be interpreted as meaning that neurotics, as a group, are significantly more verbose in social situations; that is, when given the opportunity, they tend to transmit their messages at a much higher

frequency than usual. This was what was hypothesized by communication theory, and becomes even more significant in terms of the findings on flexibility of speech.

B. Flexibility of Expression (TTR)

It may be seen immediately in table IIa that the neurotic's speech is most rigid; that is, more so than any other group, they tended to utilize the same words repetitively in their speech. Transposed into the terminology of communication theory this may be understood as the neurotics' incessant transmission of the same message. This rigidity of expression is even more striking when one also takes into account the many different ways one can express the same idea. It also may be seen that the neurotics' speech became much less flexible in social situations, which is where they were most productive.¹ This increase in rigidity of speech is significant at more than the .01 level, and reflects the neurotics' insistence upon repeating the same message again and again in social situations.

These findings affirm the hypotheses posited regarding the various groups. The neurotics are seen as most rigid, while the psychosomatic group is also limited in flexibility of expression, but not to the same degree. As expected, the productions of the control group tended to be most flexible, but just slightly more so than the psychotic. The computed t-tests seen in table IIb, again show the control and psychotic groups in one category. Here too, the enigma of the apparent equiva-

1. of. Table I.

COMPARISONS OF FLEXIBILITY

Table IIa. Total TTR of each group in response to non-social, social and total stimuli.

<u>Group</u>	<u>Non-Social</u>	<u>Social</u>	<u>Total</u>
Control	.53	.54	.445
Psychosomatic	.50	.48	.41
Neurotic	.43	.37	.32
Psychotic	.53	.54	.437

Table IIb. Significance of differences between mean TTR's of each group in response to the total stimuli.

<u>Groups</u> ¹		<u>Mean</u>		<u>Diff.,</u> <u>1st-2nd</u>	<u>t</u>	<u>p</u>	
<u>1st</u>	<u>2nd</u>	<u>1st</u>	<u>2nd</u>			<u><</u>	<u>></u>
C	N	.51	.46	.05	1.16	.4	.2
C	Ps	.51	.48	.03	0.86	.4	.2
C	P	.51	.50	.01	0.20	.9	.8
N	Ps	.46	.48	-.02	0.54	.6	.4
N	P	.46	.50	-.04	1.10	.4	.2
P	Ps	.50	.48	.02	0.60	.6	.4

Table IIc. Significance of differences within each group between mean TTR's in response to non-social and social stimuli.

<u>Group</u> ¹	<u>Mean</u>		<u>Diff.,</u> <u>1st-2nd</u>	<u>t</u>	<u>p</u>	
	<u>Non-Social</u>	<u>Social</u>			<u><</u>	<u>></u>
C	.64	.62	.02	0.61	.6	.4
Ps	.594	.586	.008	0.24	.9	.8
N	.61	.54	.07	3.02	.01	.001
P	.618	.624	-.006	0.18	.9	.8

1. C = Control
N = Neurotic

Ps = Psychosomatic
P = Psychotic

lence of flexibility of expression in the control and psychotic groups can only be resolved by a more qualitative analysis of their productions. The productions of the psychotic often bordered on the incomprehensible:

"If I was in this picture here I'd have to be either, if I was in this picture I'd have to be looking at the television set, grabbed a chair and sit down. I could even be smoking or drinking like these two, picture here. There's a million things I could be doing, doesn't necessarily have to be sitting down, I could be on my way out or way in. I could be twitching (sic!) the dials of the television set. Just, just they're relaxing. This picture doesn't make sense to me." (Subject 63¹, card 3)

The control productions, on the other hand, were fairly consistent.

Of much interest is another way in which the psychotic and control groups are distinguished from the neurotic and psychosomatic. In table IIa, it may be observed that both the psychosomatic and neurotic subjects tended to become more rigid and constricted in expression in the social situations. The psychotic and control groups, however, manifested less rigidity in social situations than in non-social, the control slightly less than the psychotic. While the differences are not significant, if substantiated in further studies, probably it could be best understood as reflecting the psychotics' basic inability to distinguish between situations, and the normal individuals' greater empathy and ego-involvement in social situations. This particular finding is clarified to a greater extent when compared with the findings on pronominal usage.

C. Egocentricity of Speech

Table IIIa summarizes the findings regarding pronominal usage. They are at once interesting and apparently paradoxical; paradoxical, that is, until analyzed further. The paradox is that the ratio of ego pronouns to non-ego pronouns of the control group, only, increased in social situations, although not at the level of .05.

1. Diagnosed as schizophrenic reaction.

COMPARISONS OF EGOCENTRICITY

Table IIIa. Total ego/Non-Ego pronoun ratios of each group in response to non-social, social, and total stimuli.

Group	Non-Social	Social	Total
Control	1.02	1.49	1.23
Psychosomatic	1.58	1.48	1.49
Neurotic	1.49	1.42	1.49
Psychotic	2.56	1.95	2.22

Table IIIb. Significance of differences, between groups, of mean Ego/Non-Ego ratios in response to non-social, social, and total stimuli.

Groups ¹		Non-Social						Social						Total					
		Mean		Diff.,		p		Mean		Diff.,		p		Mean		Diff.,		p	
1st	2nd	1st	2nd	1st-2d	t	<	>	1st	2nd	1st-2d	t	<	>	1st	2nd	1st-2d	t	<	>
C	N	1.77	2.48	-.71	0.89	.4	.2	1.99	3.07	-1.08	1.28	.4	.2	2.04	3.41	-1.37	1.39	.2	.1
C	Ps	1.77	2.92	-1.15	1.14	.4	.2	1.99	2.37	-.38	0.38	.8	.6	2.04	2.44	-.40	0.49	.8	.6
C	P	1.77	3.59	-1.82	1.71	.2	.1	1.99	2.34	-.35	0.38	.8	.6	2.04	3.26	-1.22	1.32	.4	.2
N	Ps	2.48	2.92	-.44	0.35	.8	.6	3.07	2.37	.70	0.60	.6	.4	3.41	2.44	.97	0.84	.4	.2
N	P	2.48	3.59	-1.11	1.46	.2	.1	3.07	2.34	.73	0.83	.6	.4	3.41	3.26	.15	0.16	1.0	.8
P	Ps	3.59	2.92	.67	0.78	.6	.4	2.34	2.37	-.03	0.03	1.0	.8	3.26	2.44	.82	0.99	.4	.2

Table IIIc. Significance of differences, within groups, between mean Ego/Non-Ego ratios in response to non-social and social stimuli.

Group ¹	Mean		Diff., 1st-2d	t	<	p	>
	Non-Social	Social					
C	1.77	1.99	-.22	0.54	.6		.4
Ps	2.92	2.37	.55	0.70	.6		.4
N	2.48	3.07	-.59	0.74	.6		.4
P	3.59	2.34	1.25	1.66	.2		.1

1. C = Control; N = Neurotic; Ps = Psychosomatic; P = Psychotic

This increase in the ratio of first-person to second- and third-person pronouns in the control group is somewhat analagous to the finding of their increased flexibility of speech. It is felt that this increased 'egocentricity' in social situations may be better understood as an increased ego-involvement and better ability to empathize with others, than as just increased egocentricity. It is here that some of the observations regarding ease of identification are pertinent. For instance, one notes the ease with which subject 50, of the control group, can enter social situations or empathize with individuals in them:

"Well, as you can see by the picture of me, I'm heavy, and I'm not having much fun at the party. I'm just sitting in the corner, drinking, not having much fun. And I don't exactly care for the company I'm keeping so I get up and go home. (Subject 50, card 4)

"... Well, I'm at my friend's house for tea and it's sort of a sewing, sewing club. And she's serving me tea and we're just chatting about things we did in our childhood. As you can see, I'm embroidering a table cloth. But she hasn't served me my tea yet, as she's just serving her own." (Subject 50, card 4)

This may be compared to the difficulty expressed by a subject with pruritis vulvae, of the psychosomatic group:

"... Well, now, now what must, what must I tell you about these, I mean like, like this would be me, one of the women? I would be one of the women? Now I don't know what I would do there. I guess I would just, I'd look a little more pleasant and talk, and talk I guess just about anything she would want to talk about. I wouldn't be any particular one, I would just be, uh---I don't know what I'd do there. I just wouldn't know." (Subject 18, card 3)

These results may be a reflection of the ability of the clinically normal individual to utilize different ways of speaking in different situations, which had been posited as the major difference between the clinical and control groups.

As may be observed in table IIIb, none of the differences in pronominal usage is significant at .05. The differences in response to non-social stimuli are slightly more stable than the others, but still not at a

high enough level of significance to be relied on without caution. It may be noted, however, that the slight differences which were found were all in the direction which has been hypothesized. Thus, the psychotic group tended to be most egocentric, and the control group least egocentric. With the possible exception of the control group noted above, no significant changes occurred within groups in response to non-social or social stimuli.

A very interesting finding concerns the number of times in which a subject did not utilize either first-or second-and third-person pronouns in his total productions. Briefly, it was observed that of the ten instances in which no pronouns of one of the categories were used, eight times the absence was of non-ego pronouns, and only twice was there a complete absence of ego pronouns. As might be expected, the psychotic group was most inconsistent in their ability to identify, as seen in this type of analysis. In the future, some analysis of this sort possibly should be carried out more extensively.

D. Conformity

The index which was used to investigate conformity to societal standards is the one which probably is most closely related to differences in intelligence. This might have tended to minimize differences which do exist, although the groups were matched. Another factor tending to distort the results in this particular area is that the list of words against which the subjects' productions were matched, while drawn from a very extensive survey, is a frequency count of words in written productions. The differences between written and oral language may well be extensive. Nonetheless, table IVa does reflect certain tendencies which

COMPARISONS OF CONFORMITY

Table IVa. Total first five hundred/total words ratio for each group in response to the non-social, social and total stimuli.

Group	Non-Social	Social	Total
Control	.79	.78	.78
Psychosomatic	.81	.81	.81
Neurotic	.78	.78	.78
Psychotic	.81	.81	.81

Table IVb. Significance of differences, between groups, of mean first five hundred/total words ratios in response to non-social, social and total stimuli.

		Non-Social							Social							Total						
		Mean		Diff.,				p	Mean		Diff.,				p	Mean		Diff.,				p
Groups ¹		1st	2nd	1st-2d	t	<	>		1st	2nd	1st-2d	t	<	>		1st	2nd	1st-2d	t	<	>	
C	N	.79	.77	.02	0.48	.8	.6		.779	.777	.002	0.07	1	.8		.77	.78	-.01	0.32	.8	.6	
C	Ps	.79	.80	-.01	0.58	.6	.4		.78	.81	-.03	1.46	.2	.1		.77	.81	-.04	1.51	.2	.1	
C	P	.786	.79	-.003	0.07	1.0	.8		.78	.79	-.01	0.23	.9	.8		.77	.79	-.02	0.56	.6	.4	
N	Ps	.77	.80	-.03	1.32	.4	.2		.78	.81	-.03	1.64	.2	.1		.78	.81	-.03	1.47	.2	.1	
N	P	.77	.79	-.02	0.61	.6	.4		.78	.79	-.01	0.52	.8	.6		.78	.79	-.01	0.51	.8	.6	
P	Ps	.79	.80	-.01	0.38	.8	.6		.79	.81	-.02	0.86	.4	.2		.79	.81	-.02	0.66	.6	.4	

Table IVc. Significance of differences, within groups, between the mean first five hundred/total words ratios in response to non-social and social stimuli.

Group	Mean	Non-Social	Social	Diff., 1st-2d	t	<	p	>
Control	.79	.79	.78	.01	0.47	.8		.6
Psychosomatic	.80	.80	.81	-.01	0.05	1.0		.8
Neurotic	.77	.77	.78	-.01	0.02	1.0		.8
Psychotic	.789	.789	.788	.001	0.08	1.0		.8

1. C = Control; Ps = Psychosomatic; N = Neurotic; P = Psychotic

bear on the expectations of communication theory.

From the welter of t-tests, the psychosomatic group emerges as the relatively most clearly delineated. This index, upon analysis, may be indicative of constriction of thought, and that the psychosomatic group may stand out from the rest is not unexpected in communication theory. Table IVa reveals that the neurotics are least constricted, and that the psychotic group is as constricted as the psychosomatic group. At first, these results seem contradictory, but on closer examination they might possibly be understood by thinking of the index as revealing the degree of constriction of thought, and the extent to which other modes of expression are available to them. These results then become more meaningful. The psychotic is seen as reduced to a meager fund of expressive tools, and really unable to interpret another's message because of this shortcoming. A vicious circle is set up in the psychotic: Unable to interpret another's message, he becomes more isolated, and thus becomes more unable to interpret successfully.

The differences in response to non-social and social stimuli also tends to affirm the basic hypotheses. Thus, only the control group showed any tendency to differ in the two situations, although not significantly at .05. Again, on the surface the results seem to be the reverse of what was expected. In other words, the control group was less conforming in the social situation, while it had been supposed that the change would be in the direction of greater conformity. Here again, we have a situation similar to the findings in the areas of pronominal usage and flexibility of expression; that is, the mark of the clinically normal individual is his ability to empathize and be more flexible, i.e., less constricted, in social situations. It

is felt that this is the meaning of the present findings.

As this criterion stands, then, it is best understood as a criterion of constriction. The findings suggest that it would not be very profitable to use this index as a measure of conformity until one obtains a frequency count based on spoken language. This tabulation would seem to be worthwhile in its own right, as well as being useful for such a criterion.

E. Time Orientation

The psychosomatic group is also clearly distinguished from the others in the findings on time orientation. Their total time orientation value of 1.805 is the only one lower than 2. The percentage of verb forms in the past tense utilized by the psychosomatic group is more than twice that of any other group. Their use of future verb forms is only about half that of any other group.

The differences between the psychosomatic group, showing a clearcut tendency to utilize the past tense, and the other groups all approximate at least the .05 level of significance; one is closer to the .02 level. These differences assume even more significance when it is recalled that the instructions originally given¹ were so structured as to predispose toward the use of the present tense. Quite dramatic in this respect is the response given to card 4 by subject 7, a young lady with hyperthyroidism. This is quoted in its entirety to illustrate the rather pervasive use of the past tense by this subject.

1. cf. p. 31

COMPARISONS OF TIME ORIENTATION

Table Va. Total time orientation value and per cent of verb forms utilized by the different groups in the past, present and future tenses, in response to all stimuli.

<u>Group</u>	<u>Per cent of Verb Forms</u>			<u>Total Time Orientation Value</u>
	<u>Past</u>	<u>Present</u>	<u>Future</u>	
Control	9.8	67.4	22.8	2.13
Psychosomatic	25.9	60.5	13.5	1.60
Neurotic	11.3	65.2	23.5	2.12
Psychotic	10.22	68.3	21.4	2.10

Table Vb. Significance of differences, between groups, in mean total time orientation value.

<u>Groups¹</u>		<u>Mean</u>		<u>Diff., 1st-2d</u>	<u>t</u>	<u>p</u>	
		<u>1st</u>	<u>2nd</u>				
<u>1st</u>	<u>2nd</u>					<u><</u>	<u>></u>
C	N	2.11	2.05	.06	0.84	.6	.4
C	Ps	2.11	1.92	.19	2.39	.05	.02
C	P	2.11	2.08	.03	0.30	.8	.6
N	Ps	2.05	1.92	.13	2.05	.06	.05
N	P	2.05	2.08	-.03	0.01	1.0	.8
P	Ps	2.08	1.92	.16	2.07	.06	.05

1.C = Control; Ps = Psychosomatic; N = Neurotic; P = Psychotic

"Now this reminds me of when we had a birthday party, my stepmother and I. This must have been four years ago. His birthday was Thursday and we gave him a party. It was a party for him and her too, but she was going to Florida with some people she worked for. She was going to help them get settled there, and she just stayed a month. And this was the family around, my aunt and uncles, about two aunts, three aunts here and three uncles and they were there. And I do remember my stepmother's brother-in-law, he never sit up and drink or anything. He sat in a chair and did go to sleep, so I guess that's what reminded me of it so much. There wasn't any young fellows there. It was just I invited my two friends, Lil and Alice; and I remember all the older people, they couldn't jitterbug, so we, Alice and I jitterbugged for them. And Lil did too, but she didn't stay very long because she has to go to work too early. She had to work the next morning. So we all had a very nice time. This was the first time I'd ever had any party given my dad, that's why I enjoyed it so much. Never had money to though, before I got pregnant while I was going to school, and I just had money that he would give me and I, after that, well, I didn't have too much coming in, just enough to have a place to stay and some food for the baby and myself. But when I was working I would make, the salary was just eighteen dollars but I made pretty good tips. So that's what, my stepmother, we bought him a pretty, big, beautiful cake, and we had, we made a macaroni salad, salmon salad, and we had drinks. We had beer and pop, whiskey and gin for those who drink that, and we had a nice time. The only thing about me though, I never liked to drink around my dad. I don't know why, he's just like a brother to me. We got along together, I mean nobody would ever think it was my dad. He'd do something I don't like, I'd start fussing at him like you would your brother or sister or something. So, we get along real fine. Since all this trouble is over that I used to have with him." (subject 7, story 4)

Although definitely not of the same order of significance, the findings concerning the three other groups are also interesting. The control group is slightly more future-bound in total time orientation value, but it may be noted that the neurotics actually utilized a greater percentage of their verb forms in the future tense than did any other group. To do so, they departed, more than did the controls, from the 'set' of the instructions. Interesting, is that the psychotic group tended most to stay in the present tense. Qualitative analysis again

reveals, however, the real inconsistencies of the psychotic group. For example, to card 4 subject 62 shifted suddenly from past to present:

"Well, it has, apparently, been a rather gay, being a rather gay party; dancing, drinking, so forth."

Subject 63, in response to card 3, said in part:

"...I'd have to be looking at the television set, grabbed a chair and sit down...."

Of the other three groups, the psychosomatic group most disregarded the set of the instructions, the neurotic second, and the control group least.

An analysis of the ratio of verb forms to total words reveals that the psychotic group tended to be most concerned with action, and the neurotic group least concerned with action. The differences in verb forms themselves are so great, however, that a much more complete analysis is called for in the future.

CHAPTER SEVEN

Discussion

A. Hypotheses

From the data just presented, it would appear that this type of analysis, with certain modifications, can prove fruitful in examining language behavior. The differences between the groups with different modes of emotional adjustment generally point in the expected direction, even though only a few attain significance at the .05 level. This lack of many significant differences may be due to the variations in diagnoses which made up each group, perhaps related to the variations within each group which can be observed in the five criteria. Certainly, additional research with more carefully delineated diagnostic groups seems to be pointed to. The results do reflect certain group characteristics, however, which we may note by reviewing the various hypotheses.

It was posited¹ that the psychosomatic patient's fantasy and verbalization would be restricted; his expression would be limited as to flexibility; his language behavior would be of a highly egocentric nature; his speech would reflect a high degree of conformity to societal standards; and, that he would be time-bound in the past. The results confirm the hypothesis regarding time orientation and, while not significant at .05 in the other areas are in the direction expected. In review, it was seen that the psychosomatic group was the second most rigid as regards flexibility of speech. The group ranked second with the neurotic group in egocentricity

1. cf. p. 25-26

and were classed with the psychotic group as most constricted. As regards time orientation, there is fairly clear evidence that this group is predominantly time-bound in the past, as was supposed. The findings in the area of total productivity were at first in contrast to what had been expected: Both the psychotic and control groups tended to be less responsive than the psychosomatics. In the case of the psychotic patient, the findings substantiate feelings about his general uncommunicability; in the case of the control group it is felt that certain restrictive mechanisms served to decrease their productivity below their usual norm, hence the relatively higher standing of the psychosomatic group.

The description of the psychosomatic patient by communication theory, in terms of his emphasis on physical symptoms and consequent constriction of verbal communicative methods, and in terms of his utilization of past means of communication, appears, then, to be partially substantiated. Seen in this group are constriction of thought, rigidity of speech, emphasis on the data received from themselves, and utilization of the past tense in their speech. As was supposed, this group did not manifest any differences between non-social and social situations, with the exception of an increased word productivity in response to the latter, at a level of significance of .2 to .1.

People making a neurotic adjustment were described¹ as engaging

1. of. p. 26

in incessant transmission of the same message, in the hope that others eventually would understand them. From this description it was posited¹ that their verbal productivity would be quite high, particularly in social situations; expression would be extremely rigid, despite their productivity; degree of egocentricity would not be responsive to changes in situation; conformity would be within normal limits; and they would manifest a slight tendency to use the future tense. Some of these expectations tended to be confirmed.

The neurotic group ranked first in productivity, although the difference from other groups was at best at a level of .2 to .1. This was the only group manifesting a highly significant increase of productivity in response to the social stimuli. Their rigidity of speech was manifested in the TTR's; again, they tended to rank first, which may be interpreted as meaning that more so than the other groups, they tended to utilize the same words repetitively. A manifest increase of rigidity in response to the social stimuli was highly significant, and can be interpreted as the increase in repetitive transmission of the same message in social situations. There was, however, no apparent change in either egocentricity or conformity of speech in response to the social stimuli. Their egocentricity was seen as between that of the psychosomatic and the control groups, and total conformity ranged approximately the same as the control group. The highest percentage of verb forms in the future tense was used by the neurotic group.

1. cf. p. 26

One may say, then, that the hallmark of the neurotic group is their predilection for transmitting the same message repetitively. Their speech, as a result, is quite rigid, and they transgress the restrictive influences of strange situations to get across their communications.

The psychotic patients were described¹ as unable to correct the information they had, and unable to interpret correctly the messages they received. It was expected that their productivity would be quite varied; their speech would be marked by expressive ease and flexibility; they would be more self-oriented than any other group; conformity would be minimal; and that their time orientation would be unstable.

Despite the very nature of the psychotic patient, i.e., his unpredictability, some of the expectations regarding him were also confirmed. Least productive, together with the control group, the psychotic patients were second to the control group in regard to flexibility. While this was not unexpected, qualitative analysis had to be utilized to reveal the differences between the psychotic and control groups in this area. That is, the flexibility of the psychotic tended to render his speech incomprehensible, while the speech of the control subject was consistent and understandable. The basic constriction of the psychotic was underlined in the area of conformity. As supposed, the ratios of ego to non-ego pronouns were the highest in the psychotic group, although here too the differences were not of a statistically significant nature. As with the other "clinical" groups, it is noted that there is no apparent change in responsivity to social stimuli in this area. Nor was there any change in the conformity, or constriction index. The psychotic

1. cf. p. 26-27

patient, further, as was illustrated ¹ was quite wont to shift time orientation even within a situation. This resulted in an overall present time orientation total value, within which there was marked inconsistency.

That the mark of the clinically normal individual is to utilize different characteristics of communication in different situations, was noted in several areas of the results. Too, qualitatively, the findings emphasize the normal individuals' much greater ability to empathize with other individuals. It had been expected² that their verbal productivity would vary with the situation in which they found themselves; their manner of expression would be very flexible; egocentricity would vary with the situation; conformity would increase in a social situation; and, time orientation would be most consistent.

The productivity of the control group was seen to vary with the situation in a very surprising way. That is, they apparently responded to the restrictive aspects of the test situation by a reduction in total word productivity. Despite the restricted productivity, however, the flexibility of the control group's speech was the highest of any group. Too, in response to the social stimuli, their speech became even less rigid, the reverse being true of the neurotic and psychosomatic groups, although it should be noted again that this difference was not a significant one. Similarly, only in the control group was there an increase in ease of identification in social situations, or an increase of ego-involvement, and a concomitant decrease in constriction of thought and speech. In general, as expected, they were least egocentric. In contrast to what

1. cf. p. 57

2. cf. p. 26

was expected, conformity apparently did not increase in social situations. The explanation for this had to be sought in a qualitative analysis and a better understanding of what this index really represented. The finding may not be inconsistent with the others when the index is understood as pertaining to constriction. The important result here is that again only the control group tended to differ in their responses to the two different types of stimuli. Their time orientation was the most consistent with the instructions, despite the slightly higher percentage of verb forms in the present tense by the psychotic group. The latter finding again had to be clarified further with qualitative analysis, where it was seen to be a consequence of the inconsistency of the psychotic, rather than of consistency. The trend toward the future of total time orientation in the control group may possibly be interpreted as reflecting their drive for growth.

The description by communication theory of the normal individual is partially reflected in the present analysis. The ability to utilize different ways of communicating in different situations may well be the keynote of his adjustment. This would have important ramifications for psychotherapeutic treatment, which will be dealt with next.

In summary, of the twenty experimental hypotheses, thirteen were either substantiated or results were in the direction expected. If the results of the conformity criterion are reinterpreted, the number of meaningful results increases.

B. Implications for Psychotherapy

Probably the single most important implication of communication theory for psychotherapeutic treatment is the emphasis it places upon the need for viewing the patient as part of a communication system. The modifications that more than lip service to this view will force in psychotherapeutic treatment, in this respect, center about revising concepts dealing with the patient as an isolated individual and seeing him as a functioning social being. By definition, a therapeutic rela-

tionship always refers to an interpersonal network, in which the primary aim is the improvement of the communication system of the patient.

As elaborated by Ruesch and Bateson (54), therapy, and technical therapeutic operations, always occur in a social context, and communication devices are those which are used to influence the patient. It is the therapist's aim to modify the patient's communication system in such a way as to make it similar enough to the one of the group in which the patient is living, so that mutual understanding and influence can take place. The therapist is enabled to do this both by understanding the patient's communications and by having a communication system of his own which is different from that of the patient and, at the same time, is similar to that of the core group. It is incumbent upon the therapist, then, to acquire as much information about his own and others' communication systems as is feasible. In this way, he can effect some sort of exchange with the patient, and at the same time slightly modify the communication system of the patient. Therapeutic progress, as pointed out by Ruesch and Bateson (54, p. 83), is thus intimately related to the patient's experience in being able to communicate with another individual whose entire system of communication and values is different from his own. The question of how it is that improvement or progress does take place in therapy, i.e., that modification of the patient's communication system does occur, has not been satisfactorily answered to date, and may be more amenable to description in the future in this new frame of reference.

It is not feasible to describe the technical operations involved in psychotherapeutic situations, but the findings of the present invest-

igation can offer specific leads to the therapist, whose job it is to "help the patient to acquire means of communication which will help him to adjust to the group and cultural network prevailing in his surroundings" (54, pp 92-93).

For the neurotic patient, then, improvement will be equivalent to a reduction of the number of messages he tries to transmit and a widening of his scope of experience and expression. He also will have to be helped in his acceptance of the present situation as a gratifying area of endeavor. For the psychotic patient, the keynote of improvement will be the increase of the number of effective messages in transit, a reduction in egocentricity, and an increase in the consistency of their modes of communication. The psychosomatic patients must be taught to live in the present, if not partly in the future. They also must be taught to increase the number and quality of the expressive tools they have at their command.

For all of the psychologically maladjusted patients there is the apparent need for an increasing acceptance of the self in social situations, a concomitant decrease in rigidity and constriction of thought and expression in these situations, and probably most important, a learning of various modes of communication for use in different situations, to supplant the inflexibility of their present attempts at communication and understanding.

C. Directions of Future Research

Occasionally, we have noted where additional research would serve to clarify certain findings and theoretical formulations. We would like

now to collate these suggestions and present them, briefly, along with other suggested future research projects.

One of the major goals of research in this area is the understanding of how therapeutic improvement takes place. Clarification and understanding of the processes involved in a patient's progress is indispensable to a broadening of therapeutic scope and an improvement of current methods of psychotherapy. The insights provided by the present investigation into the structure of one method of communication may point to a way in which an understanding of the therapeutic process can take place. That is, through an increased understanding of the language the patient is using, and an understanding of the changes that take place in the structure of his language, we may be able to deduce what is taking place in the larger, social context of the treatment situation.

The present method of analysis has shown itself to be feasible, in general, for an increased understanding of the patient's communication system. What is also apparent is that this type of analysis can readily become a measure of improvement in therapy, as well as leading to an understanding of the processes involved in treatment. Using the five aspects of speech behavior which were analyzed in the present study as an example, various samples of the patient's speech can be analyzed with these criteria before, during, and after therapy, providing a more objective criterion of improvement. One of the most urgent needs of the art and science of psychotherapy has always been the need for a method of evaluation of therapeutic results. This easily obtained and recorded aspect of human behavior is seen to be uniquely suited to be a valuable aid in judging the results of therapy, because of the intimate relationship between adjustment and speech, or of the reflection of degree of

mental health in the spoken productions of individuals.

One direction for future research, then, is for speech analysis at different points in therapy. This is seen as affording insights into the processes involved in therapeutic progress and affording an objective criterion of therapeutic improvement. It may well be that increased understanding of therapeutic improvement will enable us to do away with the static concept of diagnostic entities, and to see maladjustments as rather a stage in communication processes, which are usually in flux in the normal individual and in a state of permanent or temporary rigidity in the emotionally disabled individual.

The type of analysis proposed and carried out in the present investigation is also of importance in the understanding of personality structure as a whole, and in the understanding of an individual's development. Analysis of the speech patterns of developing children, taken under different environmental conditions or circumstances, can be of tremendous aid in the understanding of the development of the communication systems we see manifested by the adult. The importance of such understanding for the prevention of disturbances in communication, i.e., disturbances of behavior, is both self-evident and of intrinsic value to the mental hygiene movement. Too, the contributions of such analyses to the understanding of the psychology of the 'normal' individual cannot be overemphasized.

More specifically, of the five aspects of spoken language studied in this investigation, several seem most amenable to more extensive investigation with methodology similar to that utilized here. Particularly, the areas of pronominal usage, conformity, and time orientation, which

are those indices originated for this study, should be subject to further analysis. Further understanding of pronominal usage would seem to be important in the clarification of the processes of identification and empathy, while added understanding of one's time orientation can offer valuable insights into the frame of reference being utilized by a given individual. As regards conformity, defined as the number of words used which are in the five hundred most frequently used words, it is imperative to establish frequency lists of spoken words, as distinct from written, before this type of analysis can be carried further.

The suggested tabulation of spoken words leads into yet another area for future research. There is some basis for the feeling that tremendous differences exist between written and oral language. Yet, there is a dearth of carefully conceived comparisons relating to this feeling. Such comparisons are of vital importance, if only because of the importance of written language as another major method of communication and interpersonal influence. Analysis of the same individual's written and oral productions in response to equivalent stimuli would seem to be a very worthwhile area of research.

With the methodology utilized here, the results seem to point to the feasibility of proceeding to an analysis of the oral productions of more homogeneous diagnostic groups. That is, together with the findings of group characteristics noted here, there may well be important characteristics of diagnostic subgroups, such as between obsessive compulsive neurosis and anxiety hysteria, paranoid schizophrenia and catatonic schizophrenia, or between patients with ulcer or asthma.

CHAPTER EIGHT

Summary

The present experimental investigation stems from the hypothesis that the ability to communicate with others successfully is associated with mental health. That is to say, the degree to which one individual can understand others in his group, and be understood himself, is in part a reflection of the degree to which he is mentally healthy.

It was felt that it would be particularly feasible to analyze spoken language, as one of the major modes of communication, due to the intimate relationship between language and one's daily adjustments. Further, it was felt that this analysis should concern itself with the structure of language rather than the content.

The valuable contributions to the field of personality and communication by cybernetics, general semantics, and social psychology were discussed and evaluated. Communication theory, the frame of reference for the current study, was also reviewed with especial emphasis on scope and adequacy of applicability. Individuals making a neurotic, psychotic or psychosomatic adjustment were described in terms of variations of and distortions in communication, and certain hypotheses, as to what would be expected in the structure of their spoken language, were deduced from these descriptions. The individual making a normal adjustment was also described in terms of communication theory, and hypotheses posited regarding the structure of his language.

The subjects of the study were selected in four groups of twenty subjects each; neurotic, psychosomatic, psychotic, and a control group of asymptomatic individuals. These groups were matched for age, sex,

amount of formal education, socio-economic status, and intelligence. Each subject was exposed to two 'non-social' pictorial stimuli and two 'social' pictorial stimuli, created by the investigator. Instructions were designed to promote identification of the subject with one of the people in the picture. The oral productions of each subject to each situation were tape-recorded, transcribed, and analyzed with respect to five variables. The criteria used to compare the productions of individuals who manifested different modes of adjustment were operational definitions of the five aspects of verbal behavior referred to in the experimental hypotheses; total productivity, flexibility of expression, egocentricity, social conformity, and time orientation.

The results indicate that the individual's language structure may in some instances reflect his distinctive mode of emotional adjustment, as described by communication theory. These instances were discussed; in some cases a qualitative analysis was necessary to clarify the findings. Of much importance to the understanding of personality and mental health may be the findings that suggest that the mark of the well-adjusted individual is his ability to utilize different modes of communication in different situations. For the most part, the maladjusted individual manifests a very inflexible manner of communication, and he is apparently unable to shift his way of communicating with a change of situations.

The findings also touch on the processes of identification, empathy, and ego-involvement, all of which are reflected to some extent in language structure. The importance of the communication model to psychotherapy was underscored, especially as regards the need to view the patient as a functioning social being rather than as an isolated individual. Research was outlined which might lead to the understanding of the

processes involved in psychoterapeutic treatment, and to a more objective evaluation of the patient's progress. Specific leads were presented which stem from some of the findings regarding the manner of communication of the neurotic, psychotic, psychosomatic and control subjects. Research is also suggested which would aid in the clarification of the development of the normal personality, as well as of the development of behavior disorders. The indices originated for this investigation are felt to be particularly amenable to further study. The need for the qualitative analyses suggests that some modifications of this methodology may be in order; failure to attain many statistically significant findings also indicates that more carefully conceived axes of analyses may be pertinent.

The value of the present investigation and of future studies lies in the eventual dissemination of principles of successful communication and, hence, of mental health.

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APPENDIX

APPENDIX I A: DATA REGARDING INDIVIDUAL SUBJECTS OF THE INVESTIGATION.

CONTROL GROUP

<u>SUBJECT NUMBER</u>	<u>AGE</u>	<u>SCHOOL GRADE ATTAINED</u>	<u>SEX</u>	<u>OTIS RAW SCORE</u>	<u>CLINICAL DIAGNOSIS</u>
40	50	5	M	22	
49	41	6	M	20	
44	33	8	M	21	
59	30	8	M	28	
47	18	9	F	11	
43	29	10	M	17	
39	43	10	M	37	
41	37	10	F	41	
48	18	10	F	21	
42	22	12	F	30	
50	18	12	F	37	
46	21	12	F	44	
54	46	14	F	41	
53	19	14	F	54	
45	21	16	M	49	
26	30	16	M	52	
25	24	16	F	59	
37	30	16	M	59	
38	30	16	M	59	
27	29	17	M	63	

PSYCHOSOMATIC GROUP

34	49	4	M	25	ACUTE RHEUMATOID ARTHRITIS
14	54	6	M	10	GASTRO-INTESTINAL SYMPTOMATOLOGY
18	48	7	F	15	PRURITIS ANI AND VULVAE
1	46	7	F	30	PRURITIS VULVAE
17	42	8	M	12	DIABETES MELLITUS
70	36	8	M	23	ARTHRITIS
61	50	8	M	44	DERMATITIS
31	26	8	M	33	PEPTIC ULCER
57	18	9 $\frac{1}{2}$	M	34	DIABETES MELLITUS
7	26	10	F	41	THYROTOXICOSIS
36	36	10	F	47	COLITIS
13	28	10	M	35	BRONCHIAL ASTHMA
29	43	10	M	20	BRONCHIAL ASTHMA
12	30	10	F	42	THYROTOXICOSIS
30	36	12	F	32	ACUTE RHEUMATOID ARTHRITIS
35	30	14	F	51	OBESITY
58	22	16	F	47	THYROTOXICOSIS
60	23	16	F	53	BRONCHIAL ASTHMA
79	36	20	M	61	GASTRO-INTESTINAL SYMPTOMATOLOGY
77	26	20	M	62	PEPTIC ULCER

1. NUMBERS ARE ASSIGNED TO INSURE CONFIDENTIAL NATURE OF HOSPITAL RECORDS. THESE ARE AVAILABLE UPON REQUEST.

APPENDIX I A (CONT'D)

PSYCHOTIC GROUP

<u>SUBJECT NUMBER</u>	<u>AGE</u>	<u>SCHOOL GRADE ATTAINED</u>	<u>SEX</u>	<u>OTIS RAW SCORE</u>	<u>CLINICAL DIAGNOSIS</u>
373	18	SPECIAL	M	11	PARANOID SCHIZOPHRENIA
66	33	6	F	10	PARANOID SCHIZOPHRENIA
71	50	5	F	15	PSYCHOTIC DEPRESSION
28	34	8	F	10	SIMPLE SCHIZOPHRENIA
22	27	7	F	20	SIMPLE SCHIZOPHRENIA
19	26	7	M	34	INCIPIENT PARANOID SCHIZOPHRENIA
23	19	8	M	40	SCHIZOPHRENIC REACTION
72	34	8	M	31	PARANOID SCHIZOPHRENIA
51	30	8	F	28	PSYCHOTIC DEPRESSION
20	26	9	F	49	MANIC-DEPRESSIVE PSYCHOSIS, MANIC
74	40	9	F	46	INVOLUTIONAL PSYCHOSIS
76	19	12	M	35	CATATONIC SCHIZOPHRENIA
75	46	12	M	50	PSYCHOTIC DEPRESSION
21	36	12	F	23	PARANOID SCHIZOPHRENIA
63	28	12	M	50	SCHIZOPHRENIC REACTION
56	29	14	F	52	PARANOID SCHIZOPHRENIA
32	33	14	F	37	POST-PARTUM PSYCHOSIS
2	29	14	M	37	PARANOID SCHIZOPHRENIA
62	52	15	M	38	SCHIZOPHRENIC REACTION
24	23	16	M	59	SCHIZOPHRENIC REACTION

NEUROTIC GROUP

64	22	6	M	16	ORAL NEUROTIC CHARACTER
6	41	6	F	15	PSEUDOCYCLIS
68	52	7	F	22	NEUROTIC CHARACTER DISORDER, HOSTILE
11	21	8	M	34	ANXIETY NEUROSIS
55	29	9	M	19	NEUROTIC REACTIVE DEPRESSION
15	42	9	F	28	HYSTERICAL NEUROTIC CHARACTER
78	24	10	M	42	REACTIVE DEPRESSION, TENSION HEADACHES
9	41	10	F	33	HYSTERICAL NEUROTIC CHARACTER
69	37	10	F	41	NEUROTIC CHARACTER DISORDER
52	18	11	M	29	REACTIVE DEPRESSION
3	32	12	F	33	CONVERSION HYSTERIA
8	32	12	F	40	HYSTERICAL NEUROTIC CHARACTER
16	39	14	M	32	ACUTE ANXIETY ATTACKS
80	24	14	F	56	NEUROTIC CHARACTER, HYSTERICAL
65	26	15	F	32	CONVERSION HYSTERIA
10	21	15	M	52	NEUROTIC CHARACTER, ADOLESCENT TURMOIL
5	27	17	F	55	HYSTERICAL NEUROTIC CHARACTER
4	33	19	M	60	NEUROTIC DEPRESSION
67	31	20	M	57	OBSESSIVE-COMPULSIVE NEUROSIS
33	27	20	M	65	ANXIETY NEUROSIS

APPENDIX I A (CONT'D)

	<u>CONTROL</u>	<u>PSYCHOSOMATIC</u>	<u>PSYCHOTIC</u>	<u>NEUROTIC</u>
AGE RANGE	18 - 50	18 - 54	18 - 52	18 - 52
MALE	10	10	10	10
FEMALE	10	10	10	10
GRADE RANGE	5 - 17	4 - 20	5 - 16	6 - 20
OTIS RANGE (RAW SCORES)	11 - 63	10 - 62	10 - 59	15 - 65

APPENDIX I B: RESULTS OF STUDY OF EQUIVALENCE.

IN ORDER TO ASCERTAIN WHETHER THE TWO SERIES OF STIMULUS PICTURES WERE EQUIVALENT FOR EACH SEX, ALL OF THE PICTURES WERE PRESENTED BY SLIDES TO TEN MALES AND TEN FEMALES. THEY WERE PRESENTED IN RANDOM ORDER AND WERE ANALYZED IN REGARD TO PRODUCTIVITY. THE MEN AND WOMEN WERE MATCHED WITH REGARD TO EDUCATION AND SCORES ON A CONCEPT FORMATION TEST AND A TEST OF INTELLIGENCE, AND NO SIGNIFICANT DIFFERENCE WAS FOUND BETWEEN THE GROUPS ON THESE MEASURES OF INTELLIGENCE. SIMILARLY, NO SIGNIFICANT DIFFERENCE WAS FOUND WITH REGARD TO PRODUCTIVITY, AND THE SERIES WERE ADJUDGED EQUIVALENT FOR THE PURPOSES OF THIS STUDY. THE DATA IS PRESENTED BELOW:

PRODUCTIVITY BY WORD COUNT

<u>CARD</u>	<u>MALE</u>	<u>FEMALE</u>	<u>TOTAL</u>
M 1	1095	928	2023
F 1	723	648	1371*
M 2	847	713	1560
F 2	947	1045	1992
M 3	1102	980	2082
F 3	998	1001	1999

THERE ARE DIFFERENCES IN STIMULUS VALUE BETWEEN CARDS M 2 AND F 2 AND M 3 AND F 3. HOWEVER, THE DIFFERENCES ARE IN OPPOSITE DIRECTIONS, AND AS ONE MAY VALIDLY COMBINE THESE TWO SETS OF PICTURES, AS THEY ARE BOTH "NON-SOCIAL", THE DIFFERENCE DISAPPEARS.

THE TOTAL MALE RESPONSE TO THE MALE CARDS WAS 3044, AND TO THE FEMALE CARDS, 2668. FEMALE RESPONSE WAS THE REVERSE: 2621 WORDS TO THE MALE CARDS, AND 2694 WORDS TO THE FEMALE. THE DIFFERENCES IN TOTAL RESPONSIVITY, 5712 FOR THE MALES AND 5315 FOR THE FEMALES, IS NOT SIGNIFICANT AS REFLECTED IN A T-TEST.

*ONE MAY SERIOUSLY QUESTION THE VALIDITY OF THIS TOTAL; BECAUSE OF EXTRANEIOUS CIRCUMSTANCES, THE TOTAL TIME USED BY THE GROUP FOR THIS PICTURE WAS SHORTER THAN THE REST.

APPENDIX II: FIVE HUNDRED MOST FREQUENTLY USED WORDS AS TABULATED BY LORGE AND THORNDIKE.

A, ABOUT, ABOVE, ACROSS, ACT, ADD, AFTER, AGAIN, AGAINST, AGE, AGO, AIR, ALL, ALMOST, ALONE, ALONG, ALREADY, ALSO, ALWAYS, AM AMERICA, AMERICAN, AMONG, AN, AND, ANOTHER, ANSWER, ANY, ANYTHING, APPEAR, ARE, ARM, ARMY AROUND, AS ASK, AT, AWAY.

BACK, BANK, BE BECAME, BECAUSE, BECOME, BEEN, BEFORE, BEGAN, BEGIN, BEING, BELIEVE, BEST, BETTER, BETWEEN, BIG, BILL, BODY, BOOK, BOTH, BOY, BRING, BROUGHT, BUILT, BUSINESS, BUT, BY.

CALL, CAME, CAN, CAR, CARE, CARRY, CASE, CAUSE, CHANCE, CHANGE, CHILD, CHILDREN, CITY, CLOSE, COLOR, COME, COMING, COMPANY, CONDITION, CONSIDER, CONTINUE, COST, COULD, COUNTRY, COURSE, COURT, COVER, CRY, CUT.

DAY, DEAR, DEMAND, DID, DIE, DIFFERENT, DO, DOCTOR, DOES, DOLLAR, DONE, DON'T, DOOR, DOWN, DRESS, DROP, DURING.

EACH, EARLY, EITHER, END, ENOUGH, EVEN, EVENING, EVER, EVERY, EVERYTHING, EYE.

FACE, FACT, FALL, FAMILY, FAR, FATHER, FEAR, FEEL, FEET, FELT, FEW, FIGHT, FIGURE, FILL, FIND, FINE, FIRE, FIRST, FIVE, FOLLOW, FOOD, FOR FORCE, FOUND, FOUR, FRIEND, FROM, FRONT, FULL.

GARDEN, GAVE, GET, GIRL, GIVE, GIVEN, GO, GOD, GONE, GOOD, GOT, GOVERNMENT, GREAT, GREEN.

HAD, HALF, HAND, HAPPEN, HAPPY, HARD, HAS, HAVE, HE, HEAD, HEAR, HEARD, HEART, HELD, HELP, HER, HERE, HERSELF, HIGH, HIM, HIMSELF, HIS HOLD, HOME, HOPE, HORSE, HOUR, HOUSE, HOW, HOWEVER, HUMAN, HUNDRED, HUSBAND,

I, IDEA, IF, I'LL, IMPORTANT, IN, INCREASE, INTEREST, INTO, IS, IT, ITS, ITSELF.

JOHN, JUST.

KEEP, KEPT, KIND, KING, KNEW, KNOW.

LABOR, LADY, LAND, LARGE, LAST, LATE, LAUGH, LAW, LEARN, LEAST, LEAVE, LEFT, LESS, LET, LETTER, LIE, LIFE, LIGHT, LIKE, LINE, LITTLE, LIVE, LONG, LOOK, LOST, LOVE, LOW.

MADE, MAKE, MAN, MANY MARK, MARRY, MATTER, MAY, ME, MEAN, MEN, MIGHT, MILE, MIND, MISS, MOMENT, MONEY, MONTH, MORE, MORNING, MOST, MOTHER, MOVE, Mr., Mrs., MUCH, MUST, MY, MYSELF.

NAME, NATIONAL, NEAR, NEED, NEVER, NEW, New York, NEXT, NIGHT, NO, NOR, NOT, NOTE, NOTHING, NOW, NUMBER.

OF, OFF, OFFICE, OFTEN, OLD, ON ONCE, ONE, ONLY, OPEN, OR, ORDER, OTHER, OUR, OUT, OVER, OWN.

PAPER, PART, PARTY, PASS, PAY, PEOPLE, PERHAPS, PERSON, PICTURE, PLACE, PLAN, PLANT, PLAY, POINT, POOR, POSSIBLE, POWER, PRESENT, PRESIDENT, PRICE, PRODUCE, PUBLIC, PUT.

QUESTION, QUITE.

RATHER, REACH, READ, REAL, REASON, RECEIVE, RED, REMAIN, REMEMBER, REST, RESULT, RETURN, RIGHT, RIVER, ROAD, ROOM ROUND, RUN.

SAID, SAME, SAT, SAW, SAY, SCHOOL, SEA, SECOND, SEE, SEEM, SEEN, SERVE, SET, SEVERAL, SHALL, SHE, SHIP, SHORT, SHOULD, SHOW, SIDE, SINCE, SIR, SMALL, SMILE, SO, SOME, SOMETHING, SON, SOON, SORT, SOUND, SPEAK, STAND, START, STATE, STEP, STILL, STOOD, STOP, STORY, STREET, STRONG, SUCH, SUN, SUPPLY, SUPPOSE, SURE, SYSTEM.

TABLE, TAKE, TAKEN, TALK, TELL, TEN, THAN, THAT, THE, THEIR, THEM, THEMSELVES, THEN, THERE, THESE, THEY, THING, THINK, THIS, THOSE, THOUGH, THOUGHT, THOUSAND, THREE, THROUGH, THUS, TIME, TO, TODAY, TOGETHER, TOLD, TOO, TOOK, TOWARD, TOWN, TREE, TRIED, TRUE, TRY, TURN, TWENTY, TWO.

UNDER, UNTIL, UP, UPON, US, USE.

VERY, VOICE.

WAIT, WALK, WALL, WANT, WAR, WAS, WASHINGTON, WATCH, WATER, WAY, WE, WEEK, WELL, WENT, WERE, WHAT, WHEN, WHERE, WHETHER, WHICH, WHILE, WHITE, WHO, WHOLE, WHOM, WHOSE, WHY, WIFE, WILL WIND, WINDOWN, WISH, WITH, WITHIN, WITHOUT, WOMAN, WOMEN, WONDER, WORD, WORK, WORLD, WOULD, WRITE, WRONG.

YEAR, YES, YET, YOU, YOUNG, YOUR.

APPENDIX III: INDIVIDUAL DATA FOR THE FIVE CRITERIA OR ASPECTS OF VERBAL BEHAVIOR.

A. TOTAL PRODUCTIVITY (WORD COUNT)

CONTROL				PSYCHOSOMATIC				NEUROTIC				PSYCHOTIC			
SUB- JECT	NON- SOCIAL	SOCIAL	TOTAL	SUB- JECT	NON- SOCIAL	SOCIAL	TOTAL	SUB- JECT	NON- SOCIAL	SOCIAL	TOTAL	SUB- JECT	NON- SOCIAL	SOCIAL	TOTAL
47	10	18	28	14	75	62	137	6	84	74	158	66	43	23	66
43	9	31	40	17	118	74	192	64	57	119	176	28	120	62	182
49	76	28	104	18	101	138	239	55	95	112	207	73	15	21	36
44	29	36	65	29	89	74	163	68	26	101	127	71	107	113	220
48	25	24	49	70	108	155	263	15	79	183	262	22	67	92	159
40	45	25	70	34	64	58	122	52	71	89	160	21	70	41	111
59	109	158	267	1	225	214	439	16	132	165	297	51	108	190	298
42	99	143	242	30	228	279	507	65	1557	2080	3637	72	81	123	204
39	64	150	14	31	31	25	56	3	56	114	210	19	35	62	97
50	100	124	224	57	22	20	42	9	40	68	108	76	17	26	43
41	62	91	153	13	49	39	88	11	54	62	116	32	101	115	216
54	198	225	423	7	531	685	1216	8	87	118	205	2	69	246	315
46	19	52	71	12	67	62	129	69	176	187	363	62	21	36	57
45	104	222	326	61	68	141	209	78	46	38	84	23	64	77	141
26	179	156	335	81	75	48	123	10	94	80	174	74	20	29	49
53	64	87	151	58	44	105	149	5	276	334	610	20	155	134	289
25	33	229	62	35	244	192	436	80	117	126	243	75	97	185	282
37	170	144	314	60	112	82	194	67	351	595	946	63	143	143	286
38	112	81	193	79	98	232	330	4	166	198	364	56	312	308	620
27	333	321	654	77	188	251	439	33	242	312	554	24	134	117	251
TOTAL 1840				2537				3846				1779			
2145				2936				5155				2143			
3985				5473				9001				3922			

APPENDIX III (CONT'D)

B. TTR

CONTROL				PSYCHOSOMATIC				NEUROTIC				PSYCHOTIC			
SUB- JECT	NON- SOCIAL	SOCIAL	TOTAL	SUB- JECT	NON- SOCIAL	SOCIAL	TOTAL	SUB- JECT	NON- SOCIAL	SOCIAL	TOTAL	SUB- JECT	NON- SOCIAL	SOCIAL	TOTAL
47	1.000	0.777	0.750	14	0.600	0.452	0.467	6	0.619	0.608	0.481	66	0.721	0.957	0.696
43	0.888	0.677	0.625	17	0.805	0.730	0.651	64	0.596	0.429	0.409	28	0.400	0.597	0.362
49	0.487	0.607	0.423	18	0.683	0.435	0.382	55	0.589	0.598	0.493	73	0.867	0.952	0.806
44	0.793	0.694	0.631	29	0.764	0.743	0.552	68	0.885	0.505	0.528	71	0.607	0.708	0.532
48	0.720	0.917	0.714	70	0.546	0.458	0.373	15	0.570	0.448	0.382	22	0.597	0.598	0.365
40	0.644	0.800	0.557	34	0.609	0.621	0.459	52	0.704	0.551	0.488	21	0.657	0.805	0.550
59	0.495	0.449	0.378	1	0.404	0.402	0.308	16	0.545	0.533	0.448	51	0.583	0.474	0.426
42	0.535	0.538	0.442	30	0.298	0.401	0.327	65	0.225	0.197	0.156	72	0.691	0.569	0.490
39	0.688	0.467	0.309	31	0.645	0.760	0.589	3	0.667	0.614	0.533	19	0.800	0.597	0.505
50	0.480	0.548	0.446	57	0.818	0.950	0.786	9	0.850	0.809	0.713	76	0.706	0.654	0.558
41	0.645	0.626	0.536	13	0.776	0.795	0.693	11	0.759	0.581	0.551	32	0.485	0.617	0.500
54	0.465	0.493	0.374	7	0.348	0.348	0.280	8	0.667	0.534	0.492	2	0.638	0.472	0.432
46	0.789	0.731	0.690	12	0.657	0.694	0.543	69	0.409	0.471	0.311	62	0.857	0.861	0.772
45	0.654	0.495	0.429	61	0.397	0.509	0.411	78	0.761	0.763	0.607	23	0.734	0.636	0.535
26	0.469	0.564	0.427	81	0.467	0.688	0.447	10	0.638	0.738	0.603	74	0.800	0.483	0.551
53	0.625	0.506	0.457	58	0.772	0.571	0.570	5	0.460	0.476	0.391	20	0.490	0.634	0.465
25	0.666	0.757	0.645	35	0.471	0.578	0.422	80	0.641	0.627	0.502	75	0.340	0.384	0.348
37	0.559	0.597	0.484	60	0.536	0.671	0.490	67	0.501	0.376	0.351	63	0.420	0.476	0.339
38	0.705	0.679	0.534	79	0.714	0.427	0.436	4	0.560	0.455	0.414	56	0.381	0.383	0.324
27	0.402	0.452	0.350	77	0.569	0.502	0.369	33	0.504	0.404	0.366	24	0.582	0.615	0.482

APPENDIX III (CONT'D)

C. EGO/NON-EGO PRONOUN TABULATION

CONTROL					PSYCHOSOMATIC					NEUROTIC					PSYCHOTIC				
SUB- JECT	NON-SOCIAL NON- EGO	NON- EGO	SOCIAL NON- EGO	SOCIAL NON- EGO	SUB- JECT	NON-SOCIAL NON- EGO	NON- EGO	SOCIAL NON- EGO	SOCIAL NON- EGO	SUB- JECT	NON-SOCIAL NON- EGO	NON- EGO	SOCIAL NON- EGO	SOCIAL NON- EGO	SUB- JECT	NON-SOCIAL NON- EGO	NON- EGO	SOCIAL NON- EGO	SOCIAL NON- EGO
47	0	0	1	0	14	6	5	7	1	6	8	1	9	4	66	6	1	5	2
43	1	0	2	4	17	11	3	2	4	64	1	5	10	19	28	16	0	10	0
49	10	9	5	0	18	16	21	0	4	55	3	5	4	4	73	0	2	0	2
44	4	1	5	0	29	7	7	2	3	68	0	0	7	8	71	9	8	1	6
48	0	4	3	1	70	3	8	7	21	15	14	0	26	3	22	5	1	10	3
40	7	2	6	2	34	3	3	8	10	52	7	3	11	1	21	0	7	0	1
59	12	5	19	11	1	38	3	34	2	16	3	4	4	6	51	11	2	23	6
42	4	12	7	9	30	32	5	29	11	65	59	86	67	114	72	4	1	5	7
39	0	6	3	11	31	4	0	1	1	3	3	10	12	3	19	7	2	14	1
50	14	5	16	10	57	1	0	2	0	9	3	0	0	1	76	2	0	3	0
41	4	4	9	5	13	1	3	3	2	11	6	0	6	0	32	13	2	7	5
54	14	15	12	7	7	74	30	68	53	8	7	2	12	6	2	9	4	18	9
46	1	0	1	2	12	1	12	1	2	69	22	5	21	5	62	3	0	1	0
45	5	11	15	9	61	14	4	8	4	78	8	0	2	1	23	4	3	8	7
26	13	2	10	2	81	13	5	5	0	10	11	0	3	0	74	1	0	2	0
53	11	3	10	1	58	3	0	7	8	5	4	22	14	22	20	11	12	5	9
25	1	4	0	3	35	10	36	14	11	80	10	0	8	4	75	0	6	7	18
37	1	26	1	8	60	11	10	6	10	67	30	10	60	13	63	15	2	10	0
38	5	3	1	4	79	2	12	6	12	4	13	1	23	4	56	36	12	31	8
27	20	12	26	12	77	16	1	18	5	33	31	11	32	5	24	22	3	2	0

APPENDIX III (CONT'D)

D. RATIO OF WORDS USED WHICH ARE IN THE FIRST 500 MOST FREQUENTLY USED WORDS.

CONTROL			PSYCHOSOMATIC			NEUROTIC			PSYCHOTIC						
SUB- JECT	NON- SOCIAL	SOCIAL TOTAL	SUB- JECT	NON- SOCIAL	SOCIAL TOTAL	SUB- JECT	NON- SOCIAL	SOCIAL TOTAL	SUB- JECT	NON- SOCIAL	SOCIAL TOTAL				
47	0.500	0.444	0.464	14	0.800	0.790	0.796	6	0.833	0.824	0.829	66	0.884	0.826	0.864
43	0.667	0.806	0.775	17	0.636	0.811	0.703	64	0.596	0.832	0.756	28	0.842	0.839	0.841
49	0.908	0.928	0.913	18	0.861	0.920	0.895	55	0.779	0.705	0.739	73	0.733	0.571	0.639
44	0.896	0.861	0.877	29	0.876	0.811	0.822	68	0.577	0.861	0.803	71	0.850	0.761	0.805
48	0.720	0.792	0.755	70	0.879	0.761	0.840	16	0.810	0.760	0.775	22	0.851	0.793	0.818
40	0.844	0.880	0.857	34	0.797	0.810	0.803	52	0.803	0.798	0.800	21	0.828	0.683	0.775
59	0.844	0.835	0.839	1	0.849	0.878	0.863	16	0.788	0.782	0.785	51	0.806	0.842	0.829
42	0.697	0.783	0.748	30	0.886	0.821	0.850	65	0.780	0.781	0.781	72	0.840	0.821	0.828
39	0.734	0.813	0.538	31	0.806	0.840	0.821	3	0.823	0.816	0.819	19	0.828	0.839	0.835
50	0.840	0.790	0.812	57	0.773	0.750	0.762	9	0.700	0.647	0.667	76	0.765	0.885	0.837
41	0.790	0.745	0.778	13	0.857	0.794	0.830	11	0.797	0.742	0.802	32	0.752	0.817	0.787
54	0.798	0.760	0.778	7	0.830	0.814	0.822	8	0.827	0.822	0.824	2	0.768	0.817	0.806
46	0.842	0.827	0.831	12	0.731	0.774	0.752	69	0.886	0.856	0.871	62	0.714	0.694	0.702
45	0.769	0.797	0.788	61	0.794	0.816	0.809	78	0.869	0.842	0.857	23	0.891	0.831	0.840
26	0.810	0.724	0.770	81	0.960	0.896	0.935	10	0.776	0.638	0.713	74	0.450	0.655	0.571
53	0.844	0.839	0.841	58	0.636	0.838	0.778	5	0.724	0.743	0.734	20	0.859	0.843	0.851
25	0.879	0.689	0.790	35	0.776	0.719	0.752	80	0.803	0.730	0.765	75	0.701	0.827	0.784
37	0.835	0.759	0.796	60	0.840	0.817	0.830	67	0.741	0.770	0.759	63	0.811	0.825	0.822
38	0.804	0.778	0.793	79	0.724	0.767	0.754	4	0.753	0.818	0.788	56	0.824	0.795	0.810
27	0.709	0.735	0.722	77	0.723	0.749	0.738	33	0.789	0.772	0.780	24	0.784	0.786	0.785

APPENDIX III (CONT'D)

E. UTILIZATION OF VERB FORMS IN DIFFERENT TENSES.

CONTROL					PSYCHOSOMATIC					NEUROTIC					PSYCHOTIC				
NUMBER OF VERB FORMS IN					NUMBER OF VERB FORMS IN					NUMBER OF VERB FORMS IN					NUMBER OF VERB FORMS IN				
SUB- JECT	PAST	PRE- SENT	FU- TURE	TIME VALUE	SUB- JECT	PAST	PRE- SENT	FU- TURE	TIME VALUE	SUB- JECT	PAST	PRE- SENT	FU- TURE	TIME VALUE	SUB- JECT	PAST	PRE- SENT	FU- TURE	TIME VALUE
47	0	11	4	2.267	14	7	14	1	1.727	6	4	23	1	1.893	66	0	13	2	2.133
43	0	7	4	2.364	17	14	19	0	1.576	64	1	37	5	2.093	28	4	13	13	2.300
49	8	7	5	1.850	18	10	17	18	2.178	55	5	30	0	1.857	73	0	9	0	2.000
44	1	6	6	2.385	29	10	18	0	1.643	68	1	19	2	2.045	71	0	36	2	2.053
48	1	12	1	2.000	70	9	32	0	1.700	15	9	33	15	2.105	22	0	37	3	1.825
40	1	9	5	2.308	34	5	16	2	1.870	52	4	21	1	1.885	21	1	21	0	1.954
59	0	47	9	1.321	1	16	53	13	1.963	16	6	23	7	2.028	51	10	27	17	2.130
42	1	33	11	2.222	30	25	40	15	1.875	65	43	339	132	2.173	72	5	26	0	1.839
39	2	28	2	2.000	31	1	8	3	2.167	9	1	12	4	2.176	19	1	14	2	2.059
50	1	24	12	2.297	57	0	8	1	2.111	3	3	12	19	2.470	76	0	0	6	3.000
41	3	20	10	2.212	13	2	13	1	1.938	11	3	12	3	2.000	32	0	34	9	2.209
54	8	53	10	2.028	7	83	96	20	1.683	8	0	10	24	2.412	2	6	43	4	1.962
46	0	5	6	2.545	12	3	18	3	2.000	69	10	34	24	2.206	62	4	6	0	1.600
45	9	39	9	2.999	61	6	26	4	1.944	78	8	8	0	1.500	23	7	22	1	1.800
26	5	16	22	2.395	81	3	11	7	2.190	10	4	19	5	1.966	74	0	12	0	2.000
53	4	24	3	1.968	58	5	21	4	1.967	5	12	60	11	1.988	20	25	24	3	1.577
25	1	13	1	2.000	35	26	39	15	1.863	80	2	26	5	2.091	75	1	47	1	2.000
37	11	25	6	1.881	60	5	31	4	1.975	67	14	79	41	2.201	63	2	19	28	2.531
38	6	22	3	1.903	79	8	42	8	2.000	4	13	30	6	1.857	56	0	53	45	2.459
27	5	64	28	2.237	77	10	38	6	1.926	33	11	63	15	2.045	24	5	24	12	2.171