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PROCESS ANALYSIS OF RORSCHACH INTERPRETATION

By

ANTHONY B. TABOR

A DISSERTATION SUBMITTED TO THE FACULTY OF THE GRADUATE  
SCHOOL OF LOYOLA UNIVERSITY IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF  
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## **LIFE**

Anthony B. Tabor was born in Chicago, Illinois, December 6, 1920.

He was graduated from Foreman High School, Chicago, Illinois, June, 1939, and from Loyola University (Chicago), June, 1949, with the degree of Bachelor of Science in the Social Sciences and June, 1952, with the degree of Master of Arts.

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## CHAPTER I

### STATEMENT OF THE PROBLEM

In the last few decades the Rorschach Test has intrigued most clinicians and given rise to voluminous research, theses, and fanciful speculation regarding its scientific merit. Various hypotheses have been proffered regarding its adherence to certain theoretical systems of perception, their relationships to personality theory, subtle distinctions between structural and functional components of personality, and similar basic issues bearing on the fundamental question of how the ink blot has been elevated to the dignified role of a clinical instrument. In some instances the body of knowledge that had come to be known as dynamic psychology had been largely minimized and the Rorschach Test emerged as a somewhat unique discipline or cult. New theories of personality evolved around the Rorschach as a somewhat independent, new perspective on personality and terms such as intra- and extra-tensive displaced the traditional concepts of introversion and extroversion in much of the scientific literature.

At the other extreme many critics have cautioned against an overly-optimistic pragmatic approach to the test in the absence of rigorous substantiation of its validity. In reviews of Rorschach literature, the test is discredited as being something less than a scientific instrument when subjected to the test of current statistical checks. Amidst the debates regarding holism versus atomism and the charge that statistical measures currently applied violate certain basic premises of projective techniques, Cronbach ( 8 ) suggests the possibility that the Rorschach Test may be less at fault than the statistical techniques which are misapplied to its qualitative raw data.

While one might argue that the very nature of the human personality defies quantification within any scheme that might be considered comprehensive, this still does not vitiate the necessity of continually seeking greater refinements and more scientific precision in our modes of assessing personality. It should be emphasized at the outset, however, that this study is not directly concerned with validation of the Rorschach Test or any of its underlying principles. Accepting for the present the firmly entrenched role the Rorschach Test has gained among many clinicians, the present exploration will focus on how the analyst utilizes this instrument in arriving at a diagnosis.

Within the limits of a particular method of blind diagnosis, interest will be centered on an analysis of the analyst himself rather than on the Rorschach proper. An attempt will be made to describe explicitly certain facets of his thinking as he proceeds from the raw data, through the evolution of a personal impression or concept of the personality, to a diagnostic decision. How does he formulate, trace, confirm, and reject hypotheses enroute to his goal? Is his procedure consistent on different protocols? Does he seem to abide by a certain set of interpretive hypotheses related to specific Rorschach scores irrespective of the type of protocol with which he is dealing? What significance does he ascribe to various components of the Rorschach Test regarding the specific contribution they make to the final diagnosis - - the information they supply toward a better understanding of the personality involved?

Individual performance on several analyses, however, yields little information of value regarding either the Rorschach or the method of analysis. Only by placing the individual's behavior in the context of many analysts' of equal competence can we hope to make any meaningful assessments of interpretive procedure. The consistency of the individual analyst on several protocols may simply reflect the rigidity of his own personality with little reference to objective data. It need have no

relationship to any interpretive logic inherent in Rorschach methodology. An utter lack of consistency, on the other hand, may reflect a flexible adaptability of method to the individual personality under analysis, intuitive rambling which may be characteristic in Rorschach interpretation, or complete bewilderment by the record under consideration.

Group patterns, therefore, assume the primary role in this study. Attention will be fixed on group consistencies in procedure on individual protocols as well as similarities in procedure on several protocols. The communality of judgments within the group may reflect certain values or meanings inherent in the Rorschach itself rather than idiosyncracies of the analysts. To this extent, this study may bear on the problem of validity of the Rorschach technique though this is not its expressed aim. The problem here is simply to describe interpretive procedure.

Restricting the focus of this investigation to the analysis of Rorschach interpretation renders the accuracy of diagnoses relatively unimportant. The prime concern is with the process of analysis and only incidentally with its product. This specific feature constitutes the unique contribution the methodology of this study offers to Rorschach

research. The request for a diagnosis merely serves to set a goal for the analyst, a terminal point to his analysis. It may subsequently be interesting to determine whether the accurate diagnosticians as a group are distinguished in any manner from the inaccurate diagnosticians.

A great deal of research in psychology concerns itself with inferences from observable behavior and explicit solutions of problems to the mental processes presumed to lead to these results. What is frequently lacking is tangible evidence of the processes or stages by which problems are solved. This gap in our understanding is particularly evident in Rorschach diagnoses. No one would seriously challenge the assumption that ten analysts arriving at the same diagnosis of a particular case probably arrived at this result through devious routes. This type of confluence of judgments is demonstrated in even the most simple types of problems. The diverse channels of reasoning, however, are not revealed in the diagnoses.

The technique adapted to this study, originally devised by Dr. H. J. A. Rimoldi to study medical diagnostic processes, requires a synthesis of isolated increments of information. Actually, the analyst has access to an entire protocol if he chooses to select all the cards .



in a card file. He is asked, however, to judiciously select only cards that he feels are necessary and sufficient to reach a diagnosis. This is obviously not the usual procedure of analyzing a Rorschach protocol and it may be construed as violating a basic premise of projective techniques, namely, the organized "wholeness" of personality. In the "usual" situation, however, the analyst is generally the same person who administered the test. In evaluating the protocol, therefore, he is necessarily biased by an apperceptive mass of experience, that is, his personal contact with the person. This is obviously an unscientific climate in which to judge the validity of the interpretations gleaned from the Rorschach Test alone.

Blind diagnoses reduce the probability of this error. In the typical situation, the analyst receives the entire protocol and interprets the data in his accustomed manner except that he has no case history data to support his hypotheses. The present study imposes much more rigorous strictures on the analyst's procedure by insisting on only the information necessary for his diagnosis. While this method is hardly more or less synthetic than the usual procedure, it does tend to minimize the assimilation of a great mass of relatively irrelevant data and enforce a more stringent logic in the analyst's selections. Further-

more, this method provides a unique approach to the analyst's readily-articulated logic which can be recorded and studied. No assumptions are made regarding a one-to-one relationship between the process (logic) and the product (diagnosis). If the current exploration succeeds in shedding any light on this relationship, it will have achieved a promising beginning in a relatively neglected dimension of Rorschach research.

This thesis is fully in accord with the premise that personality is an organized whole of complexly interrelated factors that can be understood adequately only when viewed in its totality. The technique applied in this study simply reflects the fact that the human personality, though an organized whole, is not an amorphous, homogeneous mass. Certain features stand out. The very fact that a scoring system can be imposed on a Rorschach record bears testimony to its amenability to analysis and subsequent synthesis. Responses can be classified within certain categories some of which assume greater interpretive or diagnostic significance than others. One of the aims of the current study is to focus on these categories and to make an attempt at assessing their relative importance and some of their interrelationships. The method presents a particular way of viewing the process of Rorschach interpretation

within an experimental framework which permits certain meaningful measurements to be made. It ascribes no significance to what seems important to any particular analyst, but rather seeks certain dimensions which may describe what seems important to many of them.

The nature of the challenge to which this study addresses itself was well expressed by Bloom and Broder in the following passage.

They (educators and psychologists) can develop techniques which will make possible the securing of evidence on both the processes and the products of thought. Much difficulty can be anticipated in securing evidence about the processes, and perhaps the nature of the human organism is such as to prevent the securing of any clear-cut and objective evidence on these processes. In any case, attention on the processes of thought must mean the development of new techniques for psychological research. It may also require a change from large-scale testing and mass studies to those which involve small numbers of subjects studied by rather intensive techniques. The question of whether such research would be fruitful, or even possible, can be answered only after many serious attempts have been made. The challenging nature of the problem and the tremendous possibilities which would arise from a successful attack and solution should serve to channel much of our research effort to this field.  
( 5, page 4 )

## CHAPTER II

### REVIEW OF THE RELATED LITERATURE

A holistic view of personality cannot discount observed test behavior and the case history as legitimate and necessary data in a clinical setting. The utility of the Rorschach Method as an experimental instrument, however, depends in large part on its diagnostic value independently of clinical data extraneous to the protocol itself. While the present study deals with neither the reliability nor validity directly, it must of necessity address itself to similar basic issues in Rorschach research regarding rationale and methodology.

First, a further elaboration of why this is not a validation study. When we question the validity of a test we actually inquire into whether the test measures what it purports to measure. For the time being, this will not concern us directly. This study actually deals with what precedes decisions regarding validity, namely, what were some of the processes of reasoning that led up to the decision. Only secondarily,

does this decision agree with some criterion of accuracy (validity).

Once this decision-making is subjected to rigorous scrutiny, perhaps we will be in a better position to assess validity - to what extent is this decision-making dependent on objective test data and does it find confirmation in other areas.

Since there are no generally accepted hypotheses, concepts, and specific theories in Rorschach research, we can only concur with MacFarlane (16) that "the first step in projective research should be an explicit statement of concepts used and an orientation with respect to theoretical biases." This study will not attempt to establish any of these hypotheses, concepts, and theories, but rather will take a step toward assessing those utilized by a number of analysts in our sample. For the present, then, we are not questioning the validity of the Rorschach, but will simply proceed on the premise that it has proven useful in clinical practice. This premise obviously does not obviate the recognition of the continuing necessity of more refined validation studies.

On the contrary, the fact that the method has seemed helpful enough to gain such widespread use should point to the value of extensive validation research to ascertain how it 'works' as well as it does, what its errors and limitations are, and generally to refine and improve it as a tool. The inner conviction

of validity that comes to the worker as he uses the technique may be personally reassuring, but it must be held as scientifically suspect. (15, page 407)

Perhaps the present effort may make some contribution to the exposition of the "inner workings" of the Rorschach and provide an important ingredient in future validation studies.

Although the current study is not concerned with validation directly, it finds its most meaningful orientation within the framework of validation research. Within the context of some of the more popular methods in this area, the perspective of the present study can be more precisely delineated.

In general, most studies of the Rorschach appear to be reducible to two basic approaches - those which adopt an analytical approach, isolating single variables for observation, and those which deal essentially with the personality as an integrated unit. Beck accepts this dichotomy in Rorschach research as a natural division when he states that

Validation is within two totally different spheres of reference - the person as a whole --- and --- the psychological traits or the impersonal Rorschach factors which stand for these traits.  
(1, page 91)

This simple twofold classification by no means implies that any particular study is readily categorized as one type or the other or that the theoretical orientation of the investigator unequivocally labels him Atomist or Holist. The complex interplay of synthetic as well as analytic processes in a Rorschach interpretation provides a wide latitude for the type of research techniques that can be adapted to it.

The Rorschach technique is holistic rather than atomistic. This is not to imply that the interpretation is based on a total, unanalyzed impression growing out of clinical experience. On the contrary, a great deal of highly differentiated perception on the examiner's part has gone into the analysis. The final interpretation, however, is in the form of a dynamic sketch of the way in which the personality functions; the interpretation forms a highly integrated and articulated whole. (15, page 411 )

While a method can be adapted with some flexibility to this complex process of Rorschach analysis, it also imposes certain limits on the type of data or results it can yield. Thus we have analytical methods which might be typified by

1. attempts to validate single determinants by comparing them with outside criteria presumed to measure the same personality characteristic, exemplified in Elizur's ( 9 ) simple scheme of scoring the Rorschach for

anxiety and hostility and then comparing these scores with questionnaires and self-ratings.

2. Various adaptations of factor analysis attempting to isolate certain basic dimensions of personality encompassing several scoring categories. A frequently cited study is that of Wittenborn (31) who correlated and factored various Rorschach responses and reduced these to four basic factors.

Each category of responses or measurable datum becomes a single variable to be validated or studied in its interrelationships with other variables in the Rorschach Test. Cronbach (8) has thoroughly explored the many pitfalls of these analytic techniques, but nonetheless remains an outspoken critic of "wholeness" in Rorschach validation research (7). This attitude in no way disregards the importance of evaluating any Rorschach score in relation to the unique pattern of scores for the individual. He simply feels that there are no practical statistical procedures for studying the infinitely complex interrelationships of scores on which the clinician normally relies. In place of assessing unique patterns, he suggests

the statistician can at best study certain specific patterns likely to occur in many records. A pattern can be exceedingly complex; there is no statistical reason to prevent one from studying whether



(for example) more men than women show high-S-on-colored-cards-accompanied-by-emphasis-on-M-and-excess-of-CF-over-C. The only limitation the statistical approach imposes is that the same pattern of scores must be studied in all cases. (8, page 417)

While acknowledging the practical impossibility of a comprehensive statistical appraisal of Rorschach data, Cronbach does approach a configurational analysis in his insistence that "specific patterns" be studied in preference to isolated functions. The multi-stimulational nature of the Rorschach is both grossly over-simplified and misrepresented in studies of single variables.

The present study obviously has little in common with studies of single variables or individual hypotheses. The nature of the technique, dealing with the process of interpretation, involved the utilization of as comprehensive a body of Rorschach data as possible to meet the analyst's interpretive requirements.

Factor analysis of Rorschach data generally is based on similarly complete original data. When factors are isolated, a great deal of difficulty may be encountered in reaching any agreement regarding their interpretation. In view of this difficulty, it has been suggested that factor analysis might be more meaningfully considered a source of interpretive hypotheses rather

than a validating device ( 15, page 472 ). When applied to interpretive data rather than scores ( 10 ), factor analysis might prove a valuable adjunct to the present study. While factored data would yield relatively static clusters of interpretive hypotheses, however, the present study focuses its emphasis on the on-going processes of analysis.

Among the more popular types of studies dealing with "personality-as-a-whole" are

1. blind diagnoses of the Rorschach compared with clinical diagnoses ( 3, 2 ), and
2. what are sometimes termed "clinical studies" in which personality sketches or descriptions derived from Rorschach data are checked against clinical observations. ( 28 )

Although the distinction between the two types may be quite arbitrary, some studies deal with nosological diagnoses as the end products of analysis while others elaborate the personality description in terms of personality dynamics. In either case, these approaches yield rather limited results. If Rorschach results contribute no more than clinical observation to the understanding of a personality, its time-consuming administration seems quite superfluous. It seems safe to assume that most Rorschach examiners use the technique with the conviction that it reaches certain facets

of the personality with considerable economy of time and effort. Furthermore, a high degree of agreement between Rorschach diagnoses and clinical observations is an interesting and reassuring phenomenon, but offers no new insight into the manner in which this concurrence of impressions came about.

Several studies have made tentative approaches toward inferring beyond a mere comparison of scores or diagnoses, placing emphasis instead on the validation of interpretations ( 10, 18 ). The treatment of data, however, was subject to the same limitations as those discussed above.

The present study includes blind diagnoses as one element of data, but the study in no way hinges on the accuracy of these diagnoses. Debatable issues such as the comparability of diagnostic labels and personality descriptions and the expository merits of comparing diagnoses based on different sources of information are validation problems which are quite extraneous to the current study. The main emphasis of this exploration will be on processes of interpretation and whatever interpretive hypotheses these may yield.

Although blind diagnosis was involved in this study, the analysis was directed at the process of diagnosis rather than the diagnostic labels themselves. Zubin considered blind analysis as probably the most important

factor in the acceptance of the Rorschach, but

one would wish that this method could be made more explicit and more public --- Until this method becomes more open to public scrutiny, it has to be placed in the doubtful category and counted neither as a success or as a failure. ( 32, page 305 )

The technique adapted to this study partially meets this limitation. Its expressed intention is to make explicit some of the reasoning involved in blind interpretations. An attempt is made to synthesize quantitative and qualitative data in the assessment of interpretive procedure. As Hertz has noted,

The Rorschach Method is essentially qualitative, but applies quantitative procedure to its qualitative subject matter. It must, then, stand on the terra firma of objectivity without sacrificing those elements which defy measurement. ( 12, page 315 )

She concludes, therefore, that qualitative evaluation and statistical manipulation must and should play their due and proper roles. This prescription seems to be equally applicable to the evaluation of the analysis of Rorschach data. Even when quantitative procedures alone are applied to Rorschach data, Hertz concurs with Cronbach ( 8 ) that these statistical techniques are all too frequently misapplied in challenging the validity of the Rorschach.

Most clinicians nowadays think in dynamic terms and frequently prefer to formulate personality descriptions operationally. In the present

study, however, specific nosological diagnoses seemed to provide a more tangible, definite terminal point to the analysis. Ross ( 25 ) points out that diagnostic labels imply sharp lines of distinction between disorders, where in fact one classification shades into another with much overlapping. Since this study is not directly concerned with validation, the specificity of diagnoses need not concern us.

The only published Rorschach study bearing directly on the current problem was done by Chambers and Hamlin ( 6 ). Five Rorschach records were submitted to twenty psychologists who were asked to match the records with five specific diagnoses. Judges were encouraged to verbalize "hunches" if they felt they were relevant to their diagnoses. After completing the interpretations, each judge was asked to "make four statements summarizing elements of major importance influencing his thinking in arriving at his decision on each record. " Successful judges were found to have greater flexibility in shifting from one level of abstraction to another and to be relatively free of "slavish adherence to textbook statements in regard to sources. " They demonstrated a facility in relating Rorschach elements to over-all concepts of psychopathology.

The present study clearly extends beyond this simple enquiry stage. It seeks basically the same information in a considerably more

precise manner. This information can be gleaned by tracing the process of inference in the introspective data.

A concept similar to that of the utility indices used in the present study was used by Wirt ( 30 ) in his pattern analysis of the Rorschach. In evaluating thirty-two normal, thirty-two neurotic, and thirty-two psychotic records, he noted the frequency with which various determinants were used and the responsivity toward various cards of the Rorschach Test. Pattern analyses were made using the procedure developed by Block, Levine, and McNemar ( 4 ). He found no difference in card patterns, although the three groups were differentiated on their determinant psychograms. In the present study, however, the analysis deals with Rorschach analysts and their sequential procedure, over and above the simple selection of particular categories.

With the materials used in the present study, the Q-sort offers some interesting possibilities ( 26, page 301 ).

Outside of Rorschach research many studies have dealt with the analysis of thought processes. A review of the literature reveals the use of two basic approaches to the problem. The first of these deals with the inference of thought processes from the end products of thought, for example,

tracing the stages in the solution of a problem after it has been solved. The second approach aims more directly at the process of thought itself.

Many carefully-controlled experiments have been conducted in an attempt to define the process of problem-solving by analyzing the product. The basic approach to problems of this nature is illustrated in studies by Heidbreder ( 11 ) and Maier ( 17 ). These studies generally involve some form of puzzle-type problem where success or failure are easily determined. A detailed record is kept of overt behavior and solutions offered. From these solutions attempts are made to trace the probable processes leading to them.

Piaget's ( 19 ) famous language studies with children illustrate another approach to the same problem. From the examination of the language of children he attempted to determine the nature of their reasoning.

The probability of error in this type of approach is obviously quite great. It is impossible to determine which of many avenues of approach may have been followed in reaching a particular solution. Unless an investigator secures ample supporting evidence, he can be confident a particular problem was solved correctly and nothing more.

More directly related to the present exploration are studies dealing with the analysis of thought processes, involving introspection or retrospection. In the introspective approach, the subject reports his thoughts and feelings while performing a certain task as in the classic study by Titchener ( 27 ). A similar approach, representative of many studies in the field of education, was applied to multiple-choice type problems by Bloom and Broder ( 5 ).

The retrospective approach is aptly demonstrated in Wertheimer's Productive Thinking ( 29 ). After completing a certain problem, he reports on the process of thinking that led to the solution as, for example, the thinking that led Einstein to the formulation of his theory of relativity. A similar process of reconstructing the stages of thought was incorporated into the Chambers and Hamlin ( 6 ) study which was reviewed earlier.

The present study favors introspection in the course of analysis over the retrospective reconstruction of an analyst's thinking. Bloom and Broder provide a sound rationale for this preference.

There are several objections to the use of retrospection in studying the nature of mental processes. It is very difficult for a person to remember all the steps in his thought-processes and to report them in the way in which they originally occurred. There is a tendency on the part of the narrator to edit the report, to set forth the



process in a nicely logical order. Things seem to tie together so concisely after the problem has been solved. The narrator will usually omit errors and "dead ends" in his thinking processes. He will not remember the queer quirks and unusual circumstances which surrounded his thinking. Such reports generally present a coherent and well-ordered train of thought rather than the incoherent and jumbled process which may have occurred. The editing is done unconsciously to a large extent, but it tends to introduce a bias into the data obtained. These retrospective accounts are useful, but it must be recognized that they are rebuilt outlines of thought-processes and tend to reveal only the high spots and finished products rather than the raw materials and details in a fantastically complex series of thought steps. ( 5, page 6 )

The technique adapted to the Rorschach in the present study was originally developed by Rimoldi ( 20, 21, 22 ) as a general formulation for the analysis of processes which has been applied chiefly to the evaluation of medical diagnostic ability. It has been extensively explored with particular reference to the differentiation of diagnostic ability at various levels of medical education.

Expert medical diagnosticians were shown to have high Utility Scores (defined later in this report) and high intercorrelations ( 20, page 5 ). For example, one group of six experts had efficiency levels in terms of Utility Scores ranging from .50 to .85 and a measure of agreement,

computed by Kendall's coefficient of concordance (13, page 96 ), of .79. Similarly promising measures of differential skills were found in comparing Juniors and Seniors in medical school. The number of items of information required for diagnosis decreased from Juniors to Seniors and from Seniors to experts. Utility Scores, however, increased from Juniors to Seniors and from Seniors to experts. The technique thus demonstrated a trend toward differentiating levels of proficiency with increasing experience.

More advanced research on the technique ( 22 ) revealed certain significant differences in the utility value Juniors and Seniors respectively ascribed to various items of diagnostic information. Senior students proceeded more critically in their diagnoses, having greater knowledge of the medical situation than Juniors.

Among the related statistical devices incorporated into the present study were a technique of pattern analysis devised by Rimoldi and Grib (24) and a graphic and analytic treatment of Utility Scores developed by Rimoldi, Devane, and Haley (23).

Fifteen years ago Klopfer (14) pointed out the need for greater refinement of instructional techniques in the Rorschach Method. The need still exists today. The Rimoldi technique seems to offer an effective

didactic device which may be adapted to this purpose.

## CHAPTER III

### DESCRIPTION OF SAMPLE AND METHODOLOGY

Relatively little is known about the thought processes that enter into a Rorschach analysis, but certain broad generalizations can be safely assumed. An examiner almost inevitably acquires a particular idiosyncratic mode of approach, perhaps with minor variations, to any Rorschach protocol he attempts to analyze. He may begin by simply reading through the responses to grasp some gross impressions from the content of the type of person with whom he is dealing (especially in a "blind" diagnosis) or he may fix initially on quantifiable scores. Whatever the approach may be, a certain degree of self-consistency is desirable in preference to the novice's frequently random search for clues or, on the other hand, his overly rigid adherence to the sequence of approach prescribed by a textbook. This unique approach peculiar to the individual, an approach with which he feels comfortable so that he can maximize his individual interpretive skills, obviously requires an extensive background of experience. The chief qualifying criterion for the analysts consulted for the study, therefore, was a substantial

experience with the Rorschach technique, sufficiently extensive to provide an opportunity to cultivate certain idiosyncratic habits of analysis.

The criteria for Rorschach examiners included in this study were

1. some formal training in the use of the Rorschach technique,
2. the equivalent of two years of clinical experience in the course of which the Rorschach Test had been routinely administered, and
3. practiced skill in the Klopfer Method of analysis.

The enlisting of analysts for participation in this study proved to be a formidable task. Due to the scarcity of Rorschach analysts with a Klopfer orientation in the Chicago region, the sample was heavily weighted with Loyola-trained analysts. Of the total sample of thirty analysts, nineteen received their training in the Loyola Graduate School and eleven received their formal background in seven other universities --- Catholic U., U. of Chicago, Duke U., U. of Illinois, Indiana U., Northwestern U., and Wayne U. The concern over not securing sufficiently heterogeneous backgrounds proved, in the course of the analysis of data, to be a negligible variable.

The basic materials of this study consisted of three Rorschach protocols obtained while testing two psychiatric patients in a hospital setting and one normal student in a college setting. The diagnoses were verified through consultations with attending psychiatrists and the investigator's thesis adviser. The three cases and their respective diagnoses were:

1. Male, 18 years old, acute schizophrenic
2. Male, 20 years old, normal college student
3. Female, 56 years old, organic --- post-lobotomy in a chronic depressive

The selection of these three cases was based on fairly well-defined symptomatology which would permit differential diagnosis with a reasonable degree of certainty.

The protocols were scored according to the Klopfer system and were checked, discussed, and confirmed by two qualified Rorschach analysts. The scores were recorded and tallied on Klopfer-Davidson Individual Record Blanks from which individual scores were then transferred to 3 x 5 cards (21). The scoring symbol or category appeared on the face of the card along with an identifying number intended to facilitate recording the sequence of cards chosen during the interview. The reverse side of the card contained the corresponding score or pertinent verbalized responses. Thus the analyst

had access to both, the quantitative as well as the qualitative elements of the protocol. Appendix I illustrates examples of the cards and types of information they yielded. Although the content of the protocol was classified according to its corresponding scoring category, it was virtually possible to reconstruct the entire protocol by selecting the majority of the cards.

When each scored category on the Klopfer-Davidson blank was transcribed onto a separate card, each protocol consisted of fifty-two cards, with two additional cards added to the Schizophrenic protocol due to particularly unusual content. These cards were then placed in pockets in a slotted 7 x 14 inch folder, so that only the scoring symbols and card numbers were visible. One of these protocol-folders is illustrated in Appendix II. A practical limit was placed on the necessary number of cards by excluding certain scoring areas containing information which could easily be implied or compiled from information contained on other cards, for example, M: Sum C, Estimate of Intellectual Level, Manner of Approach, etc.

Each analyst was interviewed individually on three Rorschach protocols. The average time spent on the interpretation of each protocol was approximately a half-hour. The serial order of the protocols was systematically rotated to control any possibility of bias due to the order of

presentation. On the basis of six different serial orders, six sub-groups of five analysts each were formed. The sub-groups and the respective orders in which they analyzed the three protocols are listed in Table I.

TABLE I  
SUB-GROUPS BASED ON  
ROTATION OF PROTOCOLS

<u>Sub-Groups</u>	<u>Order of Presentation</u>
A . . . . .	Schizophrenic-Organic-Normal
B . . . . .	Normal-Organic-Schizophrenic
C . . . . .	Organic-Normal-Schizophrenic
D . . . . .	Schizophrenic-Normal-Organic
E . . . . .	Normal-Schizophrenic-Organic
F . . . . .	Organic-Schizophrenic-Normal

The interview with the analyst was introduced as a test of the analyst's diagnostic skill. With a nosological clinical diagnosis as his goal, he was requested to select in the best order the cards with the information he felt was "necessary and sufficient to arrive at a diagnosis." He was fully briefed on the format of the test and advised to scan the entire list of fifty-two



items from which he would make his selections. The detailed instructions in Appendix III were read verbatim to the analyst. Any questions regarding procedure were fully resolved before beginning the test proper. These instructions were obviously not repeated on the two subsequent protocols although specific directions were clarified on request. As the analyst launched into the task, he was encouraged to "think aloud" or to mumble in the course of his interpretation if he was able to do so without being seriously distracted.

The analyst then proceeded to select as few or as many cards as he wished until he felt that he had sufficient evidence on which to base his diagnostic decision. No restrictions were placed on the order in which cards were selected, although once the card was removed from its pocket, its sequential position was thereby determined. He read the information on the back of the card and placed it on a spindle where the information could be reviewed at any time, but not changed in sequence. He was permitted to make notations in the course of his interpretation and was supplied with location charts for particular scoring categories upon request. The analysis was terminated when a diagnosis was reached.

During the analysis, a record was kept of the number of each card selected along with the verbalizations and behavior of the analyst.

Besides the bare sequence, therefore, the record revealed some of the logic, "hunches", and hypotheses interwoven into the interpretation. A complete copy of one analyst's interpretation of the Normal protocol is recorded in Appendix IV to illustrate the nature of the data obtained. It contains the sequence of cards and scoring categories selected along with the corresponding introspective data.

Statistical procedures will be incorporated into the following chapter along with the analysis of data. To preserve the unity and coherence of the analysis, qualitative aspects of interpretation will be discussed immediately following the relevant quantitative data.

## CHAPTER IV

### ANALYSIS OF DATA AND RESULTS

The amount of information the analysts required to reach a diagnosis was one of the most variable factors in the entire study. Some were content to venture a diagnosis after noting only a few of the key cards of the protocol while others all but exhausted the available information. Of the fifty-two cards, six were sufficient to prompt a diagnosis for one analyst while another required forty-nine cards before concluding his analysis. Table II lists the mean number of cards selected along with the wide range found on each protocol. There was a wide range of variation around the mean of twenty-two cards per protocol for the entire sample of thirty analysts, each interpreting three protocols.

The amount of diagnostic data, in terms of the number of cards required in the three different cases, remained quite constant for any particular analyst. There were vast individual differences among the analysts, however, along with a remarkable individual consistency on the three protocols. The analysts at the extremes in terms of number of cards,

TABLE II

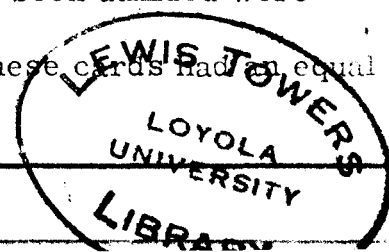
NUMBER OF CARDS  
REQUIRED FOR DIAGNOSIS

Protocol	Mean Number of Cards Selected	Range
Schizophrenic	22 <sup>a</sup>	9 - 49
Normal	20	7 - 46
Organic	23	6 - 47

<sup>a</sup> Means rounded off to nearest whole numbers

selected 49, 46, and 47 cards in one instance and 6, 12, and 7 cards in the other instance on the Schizophrenic, Normal, and Organic protocols, respectively. The other analysts were similarly consistent. The number of cards they selected seemed to be a direct function of their personal needs rather than the variations in complexity of various diagnostic problems.

For computational purposes, each card was assigned a rank in the sequence of selection. Those cards which had not been utilized were assigned an average rank under the assumption that these cards had an equal



probability of being the next card chosen. The averaged rank was computed by the formula

$$A_r = (n_s + 1) + \left[ \frac{n - (n_s + 1)}{2} \right]$$

which was simplified to read

$$A_r = \frac{n + n_s + 1}{2}$$

where  $n$  = the total number of cards in the protocol,

$n_s$  = the number of cards selected by the analyst, and

$A_r$  = the averaged rank.

The number of tied ranks, then, was the number of cards assigned an averaged rank ( $A_r$ ) or simply

$$t = n - n_s$$

where  $t$  was the number of tied ranks for any particular subject. In computing the communality of sequences for an entire group, a summative correction for the tied ranks of each subject was incorporated into the coefficient of concordance. This was expressed in the formula

$$T = \frac{1}{12} \sum (t^3 - t)$$

The communality of judgments of the members of each group was expressed in Kendall's coefficient of concordance, designated by  $W$ . (13, page 96)

$$W = \frac{S}{\frac{1}{12} m^2 (n^3 - n) - m \sum T}$$

where  $m$  = the number of subjects in the group,

$n$  = the total number of cards in the protocol, and

$S$  = the sum of the squared deviations from the mean sum of ranks on any particular card, thus

$$S = \sum (\sum r_k - M_{\sum r_k})^2$$

where  $r_k$  = the rankings assigned to any particular card  $k$  by all members of the group and

$M_{\sum r_k}$  = the mean of the summed rankings.

Unlike correlations on two variables where the measure ranges from a plus value to a minus value (+1 to -1), the  $W$  or coefficient of concordance comparing several rankings can only assume positive values (+1 to zero). A low agreement within the group is simply reflected in a low positive value of  $W$ , approaching zero as the base where there is no agreement whatsoever.

When the sequences of card selection within the eighteen subgroups (divided according to rotation of protocols) were compared, the coefficients of concordance ( $W$ 's) listed in Table III ranged from .35 to .60.

TABLE III

COEFFICIENTS OF CONCORDANCE ( W's )  
OF SUB-GROUPS AND ENTIRE SAMPLE  
ON THREE PROTOCOLS

Sub-Groups	Protocols		
	Schizophrenic	Normal	Organic
A	.49	.41	.37
B	.48	.60	.54
C	.47	.58	.52
D	.43	.51	.44
E	.51	.55	.43
F	.36	.39	.35
Entire Sample	.37	.40	.35

The sequences on which these coefficients are based appear in Appendices V, VI, and VII. With the exception of one measure, Group F's .35 on the Organic protocol, all coefficients were significant at the .001 level of confidence. The .35 was significant at the .01 level. Group F was considerably below the mean coefficient on each record. This discrepancy was

largely due to one analyst who accepted the terms of the test and then proceeded largely on the basis of content analysis. Eliminating his performance elevated Group F very markedly, raising it to a level more directly comparable to the other groups. For example, the Normal protocol was raised from a W of .39 to .47.

The median coefficients of concordance ( W's ) for the six groups on three protocols, the Schizophrenic, Normal, and Organic, were .48, .53, and .44, respectively. When the order in which the three protocols were analyzed was discounted, the sub-groupings were obviated and we dealt with what might be termed three "major groups", that is, the entire sample of thirty analysts on each of three protocols. The coefficients of concordance on the major groups were .37, .40, and .35 on the Schizophrenic, Normal, and Organic protocols, respectively, all of which were significant at the .001 level. These were somewhat lower than the typical performance of the sub-groups since they obviously measured the lowest common denominator of agreement among all analysts in the sample. The significance of the W was measured by a modification of Fisher's Z distribution using the chi square table of values. Chi square was computed by the formula ( 13, page 100 )

$$X^2 = \frac{S}{\frac{1}{12} mn (n+1) - \frac{1}{n-1} \sum T}$$



Since the degrees of freedom ( $n - 1$ ) exceeded 30 (in the current study  $v = 52$ ), readings could not be made directly from the table of  $X^2$ . The quantity  $\sqrt{2X^2}$  was taken as distributed normally about the mean  $\sqrt{2v - 1}$  with unit variance. Thus, substitution in the formula  $Z = \bar{O} - M$  yielded the following formula for  $Z$

$$Z = \sqrt{2X^2} - \sqrt{2v - 1}$$

Though there is no established procedure for evaluating the significance of these differences (13, page 102), their relative magnitudes are consistent with the investigator's expectations based on observation. The rich content of the Normal Record, lacking gross symptomatology, yielded abundant evidence for cross-validation of diagnostic impressions. While the proportion of accurate diagnoses was no greater than those on the other records, the impression of normality seemed to be formed with considerably more confidence. Comparatively, the Organic protocol suffered from a dearth of diagnostic clues and, therefore, elicited more random behavior on the part of the analyst, thus depressing the W. The Schizophrenic protocol seemed to strike an intermediate course. It was the most complex in content and symptomatology and, as will be seen later in this report, posed the most difficult diagnostic decision.

In view of the lengthy sequence being ordered, 52 items, and the diversity of backgrounds in our sample of 30 analysts, the W's cited above reflected a definite lawfulness in the order of accumulating diagnostic Rorschach evidence. Certain priorities were implicitly assigned to particular scoring categories presumed to contain basic orientation data. For example, the selection of the first card was restricted to nine of the fifty-two scoring categories, although fully a third of the analysts agreed on the total number of responses (R) as a sound base for orientation. F% and M were also prominent first choices. From this base the analyst then proceeded to fill out the personality profile until he attained a sufficiently refined impression of the personality to permit him to venture a diagnostic opinion with some measure of confidence.

The possibility was considered that the concordance obtained was merely a spurious measure of Rorschach interpretation. Since almost two-thirds of the analysts were Loyola U. alumni, it seemed conceivable that the congruence in procedure merely reflected a similarity in training the majority received in the Klopfer system of Rorschach analysis. The data of the nineteen Loyola-graduate-trained analysts were collated with those obtained from the eleven non-Loyola analysts of various backgrounds.

TABLE IV

LOYOLA GROUP VERSUS NON-LOYOLA GROUP  
MEASURES OF AGREEMENT

Protocol	Coefficient of Concordance (W)		Correlation of Utility Indices
	Loyola	Non-Loyola	
Schizophrenic	.40	.40	.81
Normal	.46	.40	.60
Organic	.39	.37	.77

Table IV lists the coefficients of concordance for these two groups. It indicates a close agreement between these groups on all three protocols with the Schizophrenic, Normal, and Organic W's of .40, .46, and .39, respectively, for the Loyola group and .40, .40, and .37, respectively, for the non-Loyola group, all significant at the .001 level. The communality of judgments regarding sequence, therefore, seemed to be more directly related to an intrinsic logic in the Klopfer Method of Rorschach analysis than to the specific training or theoretical orientation of the analyst. The correlations of utility indices, also appearing in Table IV, will be discussed below.

The sequences of card selection were subjected to another test of agreement applying a new technique of pattern analysis developed by Rimoldi and Grib (24). Each analyst's sequence on each of three protocols was compared with an "ideal sequence," which will be discussed later in this report (Table VIII). Ideally, an analyst would have achieved the most efficient selection of data if he had chosen the cards conforming to the "ideal sequence." Even if he had chosen only ten cards, the best possible choices and sequence would have been prescribed by the first ten cards of the "ideal sequence." Thus, we have the observed pattern, the actual cards the analyst selected in the particular sequence he had selected them, and the expected pattern, which is the same number of cards specified as to type and order by the "ideal sequence." The Rimoldi-Grib technique presents a method of assessing group relationships of the discrepancies between observed and expected patterns.

The assessment of group relationships is based on weighted cells and expressed in an Index of Agreement ( $I_a$ ) which varies from 1.00 (perfect agreement) to zero (minimum possible agreement). If the patterns of the thirty analysts' card selections on a particular protocol conformed completely to that of the "ideal sequence," the observed pattern would be identical with the expected pattern and the Index of Agreement would equal

1.00. If, on the other hand, there were a minimum possible agreement between the observed pattern of the analysts and the expected pattern or "ideal sequence" the Index of Agreement would be zero.

In the present study, the Indices of Agreement between the analysts' patterns and the "ideal" pattern were .73, .74, and .74 on the Schizophrenic, Normal, and Organic protocols, respectively. A test of the significance of the Index of Agreement is currently being developed.<sup>1</sup> The consistency of these indices on the three protocols lends support to the findings discussed above regarding the lawfulness in the order of accumulating diagnostic Rorschach evidence.

Having established some measure of parallelism in the sequences of card selection, attention was then directed to the ranking of the cards in terms of utility. In terms of the frequency a card with a particular scoring category was selected, its utility value could be expressed quantitatively. The utility index of any particular scoring category was simply a ratio between the number of persons selecting the category and the number of

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<sup>1</sup> Personal communication with Dr. Rimoldi, December, 1958.

analysts in the group, expressed in the simple formula ( 22, page 5 )

$$i_j = \frac{n_j}{N}$$

where  $i_j$  = utility index for card j on a particular protocol

$n_j$  = the number of persons who chose card j, and

$N$  = the total number of persons in the group.

Discounting the influence of any particular individual, his contribution to the magnitude of the utility index on a card he had selected, the utility index simply became ( 22, page 31 )

$$i_j = \frac{n_j - 1}{N - 1}$$

The value of utility indices would obviously vary with different cards in relationship to the group, ranging on a scale from 1.00 to zero. Except for one instance, discussed below, the size of the group in the present study remained constant,  $N = 30$ . If all these analysts selected a particular card, then  $i_j = 1.00$ ; if none of them selected a card, then  $i_j = .00$ .

Utility indices were computed for each of 52 cards on each of three protocols. These are listed in Tables V, VI, and VII in the order of magnitude from the highest utility index to the lowest, along with the corresponding Rorschach scoring category. This yielded a ranking of the

TABLE V

RANKED UTILITY INDICES ON  
THE SCHIZOPHRENIC PROTOCOL

Rank	Card Number	Utility Index	Scoring Category
1	40	.97	R
2.5	7	.90	FM
2.5	46	.90	F+%
4	12	.86	F%
5	6	.83	M
6	17	.79	CF
7	8	.72	m
9.5	4	.66	d%
9.5	5	.66	Dd/S%
9.5	16	.66	FC
9.5	18	.66	C
12.5	1	.59	W
12.5	24	.59	Cont:At
14.5	11	.55	FK
14.5	38	.55	P
16.5	3	.52	D%
16.5	25	.52	Cont:Sex
19	13	.48	Fc
19	15	.48	C'
19	39	.48	Orig.
23	2	.45	W%
23	19	.45	Cont:H
23	43	.45	Achr. Reac. T
23	44	.45	Chrom. Reac. T
23	48	.45	H+A
26.5	21	.41	Cont:A
26.5	49	.41	SumC

TABLE V continued

RANKED UTILITY INDICES ON  
THE SCHIZOPHRENIC PROTOCOL

Rank	Card Number	Utility Index	Scoring Category
28.5	10	.38	K
28.5	42	.38	T/R
31	14	.34	c
31	20	.34	Cont:Hd
31	47	.34	A%
34	9	.28	k
34	37a	.28	Cont:Expl.
34	45	.28	FK+Fc
36.5	22	.24	Cont:Ad
36.5	51	.24	W:M
38.5	34	.21	Cont:Blood
38.5	52	.21	Succ.
40	37	.17	Cont:Abst.
42.5	26	.14	Cont:Obj.
42.5	29	.14	Cont:Geo.
42.5	33	.14	Cont:Clouds
42.5	50	.14	VIII, IX, X
46.5	35	.10	Cont:Fire
46.5	36	.10	Cont:Mask
46.5	37b	.10	Cont:Fossils
46.5	41	.10	T
49.5	23	.07	Cont:Aobj.
49.5	30	.07	Cont:Art
52	28	.03	Cont:N
52	31	.03	Cont:Arch.
52	32	.03	Cont. Embl.
54	27	0	Cont:Pl.



TABLE VI  
RANKED UTILITY INDICES ON  
THE NORMAL PROTOCOL

Rank	Card Number	Utility Index	Scoring Category
1	6	.97	M
2	40	.93	R
3	16	.90	FC
4	7	.89	FM
5.5	12	.83	F%
5.5	17	.83	CF
7	46	.79	F+%
8	8	.69	m
9	13	.66	Fc
10	11	.62	FK
11.5	15	.59	C'
11.5	18	.59	C
13.5	1	.55	W
13.5	38	.55	P
15	25	.52	Cont:Sex
16	3	.48	D%
17.5	19	.45	Cont:H
17.5	44	.45	Chrom. Reac. T
20	10	.41	K
20	43	.41	Achr. Reac. T.
20	48	.41	H+A
22.5	5	.38	Dd/S%
33.5	39	.38	O
25	14	.34	c
25	24	.34	Cont:At
25	49	.34	Sum C
27	45	.31	FK+Fc

TABLE VI continued

RANKED UTILITY INDICES ON  
THE NORMAL PROTOCOL

Rank	Card Number	Utility Index	Scoring category
29.5	2	.28	W%
29.5	9	.28	k
29.5	42	.28	T/R
29.5	47	.28	A%
34	4	.24	d%
34	21	.24	Cont:A
34	37	.24	Cont:Abst.
34	50	.24	VIII, IX, X
34	51	.24	W:M
37	52	.21	Succ
38.5	20	.14	Cont:Hd
38.5	41	.14	T
41.5	30	.10	Cont:Art
41.5	33	.10	Cont:Cl.
41.5	34	.10	Cont:Bl.
41.5	36	.10	Cont:Mask
45.5	23	.07	Cont:Aobj.
45.5	26	.07	Cont:Obj.
45.5	32	.07	Cont:Embl.
45.5	35	.07	Cont:Fire
48.5	22	.03	Cont:Ad
48.5	28	.03	Cont:N
51	27	0	Cont:Pl
51	29	0	Cont:Geo.
51	31	0	Cont:Arch

TABLE VII  
RANKED UTILITY INDICES ON  
THE ORGANIC PROTOCOL

Rank	Card Number	Utility Index	Scoring Category
1	40	.93	R
2	12	.90	F%
3	17	.86	CF
4.5	15	.83	C'
4.5	46	.83	F+%
6.5	7	.79	FM
6.5	38	.79	P
9	6	.76	M
9	16	.76	FC
9	18	.76	C
11	19	.69	Cont:H
12.5	1	.62	W
12.5	13	.62	Fc
15.5	24	.59	Cont:At
15.5	25	.59	Cont:Sex
15.5	43	.59	Achr. Reac. T.
15.5	44	.59	Chrom. Reac. T.
19	8	.52	m
19	21	.52	Cont:A
19	49	.52	Sum C
21	39	.48	Orig.
22	42	.45	T/R
24.5	3	.38	D%
24.5	14	.38	c
24.5	20	.38	Cont:Hd
24.5	47	.38	A%
27	11	.34	FK

TABLE VII continued

RANKED UTILITY INDICES ON  
THE ORGANIC PROTOCOL

Rank	Card Number	Utility Index	Scoring Category
30.5	2	.31	W%
30.5	5	.31	Dd/S%
30.5	9	.31	k
30.5	45	.31	FK+Fc
30.5	48	.31	H+A
30.5	50	.31	VIII, IX, X
34.5	10	.28	K
34.5	26	.28	Cont:Obj.
37	4	.24	d%
37	32	.24	Cont:Embl.
37	52	.24	Succ.
39.5	22	.21	Cont:Ad
39.5	36	.21	Cont:Mask
41.5	37	.17	Cont:Abst.
41.5	51	.17	W:M
44.5	29	.14	Cont:Geo.
44.5	30	.14	Cont:Art
44.5	31	.14	Cont:Arch.
44.5	35	.14	Cont:Fire
48.5	27	.10	Cont:Pl.
49.5	28	.10	Cont:N
48.5	33	.10	Cont:Cl
48.5	41	.10	T
51.5	23	.07	Cont:Aobj.
51.5	34	.07	Cont:Blood

Rorschach scores in terms of their perceived importance by the thirty analysts. Since they had been instructed to select only those scores they felt were "necessary and sufficient" to arrive at a diagnosis, these rank orders mirrored the relative amounts of critical information the scores were judged to contribute to a diagnosis.

Scanning of the scoring categories ranked in terms of utility indices (Tables V, VI, and VII) reveals a certain basic agreement, particularly in the highest ten categories selected on each protocol. Later in this report, the utility index of scoring categories will be demonstrated to correlate with their respective sequential positioning. Subsequent discussion will, therefore, assume this relationship. For example, categories with high utility index will generally be presumed to be selected first by the analyst.

Apart from areas of concern peculiar to the particular case, the analysis of the three protocols reflected a general agreement that the total number of responses, R, the degree of dependence on form for delineating responses, F%, and the quality of responses, F+%, were necessary basic data for orientation when utilizing a Rorschach protocol for diagnostic purposes. From this base, the skeletal structure of the personality was developed in terms of certain major determinants of the psychogram, lending

prominence to the movement and color responses. Movement responses were apt to be restricted to FM and M, introducing m when a more refined elaboration of inner life or more precise estimate of tension level was required. Color responses centered largely in FC and CF except when serious emotional pathology appeared evident. Pure C was then introduced for substantiation.

As noted above, areas of concern peculiar to the individual protocol introduced minor variations in the "top ten" categories.

1. In the Schizophrenic Protocol, the excessive rigidity of the personality elicited the analyst's concern with the subject's handling of small detail - Dd/S% and d%.
2. In the Normal Protocol, the wary attempt of the analyst to discount evidence of pathology and to further delineate the psychogram was reflected in the seeking of evidence for normality with FK and Fc.
3. In the Organic Protocol, the sterility of the record gave rise to suspicions regarding depression, C', and the basic question regarding contact with reality, P.

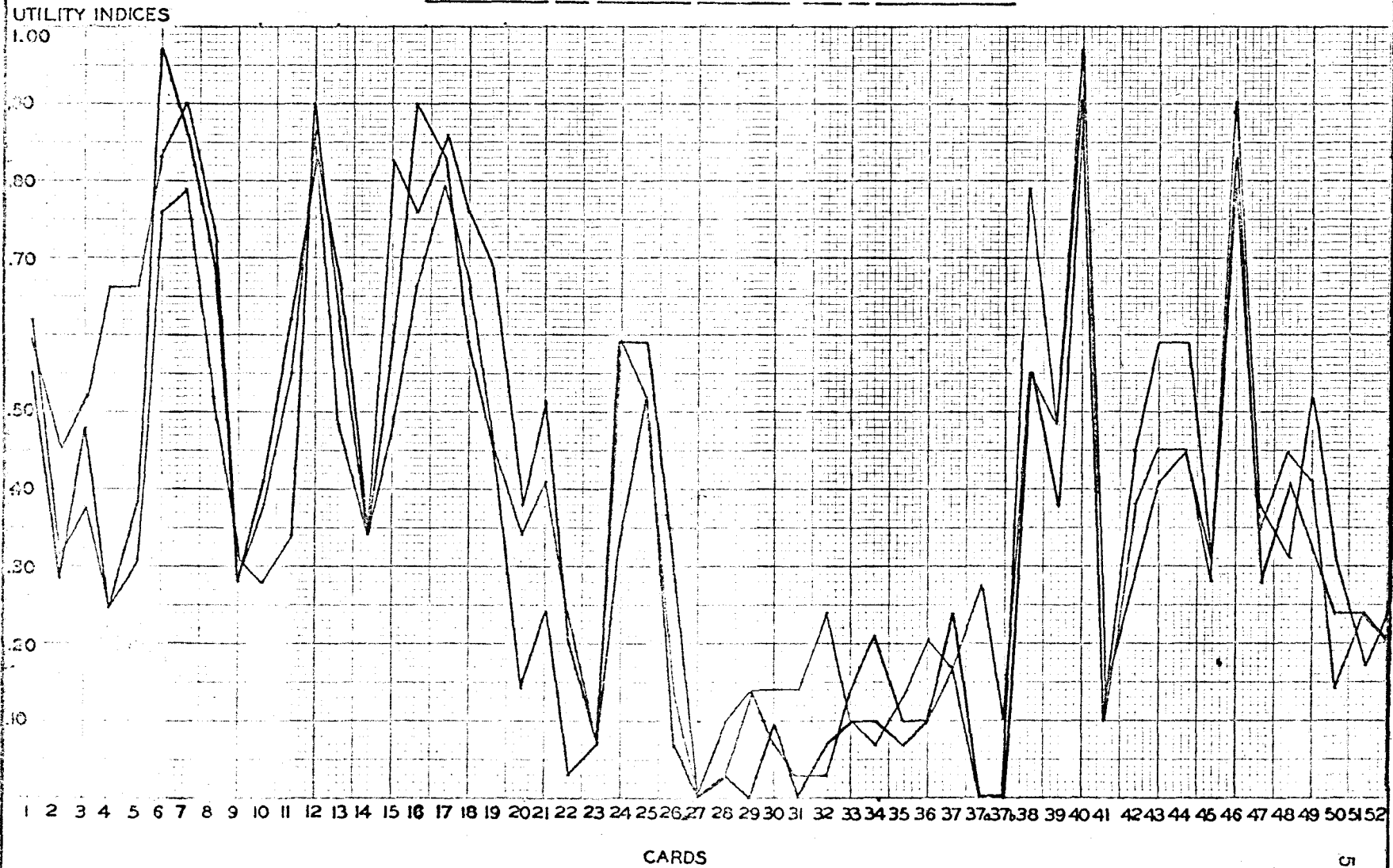
In this approach, requiring the systematic ordering of Rorschach data, the explicit delineation of the personality in terms of specific content

was largely deferred to the latter half of the test in terms of sequence. The logical order the analyst followed appeared to be somewhat as follows. The analyst proceeded from the more objective, quantifiable data to the more symbolic, qualitative data. Having established some estimate of productivity ( R ), control ( F% ), and quality of responses ( F+% ), he began to outline a specific personality structure in terms of determinants in the psychogram. Dominant emphasis was placed on the phantasy life and creative potentialities as reflected in movement responses, mainly FM and M, and emotional controls and balance as reflected in the handling of color, chiefly FC and CF. After further filling-in and elaborating the psychogram, the analyst proceeded to seek more detailed, unique attributes of the personality in the content and generally concluded his analysis in this area. From time to time he referred to ratios as check-points in the course of analysis.

At this point in the analysis of data, there was no manifest pattern between the stage where the analyst concerned himself with determinants in the psychogram and the final, almost exclusive concern with content. The intervening pattern of analysis was not, however, random and indeterminate. There was, as a matter of fact, a high degree of agreement regarding the relative value of particular scoring categories as reflected in a W of .92 among the rankings of utility indices on three protocols. Figure 1

FIGURE 1

PATTERNS OF UTILITY INDICES ON 3 PROTOCOLS





illustrates the similarity in the patterns of ranked utility indices on the three protocols. Scoring categories with a high utility value, those yielding the most significant diagnostic information, retained this high value regardless of the particular protocol to which they applied. Perhaps we might say that those particular scoring categories having high utility values were judged significant sources of information quite independently of the individual diagnostic case. They were almost unanimously recognized among our sample of Rorschach analysts as critical sources of Rorschach data. The same interpretation naturally applied to the scoring categories of low and intermediate values.

Since the coefficient of concordance of the ranked utility indices on the three protocols was high (  $W = .92$  ), the inter-protocol variations were assumed to be quite minor. This factor supplied the rationale for positing an "ideal sequence" of utility values by combining the three rankings. Ignoring the minor variations, the thirty analysts on three protocols were considered as virtually ninety analysts making ninety individual interpretations. Thus, considering  $N = 90$  and still discounting each individual's contribution to his own scores on each of three protocols, the Total Utility Index (  $I_j$  ) for each scoring category was computed by the formula

$$I_j = \frac{n - 3}{N - 3}$$

These utility indices, yielding the "ideal sequence" of utility indices, are ranked in Table VIII.

A comparison of the Loyola and non-Loyola groups in terms of utility indices, based on individual protocols, revealed a moderately high level of agreement with correlations of .80, .60, and .77 on the Schizophrenic, Normal, and Organic protocols, respectively. These appear in Table IV. In the inter-group comparisons the formula for utility indices was used without the correction ( $i_j = \frac{n}{N}$ ) since these measures had reference solely to the group.

The utility indices on each scoring category on each of the three protocols were used as the basic units for determining a numerical measure of the analyst's interpretive efficiency. The most efficient procedure would consist of selecting cards in terms of their empirically determined utility value. The scoring category with the highest utility index would be selected first, the second highest next, and so forth down to the categories with the lowest utility indices. The analyst's efficiency would generally be judged highest if he chose few cards with high utility indices. The individual's Utility Score was simply the mean of the utility indices on the scoring categories he had selected. Since the analysts invariably initiated their interpretations by selecting cards of high utility, the selection of a large

TABLE VIII  
RANKED UTILITY INDICES ON  
THREE COMBINED PROTOCOLS  
"IDEAL SEQUENCE"

Rank	Card Number	Utility Index	Scoring Category
1	40	.94	R
2	12	.86	F%
3.5	6	.85	M
3.5	7	.85	FM
5	46	.84	F+%
6	17	.83	CF
7	16	.77	FC
8	18	.67	C
9	8	.64	m
10.5	15	.63	C'
10.5	38	.63	P
12.5	1	.59	W
12.5	13	.59	Fc
14	25	.54	Cont:Sex
15	19	.53	Cont:H
16.5	11	.51	FK
16.5	24	.51	Cont:At
18	44	.49	Chrom. Reac. T.
19	43	.48	Achr. Reac. T.
20	3	.46	D%
21.5	5	.45	Dd/S%
21.5	39	.45	Orig.
23	49	.43	Sum C
24.5	21	.39	Cont:A
24.5	48	.39	H+A
26	4	.38	d%
27	42	.37	T/R

TABLE VIII continued .

RANKED UTILITY INDICES ON  
THREE COMBINED PROTOCOLS  
"IDEAL SEQUENCE"

Rank	Card Number	Utility Index	Scoring Category
28.5	10	.36	K
28.5	14	.36	c
30	2	.34	W%
31	47	.33	A%
32	45	.30	FK+F+Fc%
33.5	9	.29	k
33.5	20	.29	Cont:Hd
35	50	.23	VIII, IX, X
36.5	51	.22	W:M
36.5	52	.22	Succ.
38	37	.20	Cont:Abst.
39.5	22	.16	Cont:Ad
39.5	26	.16	Cont:Obj.
41	36	.14	Cont:Mask
42	34	.13	Cont:Blood
44	32	.11	Cont:Embl.
44	33	.11	Cont:Clouds
44	41	.11	T
46.5	30	.10	Cont:Art
46.5	35	.10	Cont:Fire
48	29	.09	Cont:Geo.
49	23	.07	Cont:Aobj.
50.5	28	.06	Cont:N
50.5	31	.06	Cont:Arch.
52	27	.03	Cont:PL

number of cards could influence the Utility Score in only one direction, that of reducing the score.

Table IX lists the analysts' Utility Scores on each of the protocols. The Utility Scores on each protocol were ranked and a coefficient of concordance was computed on the three rankings. A W of .80 indicated a high degree of individual consistency. Since their relative levels of performance remained quite consistent on the three protocols their mean Utility Scores constituted reasonably accurate indications of their over-all efficiency of performance. The mean Utility Scores ranged from .41 to .72 with a median of .59 and a standard deviation of .09.

At this stage of the investigation, an hypothesis of efficiency with self-consistency was posed. A comparison of Utility Scores on three protocols demonstrated a reasonably constant level of efficiency typifying each analyst's performance. This measure simply had reference to the economy of card selection and the utility value of those selected. Since the Utility Scores correlated  $-.65$  with the number of cards selected, a cautious restraint in the selection of data was rewarded with a higher score. No question of order or sequence was involved. An hypothesis was proposed that the mean efficiency level of the analyst would be reflected in a proportionately systematic selection of cards (sequence) to which he adhered quite

TABLE IX

INDIVIDUAL ANALYST'S UTILITY SCORES  
AND MEASURES OF CONSISTENCY

Analyst	Utility Scores			Mean Utility Score	Coefficients of Concordance
	Schizophrenic	Normal	Organic		
AM	.52	.52	.47	.50	.67
AT	.53	.49	.53	.52	.82
AJ	.54	.53	.60	.57	.64
AB	.73	.66	.57	.65	.75
AK	.64	.58	.65	.62	.73
BL	.55	.64	.69	.63	.71
BM	.59	.53	.61	.58	.64
BW	.61	.71	.61	.64	.70
BP	.53	.62	.59	.58	.78
BB	.59	.61	.56	.59	.70
CH	.56	.62	.58	.59	.79
CM	.56	.50	.53	.53	.74
CL	.59	.61	.56	.59	.67
CB	.56	.65	.57	.59	.80
CG	.70	.70	.72	.71	.89
DR	.60	.53	.65	.59	.67
DB	.72	.72	.69	.71	.84
DF	.55	.55	.53	.54	.71
DO	.47	.54	.48	.50	.62
DC	.41	.43	.45	.43	.82
ED	.58	.66	.69	.64	.75
ET	.57	.69	.66	.64	.84
EN	.60	.65	.69	.65	.76
EM	.53	.54	.48	.52	.74
EG	.41	.39	.43	.41	.82

TABLE IX continued

INDIVIDUAL ANALYST'S UTILITY SCORES  
AND MEASURES OF CONSISTENCY

Analyst	Utility Scores			Mean Utility Score	Coefficients of Concordance
	Schizophrenic	Normal	Organic		
FL	.53	.48	.63	.55	.71
FW	.74	.72	.70	.72	.77
FG	.57	.55	.59	.57	.73
FM	.51	.56	.56	.54	.61
FD	.69	.71	.62	.67	.80
Range	.41 - .74	.39 - .72	.43 - .72	.41 - .72	.61 - .89
Median	.57	.60	.59	.59	.74
SD	.09	.09	.08	.07	.07

faithfully on each protocol.

An inter-protocol comparison of each analyst's three sequences of card selection yielded coefficients of concordance ranging from .61 to .89 with a median of .74 and a standard deviation of .07. These coefficients also appear in Table IX. While the median W of .74 indicated a generally high degree of self consistency and orderliness in Rorschach interpretation, it bore little or no relationship to the individual analyst's efficiency level as measured by his Utility Score ( $r = .22$ ).

This suggested that even the highly effective diagnostician, in terms of Utility Score, may be quite flexible and adaptable in his interpretive procedure, depending on the individual case under analysis. On the other hand, the inefficient analyst may be hampered by a crippling rigidity of approach which tolerates no variation. These situations occurred with sufficient frequency in this study to suggest that while the Utility Score may have been a reasonable approximation of skill, the sequential consistency on several protocols was probably more closely related to the analyst's personality. The truly effective diagnostician may well be characterized by

1. an economy and prudence in the selection of Rorschach data and
2. a mastery of the test which, unhampered by personal insecurity and constriction in behavior, permits him a natural flexibility in adapting Rorschach findings meaningfully to the individual case.

Validation of this hypothesis, however, is beyond the scope of the current investigation.

A factor that is notably evident in the foregoing discussion of Utility Scores and W's is that the latter is a relatively independent, quite extraneous index of sequence. It reveals nothing relevant to the nature of the individual's sequence which might be meaningfully related to his Utility



Score. The Utility Score indicates the average level of utility indices on the cards chosen and, indirectly, whether few or many cards were chosen. As noted earlier, Utility Scores correlated  $-.65$  with the number of cards chosen. The coefficient of concordance reveals that, whatever the sequence of cards may have been, the sequence was consistent to a certain degree, as reflected in the W figure.

An attempt was made to relate the magnitude of utility indices directly to the sequence in which they were selected, based on an original technique devised by Rimoldi, Devane, and Haley (23). Ideally, the most efficient selection of cards was assumed to be a progression from the card of highest utility value to the lowest. The analyst might have been expected to select the cards yielding the most diagnostic information first and then proceeding progressively toward those yielding little or no information, assuming he had used all of it. Accordingly, the cards were ranked in terms of the magnitude of their utility indices (Tables V, VI, and VII). The cumulative sums of the ranked utility indices were then plotted to yield the "best possible" pattern or sequence of card selection in terms of diagnostic value. The "worst possible" pattern would theoretically be the cumulative sum of a complete reversal of the original ranking, selecting cards of the lowest utility indices first. These two extreme sequences prescribed the

elliptical fields in Figures 2, 3, and 4 within the limits of which each analyst's sequence could be plotted and relatively assessed. The individual patterns were simply the cumulative sums of utility indices on the cards each analyst selected in his particular order of selection.

When the entire group of thirty patterns were plotted for any particular protocol, the result was too hopelessly complex to make any intelligible observations. Consequently, nine analysts were selected to represent the median and extreme scores on each protocol - three analysts with the highest Utility Scores, three with median scores, and three with the lowest scores ( see Figures 2, 3, and 4 ).

While the Utility Scores clearly distinguished these three groups, these graphic illustrations demonstrate more meaningfully how the number of cards and their utility values mutually determined the individual's Utility Score. Similar patterns on the three protocols indicated that the efficient analyst selected few cards, but these few were selected carefully in terms of their high utility values. On each protocol, the three high analysts had very comparable patterns, adhering closely to the "best possible" pattern in their sequences of selection. The low-scoring analysts, as a group, tended to depart quite markedly from the "best possible" pattern. They may have initially followed a fairly efficient pattern, perhaps on the first ten cards,

FIGURE 2  
PATTERNS OF UTILITY IN DATA SELECTION  
SCHIZOPHRENIC PROTOCOL

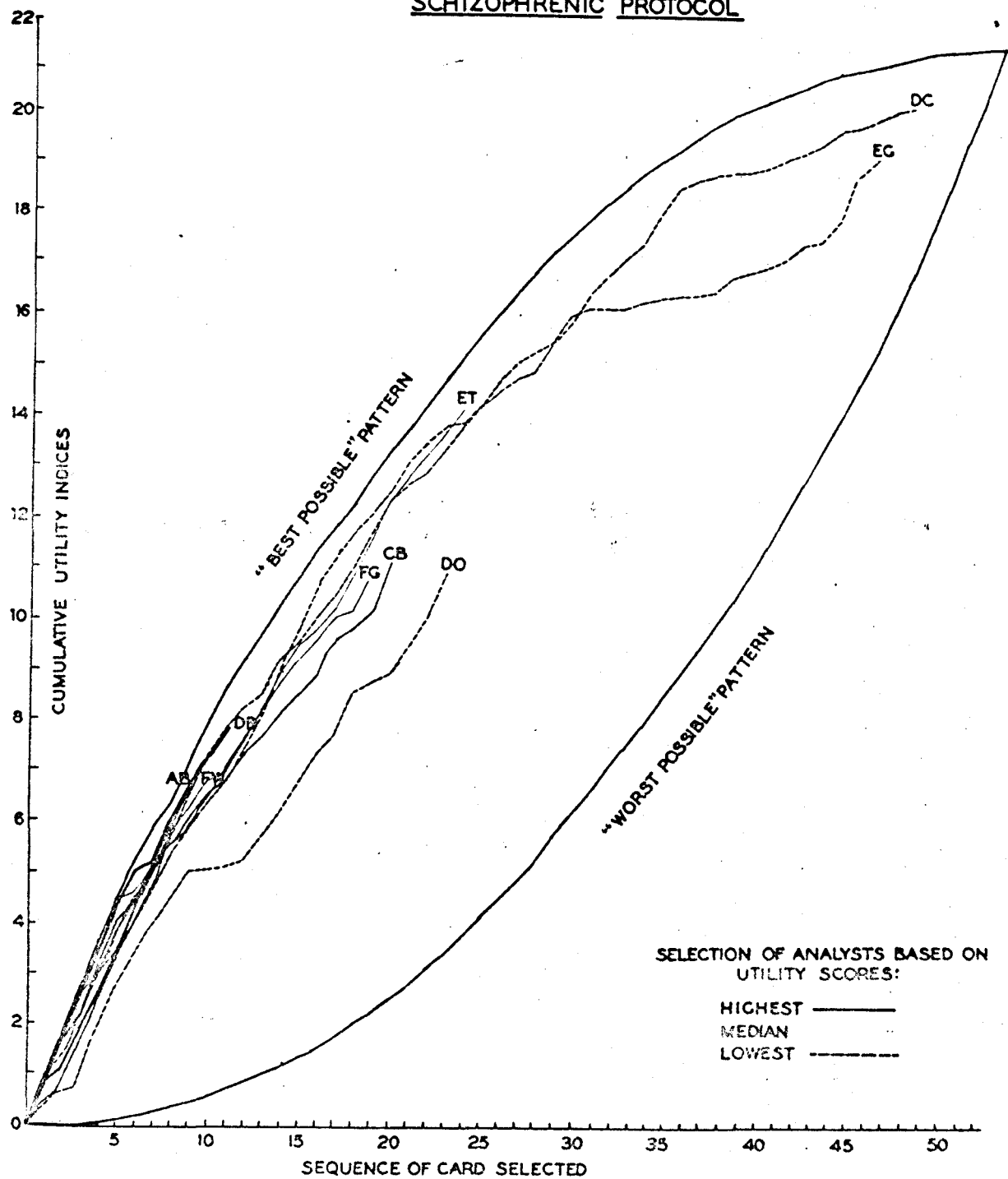
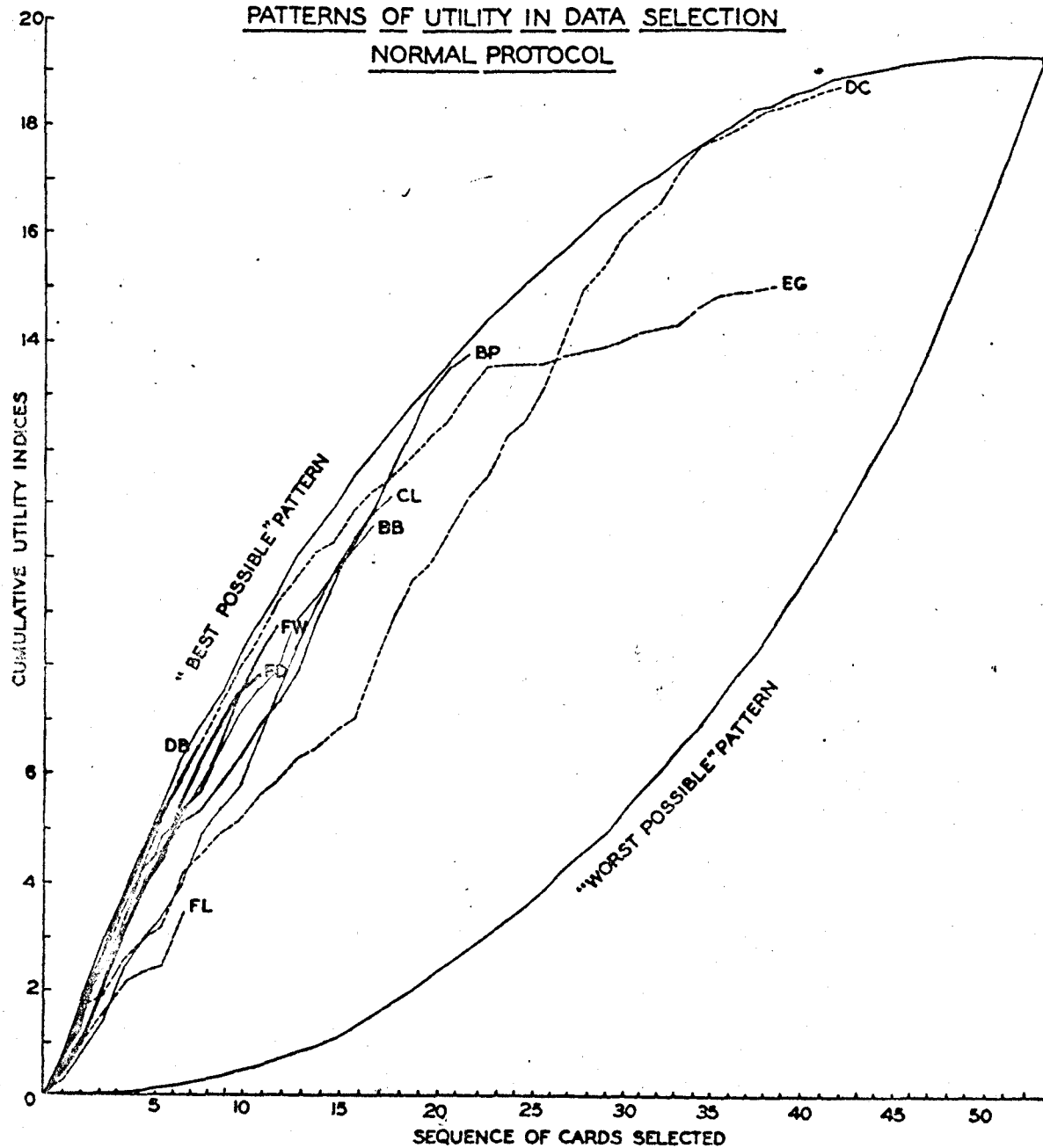


FIGURE 3

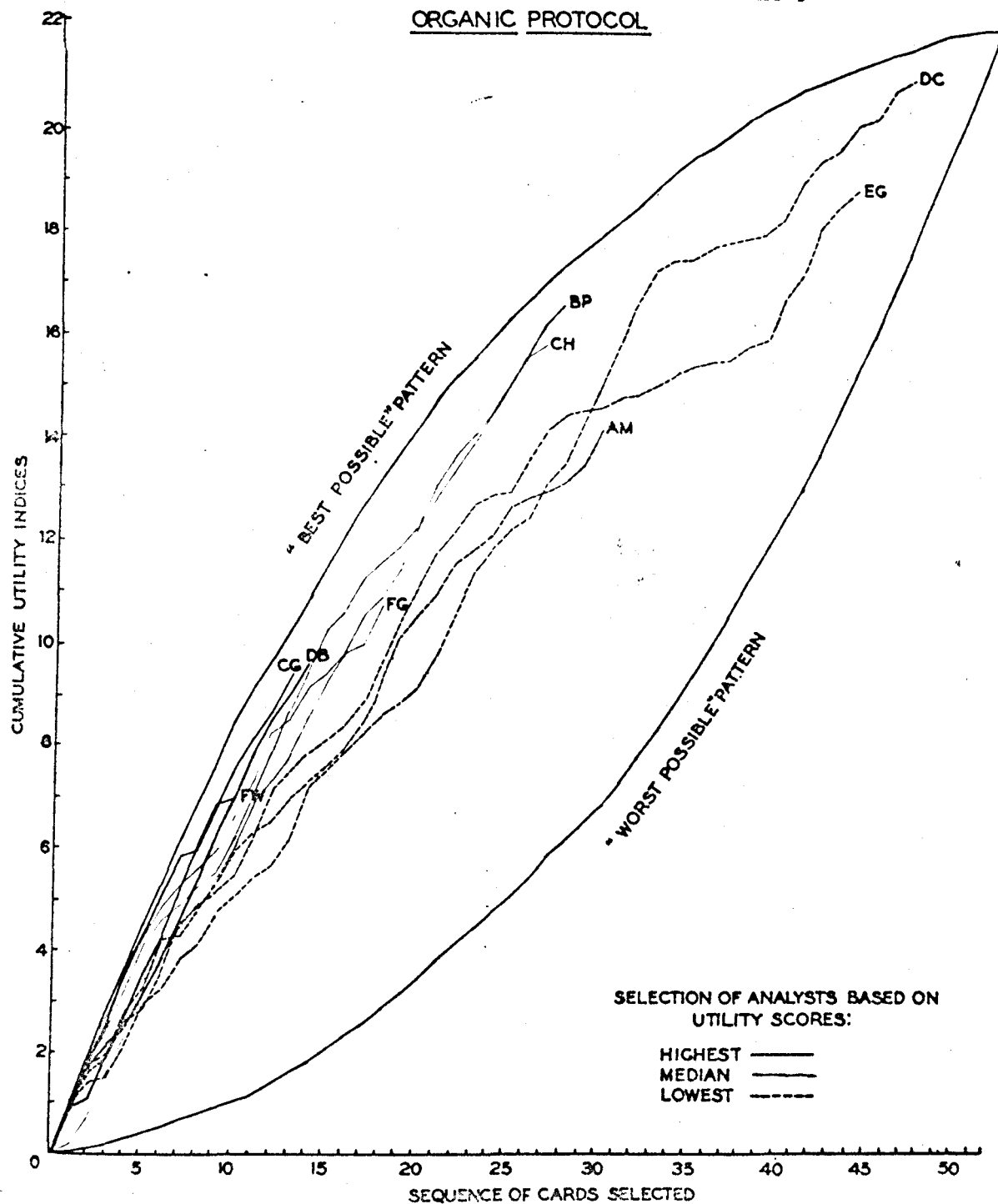
PATTERNS OF UTILITY IN DATA SELECTION  
NORMAL PROTOCOL



SELECTION OF ANALYSTS BASED ON  
UTILITY SCORES:

HIGHEST ———  
MEDIAN - - - -  
LOWEST . . . . .

FIGURE 4  
PATTERNS OF UTILITY IN DATA SELECTION  
ORGANIC PROTOCOL



but then proceeded to reduce their score by arbitrarily accumulating an excessive amount of superfluous information. In some cases the low-scoring analyst deviated from group patterns quite early in his analysis and never regained his lost ground in terms of the group norms of efficient performance. The analysts who approximated the median rank in Utility Scores struck an intermediate course in terms of sequential patterns. They neither adhered to the "best" pattern as consistently as the high scorers, nor did they follow the deviant, sometimes erratic, course of the low scorers. In the amount of information required for diagnosis (number of cards selected) they similarly favored a middle ground.

It is interesting to note that, as wide as the discrepancies in pattern may have been, all patterns were confined to the upper half of the elliptical field. Perhaps this merely reflected the homogeneity of the sample, the fact that all subjects possessed a practiced skill in Rorschach analysis. It is also interesting to note that the highest, median, and lowest groups of analysts were most clearly differentiated on the Organic protocol ( Figure 4 ), the protocol with the least definitive diagnostic clues.

The foregoing discussion of patterns did not involve a direct comparison of individual cards within a sequence, but rather a comparison of utility values. As noted in Tables V, VI and VII, however, there was not

a one-to-one relationship between utility indices and specific cards since frequent ties occurred in utility indices. A more rigorous assessment, therefore, was made of the individual sequences. Each analyst's sequence of card selection was correlated with the Ideal sequence. The coefficients of correlation (  $\rho$ 's ) for the ninety individual sequences are listed in Table X along with the Utility-Score data which is reproduced here from Table IX to facilitate comparison. The individual's approximation of the Ideal sequence in his own selections was clearly related to his general level of efficiency. A moderate level of agreement was found between the correlation of individual sequences with the Ideal sequence and Utility Scores on the Normal and Organic protocols. These correlated .57 and .58, respectively. The significantly lower correlation of .37 on the Schizophrenic protocol probably was due to the greater complexity of this diagnostic problem, as noted earlier.

The sequential positioning of cards ( with corresponding scoring categories ) appeared to be related largely to their utility values ( Table IV ). Perhaps this is what one might anticipate - the most useful information would be sought first. This tentative observation did not discount the possibility, however, that certain increments of data might prove to be most fruitful information-wise at some advanced stage in the interpretation. One might

TABLE X

CORRELATION OF INDIVIDUAL SEQUENCES OF CARD SELECTION  
AND IDEAL SEQUENCE OF RANKED UTILITY INDICES  
WITH CORRESPONDING UTILITY SCORES

Analyst	Protocol					
	Schizophrenic		Normal		Organic	
	Rho	Utility Score	Rho	Utility Score	Rho	Utility Score
AM	.50	.52	.46	.52	.27	.47 <sup>c</sup>
AT	.58	.53	.76	.49	.62	.53
AJ	.50	.54 <sup>a</sup>	.53	.58	.57	.60
AB	.62	.73 <sup>a</sup>	.66	.66	.65	.57
AK	.65	.64	.58	.58	.64	.65
BL	.60	.55	.77	.64	.76	.69
BM	.59	.59	.73	.53	.67	.61
BW	.52	.61	.73	.71	.58	.61
BP	.70	.53	.76	.62 <sup>b</sup>	.73	.59 <sup>b</sup>
BB	.75	.59	.63	.61 <sup>b</sup>	.58	.56
CH	.66	.56	.72	.62	.78	.58 <sup>b</sup>
CM	.64	.56	.66	.50	.58	.53
CL	.46	.59	.63	.61 <sup>b</sup>	.59	.56
CB	.62	.56 <sup>b</sup>	.65	.65	.72	.57
CG	.58	.70	.69	.70	.68	.72 <sup>a</sup>
DR	.64	.60	.62	.53	.75	.65
DB	.65	.72 <sup>a</sup>	.71	.72 <sup>a</sup>	.68	.69 <sup>a</sup>
DF	.67	.55	.66	.55	.44	.53
DO	.24	.47 <sup>c</sup>	.57	.54	.52	.48
DC	.66	.41	.57	.43 <sup>c</sup>	.45	.45 <sup>c</sup>

a High Scorers

b Median Scorers

c Low Scorers



TABLE X continued

CORRELATION OF INDIVIDUAL SEQUENCES OF CARD SELECTION  
AND IDEAL SEQUENCE OF RANKED UTILITY INDICES  
WITH CORRESPONDING UTILITY SCORES

Analyst	Protocol					
	Schizophrenic		Normal		Organic	
	Rho	Utility Score	Rho	Utility Score	Rho	Utility Score
ED	.70	.58	.78	.66	.65	.69
ET	.73	.57 <sup>b</sup>	.64	.69	.70	.66
EN	.61	.60	.73	.65	.65	.69
EM	.64	.53	.64	.54	.46	.48
EG	.55	.41 <sup>c</sup>	.51	.39 <sup>c</sup>	.42	.43 <sup>c</sup>
FL	.44	.53	.44	.48 <sup>c</sup>	.51	.63
FW	.68	.74 <sup>a</sup>	.72	.72 <sup>a</sup>	.58	.70 <sup>a</sup>
FG	.50	.57 <sup>b</sup>	.55	.55	.53	.59 <sup>b</sup>
FM	.38	.51	.60	.56	.60	.56
FD	.73	.69	.69	.71 <sup>a</sup>	.62	.62
Range	.24 - .75	.41 - .74	.44 - .78	.39 - .72	.27 - .78	.43 - .72
Median	.62	.57	.66	.59	.61	.59
SD	.11	.09	.09	.08	.11	.08
Correlation of Rho's and Utility Scores	.37		.57		.58	

a High Scorers

b Median Scorers

c Low Scorers

find, for example, that the Average Time Per Response ( T/R ) was never selected early in the sequence as orientation data, but was almost invariably checked by the analysts in the latter part of the interpretation as confirmatory evidence, before venturing a diagnosis. On each card, therefore, a comparison was made of its utility index with its median position in terms of quartile units.

Each analyst's sequence was divided into quarters. For example, if he had selected twenty cards, five were selected in the first quarter and five in each of the other three quarters. The median position of each card was determined graphically by taking into account the number of analysts who chose a particular card and the proportion of these analysts who chose it in each quarter of the test. The quartile placement of the card in each analyst's sequence was obviously a function of the total number of cards the individual analyst had selected. In this manner the empirically derived priority accorded each scoring category was determined. ( 21, page 453 ).

The median value of each scoring category appears with its corresponding utility value and dispersion in Tables XI, XII, and XIII. A high priority in terms of the sequence of cards was reflected in a numerically low median value. A comparison of these values with the corresponding utility indices yielded negative correlations of a moderately high degree.

TABLE XI

RELATIONSHIP OF UTILITY INDEX,  
MEDIAN POSITION, AND DISPERSION  
OF EACH SCORING CATEGORY:

## SCHIZOPHRENIC PROTOCOL

Rank of Utility Indices	Utility Indices	Card Number	Scoring Category	Median Position (Quartile Units)	Dispersion (Interquartile Range)
1	.97	40	R	.90	1.12
2.5	.90	46	F+%	.97	2.31
2.5	.90	7	FM	1.40	1.54
4	.86	12	F%	.76	1.00
5	.83	6	M	.84	1.33
6	.79	17	CF	1.90	1.54
7	.72	8	m	2.00	1.63
9.5	.66	16	FC	1.66	1.91
9.5	.66	5	Dd/S%	1.70	1.60
9.5	.66	4	d%	2.00	1.83
9.5	.66	18	C	2.00	2.00
12.5	.59	1	W	1.50	1.72
12.5	.59	24	At	2.77	1.69
14.5	.55	38	P	1.97	1.34
14.5	.55	11	FK	2.58	1.58
16.5	.52	3	D%	1.63	2.16
16.5	.52	25	Sex	2.86	1.12
19	.48	13	Fc	2.15	2.06
19	.48	15	C'	2.25	1.34
19	.48	39	O	2.25	1.61
23	.45	2	W%	1.00	1.36
23	.45	19	H	2.35	1.40
23	.45	44	ChrT	2.76	1.61
23	.45	43	AchrT	2.76	1.65
23	.45	48	H+A	2.88	2.39
26.5	.41	49	SumC	.92	1.44
26.5	.41	21	A	2.12	1.61
28.5	.38	42	T/R	1.24	2.00
28.5	.38	10	K	3.14	1.26

TABLE XI continued

RELATIONSHIP OF UTILITY INDEX  
MEDIAN POSITION, AND DISPERSION  
OF EACH SCORING CATEGORY:

## SCHIZOPHRENIC PROTOCOL

Rank of Utility Indices	Utility Indices	Card Number	Scoring Category	Median Position (Quartile Units)	Dispersion (Interquartile Range)
31	.34	47	A%	1.91	1.73
31	.34	20	Hd	2.50	.62
31	.34	14	c	2.18	1.56
34	.28	45	FK+Fc	1.43	.76
34	.28	9	K	2.84	1.36
34	.28	37a	Expl	3.43	.57
36.5	.24	51	W:M	1.68	1.35
36.5	.24	22	Ad	2.66	.67
38.5	.21	52	Succ	2.76	1.65
38.5	.21	34	Bl	3.31	.88
40	.17	37	Abst	3.25	.89
42.5	.14	50	VIII, IX, X	1.25	1.25
42.5	.14	26	Obj	2.25	1.25
42.5	.14	29	Geo	3.37	.62
42.5	.14	33	Cl	3.50	.50
46.5	.10	41	T	1.00	1.26
46.5	.10	35	Fire	3.50	.50
46.5	.10	36	Mask	3.50	.50
46.5	.10	37b	Fossils	3.50	.50
49.5	.07	30	Art	2.50	1.49
49.5	.07	23	Aobj	3.26	.87
52	.03	31	Arch	2.50	2.00
52	.03	28	N	3.00	1.00
52	.03	32	Embl	3.50	.50
54	0	27	Pl	2.50	.50

TABLE XII

RELATIONSHIP OF UTILITY INDEX,  
MEDIAN POSITION, AND DISPERSION  
OF EACH SCORING CATEGORY:

## NORMAL PROTOCOL

Rank of Utility Indices	Utility Indices	Card Number	Scoring Category	Median Position (Quartile Units)	Dispersion (Interquartile Range)
1	.97	6	M	.83	1.06
2	.93	40	R	.76	.98
3	.90	16	FC	1.55	1.32
4	.86	7	FM	1.45	2.28
5.5	.83	12	F%	1.35	1.05
5.5	.83	17	CF	1.70	1.67
7	.79	46	F+%	1.37	1.84
8	.69	8	m	2.50	2.01
9	.66	13	Fc	1.88	1.55
10	.62	11	FK	2.18	1.80
11.5	.59	18	C	1.67	1.62
11.5	.59	15	C'	2.56	1.37
13.5	.55	1	W	1.10	1.27
13.5	.55	38	P	2.08	1.43
15	.52	25	Sex	2.78	1.68
16	.48	3	D%	1.50	1.93
17.5	.45	19	H	2.23	1.76
17.5	.45	44	ChrT	3.02	1.67
20	.41	10	K	2.28	1.82
20	.41	48	H+A	3.00	1.00
20	.41	43	AchrT	3.08	1.47
22.5	.38	5	Dd/S%	1.66	1.45
22.5	.38	39	O	2.00	1.35
25	.34	49	SumC	.93	1.30
25	.34	14	c	2.43	1.02
25	.34	24	At	3.33	1.22
27	.31	45	FK+Fc	2.50	1.88
29.5	.28	47	A%	1.51	1.64
29.5	.28	2	W%	2.26	2.67

TABLE XII continued

RELATIONSHIP OF UTILITY INDEX,  
MEDIAN POSITION, AND DISPERSION  
OF EACH SCORING CATEGORY:

## NORMAL PROTOCOL

Rank of Utility Indices	Utility Indices	Card Number	Scoring Category	Median Position (Quartile Units)	Dispersion (Interquartile Range)
29.5	.28	42	T/R	2.78	2.19
29.5	.28	9	k	3.10	1.42
34	.24	51	W:M	1.24	1.08
34	.24	4	d%	2.00	1.99
34	.24	50	VIII, IX, X	2.66	1.33
34	.24	21	A	2.67	1.34
34	.24	37	Abst	3.19	1.11
37	.21	52	Succ	2.56	2.50
38.5	.14	41	T	1.75	1.64
38.5	.14	20	Hd	3.17	1.97
41.5	.10	30	Art	2.68	.65
41.5	.10	36	Mask	3.33	.37
41.5	.10	33	Cl	3.33	.67
41.5	.10	34	Bl	3.50	.50
45.5	.07	23	Aobj	3.27	.87
45.5	.07	26	Obj	3.50	.50
45.5	.07	32	Embl	3.50	.50
45.5	.07	35	Fire	3.50	.50
48.5	.03	28	N	3.00	1.00
48.5	.03	22	Ad	3.50	.50
51	0	27	Pl	2.50	.50
51	0	29	Geo	2.50	.50
51	0	31	Arch	2.50	.50

TABLE XIII

RELATIONSHIP OF UTILITY INDEX,  
MEDIAN POSITION, AND DISPERSION  
OF EACH SCORING CATEGORY:

## ORGANIC PROTOCOL

Rank of Utility Indices	Utility Indices	Card Number	Scoring Category	Median Position (Quartile Units)	Dispersion (Interquartile Range)
1	.93	40	R	.67	.65
2	.90	12	F%	.89	1.41
3	.86	17	CF	2.18	1.35
4.5	.83	46	F+%	1.25	1.26
4.5	.83	15	C'	2.07	1.78
6.5	.79	7	FM	1.60	.86
6.5	.79	38	P	1.89	1.93
9	.76	6	M	.77	1.01
9	.76	16	FC	1.78	1.50
9	.76	18	C	1.95	1.59
11	.69	19	H	2.90	1.91
12.5	.62	1	W	1.38	1.97
12.5	.62	13	Fc	2.25	1.20
15.5	.59	43	AchrT	1.85	1.88
15.5	.59	44	ChrT	1.85	2.00
15.5	.59	24	At	2.79	1.13
15.5	.59	25	Sex	3.02	1.07
19	.52	49	SumC	.90	1.29
19	.52	8	m	1.63	1.20
19	.52	21	A	2.68	1.00
21	.48	39	O	2.30	2.16
22	.45	42	T/R	1.00	2.64
24.5	.38	47	A%	1.78	1.29
24.5	.38	14	c	2.40	1.32
24.5	.38	3	D%	2.49	1.79
24.5	.38	20	Hd	3.15	1.09
27	.34	11	FK	2.51	1.63
30.5	.31	2	W%	1.50	1.43
30.5	.31	45	FK+Fc	1.75	2.05

TABLE XIII continued

RELATIONSHIP OF UTILITY INDEX,  
MEDIAN POSITION, AND DISPERSION  
OF EACH SCORING CATEGORY:

## ORGANIC PROTOCOL

Rank of Utility Indices	Utility Indices	Card Number	Scoring Category	Median Position (Quartile Units)	Dispersion (Interquartile Range)
30.5	.31	50	VIII, IX, X	2.00	1.99
30.5	.31	9	k	2.25	1.25
30.5	.31	5	Dd/S%	2.25	1.37
30.5	.31	48	H+A	3.00	1.75
34.5	.28	10	K	2.38	1.19
34.5	.28	26	Obj	3.11	1.93
37	.24	4	d%	2.48	1.85
37	.24	52	Succ	3.00	1.50
37	.24	32	Emb;	3.00	2.03
39.5	.21	22	Ad	3.12	.98
39.5	.21	36	Mask	3.12	1.18
41.5	.17	51	W:M	.60	.60
41.5	.17	37	Abst	2.93	2.01
44.5	.14	31	Arch	3.16	.97
44.5	.14	30	Art	3.18	1.32
44.5	.14	29	Geo	3.38	.63
44.5	.14	35	Fire	3.38	.63
48.5	.10	41	T	1.50	2.70
48.5	.10	27	Pl	3.00	1.00
48.5	.10	28	N	3.34	.67
48.5	.10	33	Cl	3.34	.67
51.5	.07	34	Bl	2.51	1.68
51.5	.07	23	Aobj	3.26	.87



On the Schizophrenic, Normal, and Organic protocols these correlations were  $-.62$ ,  $-.67$ , and  $-.59$ , respectively. These are listed with other relevant relationships in Table XIV.

TABLE XIV  
CORRELATION OF UTILITY INDICES  
WITH SEQUENTIAL POSITIONING OF  
SCORING CATEGORIES

Protocol	Median vs. Utility Index	Utility Index vs. Interquartile Range	Median vs. Interquartile Range
Schizophrenic	$-.62$	$.49$	$-.47$
Normal	$-.67$	$.40$	$-.35$
Organic	$-.59$	$.07$	$-.22$

The correlations signify a general tendency to initiate an interpretation of Rorschach data by concentrating on areas presumed to yield the greatest amount of diagnostic information. The close relationship between utility and priority was most evident in the extremes as noted in Figures 5, 6, and 7. The ten categories of highest and lowest utility were most consistently positioned in terms of utility indices. The scoring categories most frequently selected by the analysts were also the categories chosen first or early in the analysis. The diagnostic utility of these

categories undoubtedly determined this priority in the analyst's perceptual field. The analysts similarly approached unanimity regarding the categories they ignored or relegated toward the end of their analyses.

The scoring categories with intermediate utility indices were characterized by wide variability regarding their sequential positions. Although there was a general trend for categories of high utility to assume priority over those of low utility, there were also notable exceptions to the trend. Conspicuous departures from the pattern were found on the Schizophrenic protocol in W%, T/R, FK+Fc, T, VIII, IX, X%, W:M, and Sum C, on the Normal protocol in Dd/S%, c, A%, W:M, and T, and on the Organic protocol in T/R, A%, W%, W:M, and T. These scoring categories can be largely reduced to location, time factors, and scoring ratios. While these areas assumed a relatively minor role in the diagnostic process, they seemed to be selected prematurely relative to the significance of the information they were presumed to contribute. Though they may not have been intrinsic elements in the logical development of a diagnosis, they were consulted early in the course of analysis as check points, perhaps quite tangential to the main stream of the analyst's diagnostic formulation. It seems reasonable to assume that these scoring categories were considered convenient sources of confirmatory evidence, although the introspective evidence

obtained does not yield definitive support to his hypothesis.

Two corollary hypotheses were that

1. scoring categories chosen earlier (low median values) would have a smaller dispersion and
2. the more important categories (high utility values) would have proportionately smaller dispersion.

The underlying assumption was that scoring categories which were prominently distinguished as important sources of information (high utility indices) would be more apt to be consistently positioned in sequence than those over which there was a marked division of opinion. This assumption would apply similarly to scoring categories positioned at the beginning of the sequence (low median values) since these were found to correlate negatively with utility values ( Table XIV ).

Accordingly, along with the calculation of medians, interquartile ranges were computed graphically and plotted in reference to their corresponding medians and utility values for each card in Figures 5, 6, and 7. Table XIV lists the correlations between the medians and dispersions (interquartile ranges) which were consistently negative. This measure would seem to suggest that the earlier a card was scored, the less consist-

FIGURE 5

## RELATIONSHIP OF UTILITY INDICES, MEDIAN AND DISPERSIONS ON THE SCHIZOPHRENIC PROTOCOL

INTERQUARTILE  
RANGE ———  
MEDIAN  
POSITION

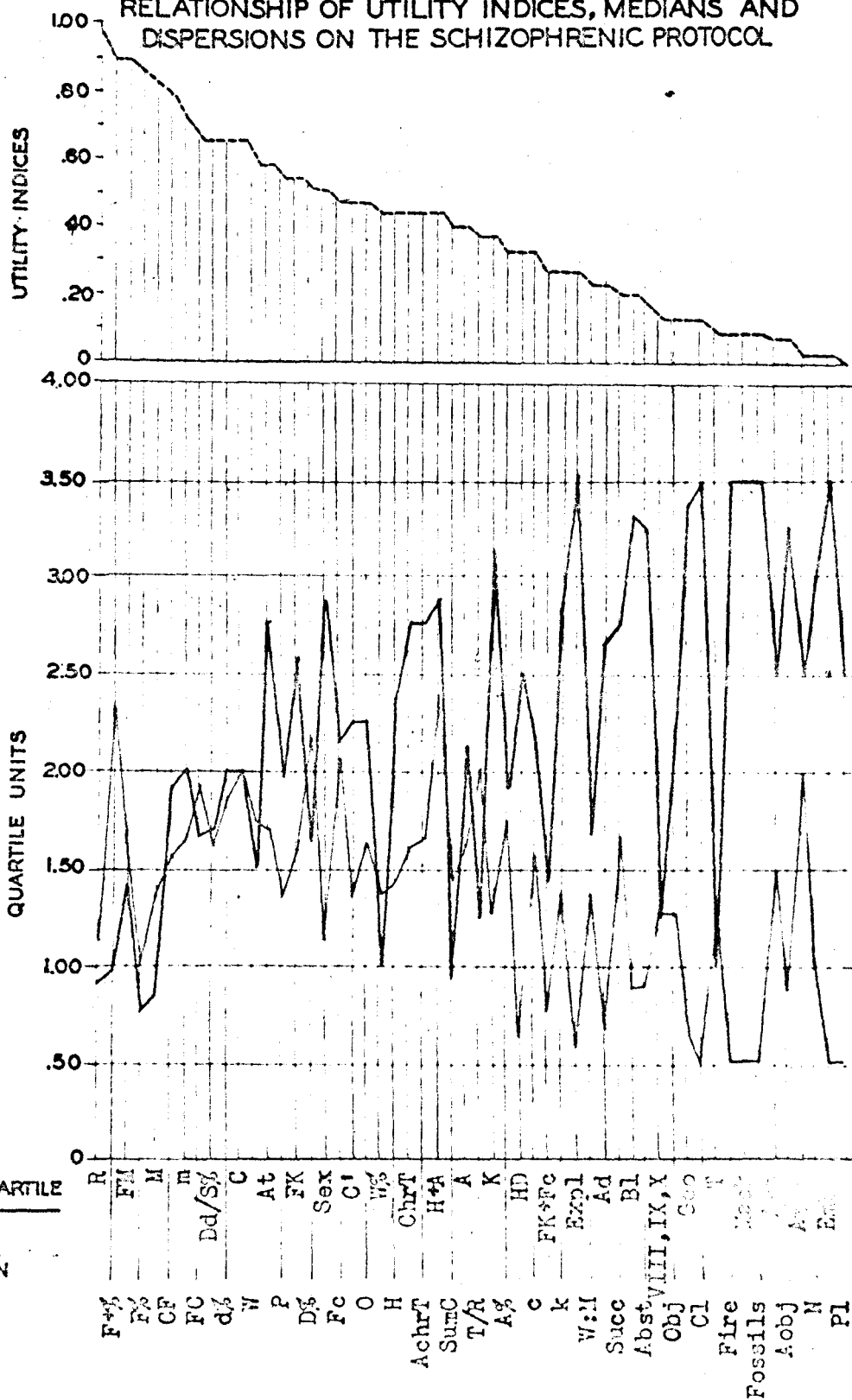


FIGURE 6

RELATIONSHIP OF UTILITY INDICES, MEDIAN POSITIONS AND DISPERSIONS ON THE NORMAL PROTOCOL

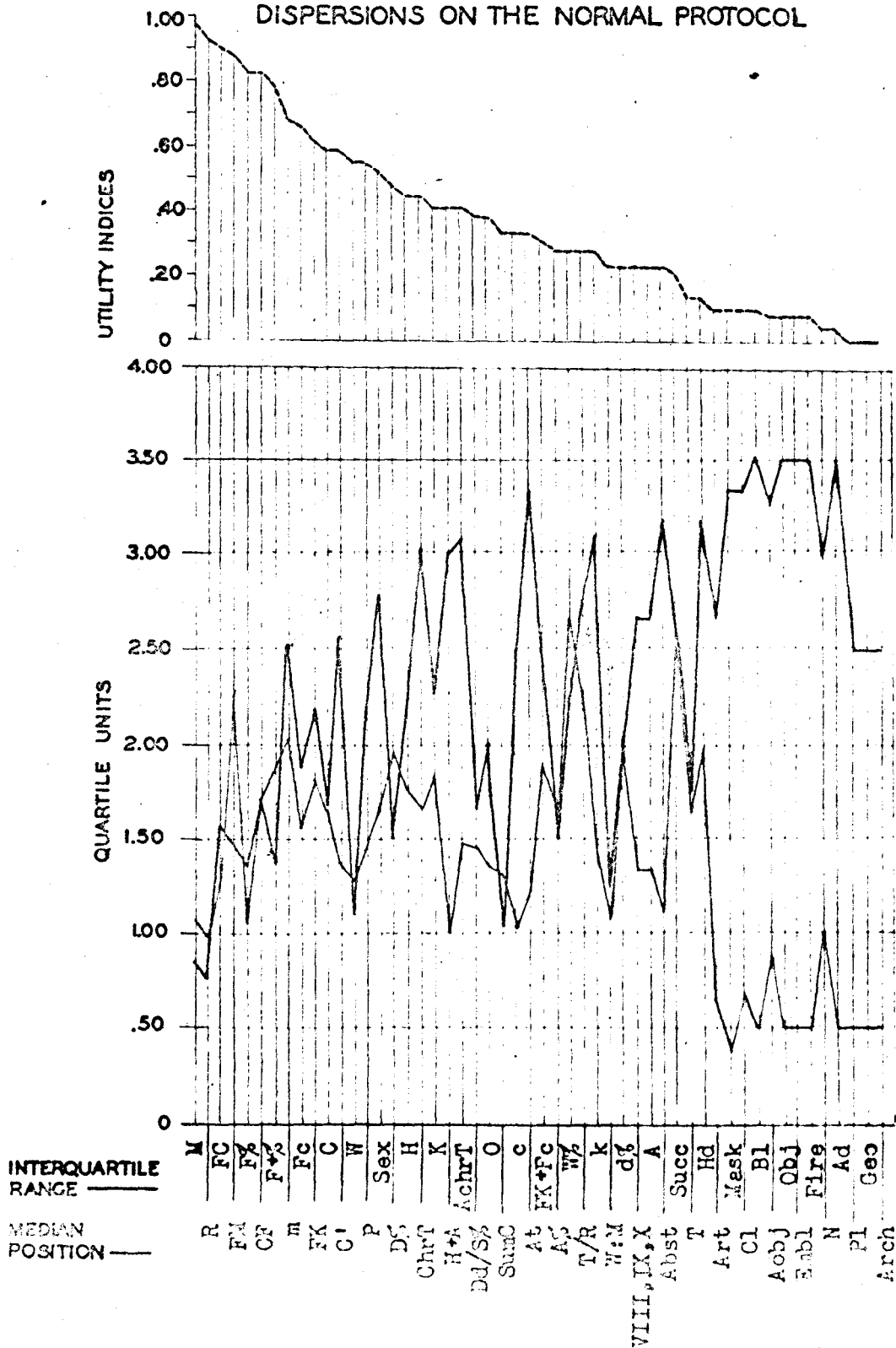
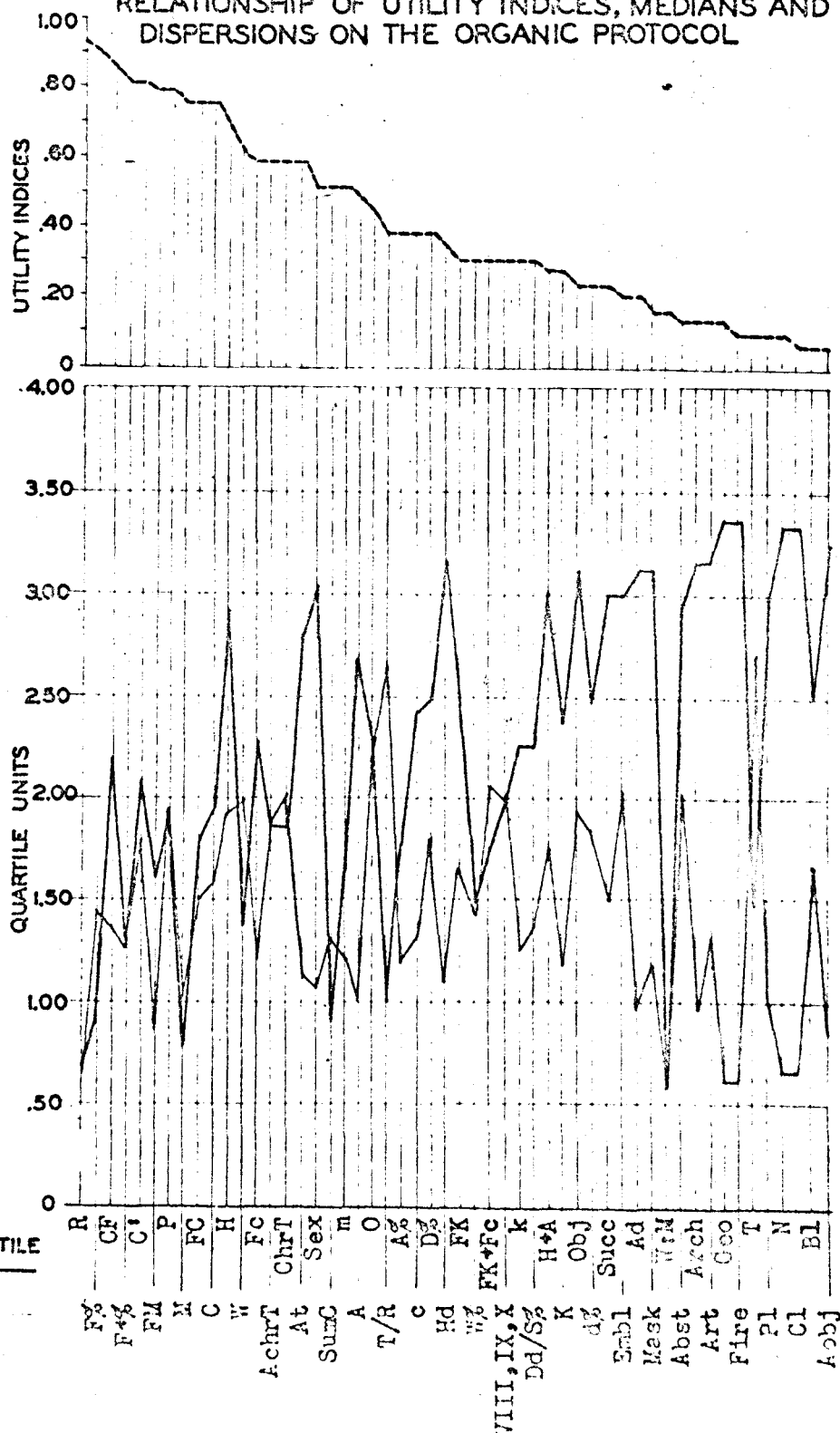


FIGURE 7.

## RELATIONSHIP OF UTILITY INDICES, MEDIAN POSITIONS AND DISPERSIONS ON THE ORGANIC PROTOCOL

INTERQUARTILE  
RANGE ———MEDIAN  
POSITION

ently it was positioned in sequence - a rather unlikely possibility. Figure 6 illustrates particularly well what the nature of this relationship appears to be. The dispersions approximate a curvilinear pattern, generally conforming to the pattern of medians in the early phase of analysis, experiencing the same wide variability as the medians in the intermediate stages, and then abruptly diminishing a value at the end of the sequence. The negative correlations of  $-.47$ ,  $-.35$ , and  $-.22$  for the Schizophrenic, Normal, and Organic protocols, therefore, have questionable validity in describing this relationship.

A similar artifact of the data occurred in the relationship of utility indices to dispersions in Table XIV. The positive correlations of  $.49$  and  $.40$  on the Schizophrenic and Normal protocols, respectively, and the lack of correlation ( $r = .07$ ) on the Organic protocol suggested that, if any relationship existed at all, it was a positive one - the dispersions decreased in proportion to the importance of a card. Again, this seemed an unlikely possibility. A closer examination of the patterns in Figures 5, 6, and 7 revealed that the true measures of agreement were actually vitiated at the low end of the scale of utility indices. The measures at this extreme were frequently based on a single analyst and the dispersion as a reflection of group consistency obviously became meaningless.

Several additional correlations were carried out on the Normal protocol to clarify the problem. First, only the fifteen cards with the highest utility indices were compared with their respective dispersions. Their correlation was negative,  $r = -.55$ . In the initial phase of interpretation, analysts were somewhat consistent (small dispersions) in selecting the cards they considered important (high utility values). Secondly, utility indices were compared with dispersion, excluding only cards with utility indices of .10 or less which, as discussed above, entailed meaningless measures of dispersion. The correlation in this instance was  $-.19$ , admittedly low, though supporting the trend in the initial phase of the test.

Diagnoses were ascribed relatively little significance since validation was not the expressed purpose of this study. Accurate diagnoses were noted, however, to determine whether

1. accurate diagnosticians were distinguished from inaccurate ones in terms of card selection; perhaps greater group similarities might have been anticipated among analysts who succeeded in diagnosing accurately, and
2. the accuracy of diagnoses bore any relationship to the analyst's measures of efficiency levels as defined by the Utility Score.



An accurate diagnosis was specified as one conforming to a narrow range of closely related disorders. For example, "severely neurotic" and "schizophrenic with compulsive features" might apply as legitimate descriptions of the same person, differing somewhat in specificity. Although we can differentiate these diagnostic labels conceptually, an analyst could not be justifiably criticized for adopting either perspective. Rather than drawing subtle though insignificant lines of distinction between diagnostic categories, the following diagnoses were accepted as basically accurate. In the concluding chapter of this study an alternate procedure will be discussed.

The schizophrenic case was in remission and presented a severely compulsive pattern of behavior. Acceptable diagnoses in this instance were "schizophrenic," "obsessive-compulsive," "severely neurotic," or some combination of these classifications reflecting the severity of the personality disorder. The normal record elicited occasional references to anxiety symptoms, mild sexual conflicts, and frustrated dependency needs, but the accurate diagnosis required an explicit affirmation regarding the basic normality of the record. The organic patient had been lobotomized after a long-term depression. The depressive features of the personality prior to lobotomy remained as quite dominant, persisting

TABLE XV  
ACCURACY OF DIAGNOSES  
AND NUMBER OF CARDS REQUIRED

Protocol	Number of Accurate Diagnoses	Mean Number of Cards Selected <sup>a</sup>		
		Entire Sample	Accurate Analysts	Inaccurate Analysts
Schizophrenic	21	22	20	24
Normal	21	20	21	18
Organic	18	23	24	22
Mean Number of Cards		22	22	21

a Rounded off to nearest whole number

features in the Rorschach. Both "depressive" and "organic" were accepted as accurate in this instance.

In terms of the foregoing criteria, Table XV indicates that about two-thirds of the analysts on each protocol arrived at diagnoses which were substantially accurate. There was no apparent relationship between the amount of information (number of cards) required and the accuracy of the final diagnosis. This appeared to be another area in which the personality dynamics of the analyst entered into the diagnostic process. Two analysts

of equal competence may function quite differently. One may hazard a diagnosis on the basis of a few key increments of data while another may seek extensive corroboration of his initial impression before reaching a diagnostic decision. Obviously, where only three protocols are involved, chance may play a prominent role in determining whether a particular analyst will have, for example, two or all three correct diagnoses. Intro-spective data can furnish some clues regarding the extent to which a diagnosis is well-elaborated or simply chosen as the most likely of several possibilities.

Considering the analysts with correct diagnoses as a group, and those with incorrect diagnoses as a second group, a comparison of the two groups was made in terms of the sequences of card selection. This was done to determine whether greater group similarities might distinguish the successful group. Table XVI compares the coefficients of concordance of the correct group with the incorrect group on each of the three protocols. All of these  $W$ 's are significant at the .01 level of confidence. There is obviously no constant difference between the groups to distinguish either group as more internally consistent.

Table XVII presents a summary of the number of analysts successfully diagnosing all three protocols, two, one, and none. About a

TABLE XVI

COEFFICIENTS OF CONCORDANCE  
OF CORRECT VERSUS INCORRECT DIAGNOSTIC GROUPS

Protocol	Coefficients of Concordance	
	Correct Group	Incorrect Group
Schizophrenic	.28	.32
Normal	.34	.48
Organic	.35	.28

TABLE XVII

RECORD OF SUCCESSES  
OF THIRTY ANALYSTS ON THREE PROTOCOLS

<u>Number of</u> <u>Correctly-Diagnosed</u> <u>Protocols</u>	<u>Number of</u> <u>Analysts</u>
3.....	9
2.....	13
1.....	7
0.....	1

third of the sample diagnosed all protocols correctly and more than two-thirds diagnosed at least two out of three correctly. When the number of correct diagnoses was compared with each analyst's mean Utility Score as his measure of efficiency, there appeared to be no immediately evident relationship between accuracy and efficiency in diagnosis. In Table XVIII where the mean Utility Scores are ranked from highest to lowest, there appears to be no consistent relationship within the group.

Taking individual rather than group performance into account, some positive relationship between efficiency and accuracy was suggested. Of the more than two-thirds of the sample diagnosing two or more protocols correctly (noted above), nine analysts were correct in all three cases and thirteen diagnosed two correctly. Of the thirteen diagnosing two protocols correctly, there were seven cases in which the correct diagnoses coincided with the protocols on which the analyst scored his highest and second highest Utility Scores. While this indicates only a trend, it may bear further investigation in the future.

In scanning the introspective data, it is important to keep in mind the instructions which influenced the analyst's mental set while verbalizing his introspections. The directions were quite permissive; the analyst was requested to "think aloud" if he could do so without serious distraction.

TABLE XVIII  
RELATIONSHIP OF UTILITY SCORES  
TO ACCURACY OF DIAGNOSIS

Analyst	Utility Score	Number of Correct Diagnoses
FW	.72	3
CG	.71	3
DB	.71	2
FD	.67	2
AB	.65	1
EN	.65	1
ED	.64	1
BW	.64	2
ET	.64	2
BL	.63	2
AK	.62	2
BB	.59	2
CH	.59	3
CL	.59	2
CB	.59	2
DR	.59	3
BM	.58	2
BP	.58	2
AJ	.57	1
FG	.57	3
FL	.55	1
DF	.54	3
FM	.54	3
CM	.53	1
AT	.52	2
EM	.52	2
AM	.50	1
DO	.50	3
DC	.43	3
EG	.41	0

Subtle pressure could have been imposed to elicit a logical accounting for each card selected, but this seemed undesirable in the original approach to the process of interpretation by the current method. Even though the procedure of this study left much un verbalized, as in certain instances where several cards were selected in complete silence, the instructions favored maximum spontaneity. The elicited introspections, therefore, were restricted to the readily-articulated logic of the analyst, volunteered in the course of his analysis. This qualification of the data suggests an alternate mode of approach to the introspections which will be discussed in the last chapter of this report.

The initial approach to the protocols in this study assumed several different forms, probably indicative of individual analyst's orientation to personality appraisal in general. Of the diverse reactions to the test situation, they seemed to follow four basic patterns,

1. Personality-oriented,
2. Rorschach-oriented,
3. Diagnosis-oriented in terms of multiple possibilities, and
4. Diagnosis-oriented in terms of specific pathological indicators.

The personality-oriented approach typified the majority of our sample. The analyst began formulating an impression of a person from the

first category he selected. After establishing the sex and age of the subject he sought indicators that would aid in determining certain basic, though usually undifferentiated, dimensions of the personality, for example, productivity, creativity, rigidity or lability, etc. With this broad type of personality as his base, he proceeded to elaborate his impressions. The characteristic feature of this approach was the analyst's continual orientation toward the subject as a person and the persistent attempt to fathom the individual's personality structure as well as his motivational system. The sophistication of our sample is undoubtedly reflected in this familiarity with the Rorschach, permitting the analyst to see beyond the test instrument as though he were dealing directly with a living human subject. The novice in the Rorschach technique would probably be more likely to adopt the second approach, the Rorschach-oriented.

In the second approach, the analyst maintained a rather direct orientation to the Rorschach test and seemed to deal more with scoring symbols than the personal dynamics they represented. This was at any rate, the impression conveyed by the analyst's verbalized behavior, though it may not have been an adequate reflection of the implicit personality correlates elaborated in his thinking. This orientation was frequently difficult to distinguish from the personality orientation discussed above since it was



frequently alternated with the latter in the course of a particular analyst's introspections. Relatively few analysts adopted a Rorschach orientation almost exclusively. The approach was characterized by a cold, objective, and quite impersonal handling of data as though the analyst were more intent on establishing a theoretical personality type than diagnosing a particular, unique individual.

The third and fourth types of approach listed above were similar in so far as both orientations reflected an immediate concern with pathology. This generally negative orientation characterized about a third of the analysts tested. The concern with pathology assumed two forms.

In the first, the analyst immediately proceeded to list the range of possible diagnoses when he determined the sex and age of the subject. Along with this list he sometimes mentioned one or more diagnoses which would be largely precluded by the person's age. A process of progressive elimination followed as specific information was accumulated contraindicating some of the originally hypothesized diagnoses. This type of "funnel approach" frequently occurred in other contexts where the analyst listed several alternative hypotheses and proceeded to check through each with additional data.

In the second form of the diagnostically-oriented approach (point 4 above ), the analyst proceeded somewhat more impulsively in his haste to find the proper diagnostic label. In several instances, as soon as the analyst determined the sex and age of the subject, he posited what he felt would be the most likely emotional disorder for a person of that sex and age, and proceeded to check this single hypothesis with specific data. When his initial guess or "hunch" failed and, sometimes, before he was convinced of his error, he found clues suggesting new diagnostic possibilities. He then proceeded on the new hypothesis until it, too, was confirmed or rejected. This type of uncoordinated "chase" after the elusive, single route to the correct diagnosis frequently resulted in failure. The previous approach which took into account a wide range of possibilities before proceeding with the confirmation of hypotheses presented less chance of error; the analyst was less likely to miss vital information required for a specific diagnosis. Certain basic principles of effective and ineffective problem-solving behavior were clearly demonstrated.

It is extremely hazardous to generalize about the interpretive logic of the analysts since the introspective records are as unique as their individual authors. Some were quite verbal and explicit in accounting for their selections as well as the numerous interpretive possibilities of each

score. At the opposite extreme were those who commented only when certain interpretations were relatively crystallized and could be supported with several sources of evidence.

The "lawfulness" discussed earlier in this report was evident to a certain extent in the first ten cards selected. Most analysts concentrated on high utility cards in the initial phase of the test, structuring the basic personality in terms of several broad dimensions of productivity, creativity, emotional responsivity, etc. Beyond this point there was little uniformity. Obviously related sequences of scores, for example, M-FM-and-m, were interspersed with what appeared to be completely erratic selections. Selections ranged from specific scores logically following a particular sequence to arbitrary selections following the failure of a particular hypothesis to find adequate confirmation. Ruminations on a particular facet of personality as, for example, the subject of emotional maturity, might be precipitated by the content on the FM card, leading to speculations regarding emotional controls and quite logically suggesting CF as the category to expand this area of thought. With certain analysts the verbalized introspections were sufficiently explicit and logical in their development that the investigator frequently predicted the next card chosen. Several of these analysts attempted to account for each choice before making it, even predicting what scores

they might find. In other instances an analyst might attempt to "test the limits" of the subject's contact with reality by selecting "Content: Blood" simply because this was "an extreme kind of response." In cases such as this he could have selected originals or pure color responses with equal probability of finding evidence of bizarre ideation.

Analysts with high Utility Scores generally proceeded more critically through their analysis. They generally assessed information more carefully and attempted to logically justify their next selection. Several of the low scorers, on the other hand, tended to select many cards in their numerical sequence as they appeared in the protocol folder. One low-scoring analyst, for example, selected the cards numbered from nineteen through thirty-seven. This type of arbitrary, indiscriminate behavior was obviously reflected in his low Utility Score. A glance at Figure 1 clearly indicates that the individual's score could only decrease by selecting such runs. The efficient analyst discriminately selected cards with high utility indices because these were meaningful and logically, rather than simply numerically, related.

The difficulty of adequately assessing introspective data in terms of group patterns suggests a corollary study, expository in nature, of individual introspective records. This subject will be discussed in the next chapter.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

Considerable controversy surrounds the Rorschach as a technique for the assessment of personality. It is accepted unchallenged by some as a useful clinical instrument and its validity is seriously questioned by others. Whatever the current status of the Rorschach Test is presumed to be, a continuing need persists for greater scientific precision in the assessment of personality. This calls for more carefully controlled validation studies, development of new research techniques, and continual assessment and refinement of current statistical procedures.

The present study approached a relatively neglected area of Rorschach research, an exposition of the process of interpretation of Rorschach data within the limits of a particular method. No attempt was made to evaluate the validity of the Rorschach, although an analysis of interpretive techniques might well contribute toward its validation. While validation studies generally deal with the end products of Rorschach analysis-

the personality descriptions or diagnoses yielded by this technique - the present exploration deals with the processes that precede those results.

An attempt was made to describe particular diagnostic procedures and certain facets of the analyst's reasoning as he proceeded through blind analyses of actual Rorschach protocols to a diagnosis. The diagnoses were considered important only in so far as they determined a terminal point to the interpretation. The primary focus was on group patterns of consistency and secondarily certain measures of self-consistency on three protocols were introduced. The basic procedure was adapted from Dr. Rimoldi's extensive and exceedingly promising research in the application of his technique to medical diagnoses. His technique yielded tangible evidence of the interpretive process by imposing fairly rigorous limits on the analyst's procedure. The instructions regarding the selection of information "necessary and sufficient" for a diagnosis eliminated considerable irrelevant material which might have obscured the diagnostic process.

An extensive review of literature merely served to highlight the dearth of research information available on the Rorschach diagnostic process. Since the current exploration addressed itself to issues similar to those involved in validation research, a brief overview of the latter area was included, hopefully providing a frame of reference for the process of diagnosis.

Validation studies can be roughly classified as analytic and holistic - those dealing with specific personality traits and those dealing with the person as a whole. Beck ( 1 ) accepts this dichotomy as a quite natural division and receives indirect support from Klopfer ( 15 ) who notes that the Rorschach technique deals with both, "highly differentiated perception on the examiner's part" as well as the "articulated whole."

Single variable studies and factor analyses of Rorschach data were cited as common forms of the analytic type of approach. This study was found to have little in common with the single variable approach. Factor analyses and the current process analysis seem similar in that both forms of analysis begin with a comprehensive body of Rorschach data and both are potentially fruitful sources of interpretive hypotheses. The current study dealt with processes while factor analytic studies generally deal with the products of analysis.

Various clinical studies and blind diagnoses generally deal with personality as an integrated unit. These generally compare nosological diagnostic labels or personality descriptions with clinical observations. These again, deal with the end products of analysis. If they accomplish no more than a demonstration that the Rorschach achieves the same results as clinical observation, they obviously have limited value. The present study

involved blind diagnoses, concerning itself less with the diagnosis than with the manner in which it was reached. Both quantitative and qualitative procedures were adapted to this process.

Chambers and Hamlin ( 6 ) were cited as the only published Rorschach study bearing directly on the present problem. The retrospective reconstruction of the analytic process, however, yielded rather superficial data subject to distortions of memory.

Wirt ( 30 ) performed pattern analysis of Rorschach cards and scoring categories and found some differentiation of the categories among normals, neurotics, and psychotics. His comparisons of scoring categories bore some resemblance to the concept of utility indices in the present study.

Outside of Rorschach research many studies have dealt with thought processes in terms of the end products of thought as well as the process itself. The process has been studied retrospectively and introspectively. The inadequacy of retrospection was noted in some detail by Bloom and Broder ( 5 ) in an introduction to their basic research on the introspections of college students while solving problems.

The technique adapted to this study combines introspection with quantitative procedures. It was originally developed by Rimoldi ( 20, 21, 22 )



with its chief application in the area of medical diagnoses. Various levels of diagnostic proficiency (junior and senior medical students and experts) were differentiated successfully by the technique.

Related statistical procedures of pattern analysis ( 24 ) and the graphic treatment of Utility Scores ( 23 ) were also adapted to the current study.

Thirty professionally skilled Rorschach analysts were tested on three protocols of actual cases, a schizophrenic, normal, and an organic. The data were presented in folders on 3 x 5 cards containing qualitative and quantitative Rorschach data. The folders were rotated to avoid systematic bias. The analyst was requested to select as few cards as he felt were sufficient and necessary to arrive at a diagnosis and to "think aloud" during the analysis. A complete record was kept of the sequence in which the cards were chosen as well as the verbalized introspections.

The amount of information any particular analyst required for diagnosis remained quite constant on the three protocols, although individuals varied from six to forty-nine cards with a mean of twenty-two cards. The communality of judgments on the sequences of card selection was expressed by Kendall's coefficient of concordance,  $W$  ( 13 ). Levels of significance

computed by a modification of Fisher's distribution were fixed at the .01 level as the standard for acceptance throughout the study.

The analysts were compared as sub-groups, based on the rotation of protocols, as well as major groups (entire sample) on three protocols. The coefficients of concordance on the sub-groups reflected a substantial agreement, ranging from W's of .35 to .60. All but one sub-group W were significant at the .001 level. The median W's for the sub-groups were .48, .53, and .44 on the Schizophrenic, Normal, and Organic protocols, respectively. The W's for the entire sample and in the same order were .37, .40, and .35, reflecting a definite lawfulness in sequence of accumulating Rorschach data for diagnostic purposes.

A heavy loading of the sample with Loyola-trained analysts did not introduce any bias into the data. They were closely comparable to non-Loyola analysts in terms of sequence as well as utility value ascribed to various scoring categories.

A pattern analysis, according to a new method by Rimoldi and Grib ( 24 ), yielded Indices of Agreement of .73, .74, and .74 on the Schizophrenic, Normal, and Organic protocols, respectively, when individual patterns were compared with an "ideal" pattern. Up to this point, the

data indicated that there was a definite lawfulness in the manner of handling interpretive Rorschach data quite independently of an analyst's training. Furthermore, this uniformity was present even when the diagnostic problems varied. Both factors support the thesis of an orderliness intrinsic to the Rorschach technique of analysis.

The usefulness of a particular scoring category was determined by the number of analysts who chose it. Its utility was expressed numerically by the utility index. When these indices were ranked and correlated, they followed a highly consistent pattern as indicated by a W of .92. The consistency was particularly marked in the first ten cards selected. The analyst generally oriented himself by selecting R, F%, and F+%, and then proceeded to movement ( FM and M ) and color ( FC and CF ) responses. Minor variations from this general pattern occurred relevant to the particular diagnostic case. Analysis generally proceeded from the quantifiable data in the psychogram to the more symbolic, qualitative data.

Since there were only minor variations in the ranked utility indices on the three protocols (  $W = .92$  ), the differences were ignored and the three rankings were combined into an "ideal sequence."

The individual indices of utility were combined into a measure of efficiency termed an Utility Score, simply the mean of the utility indices on the cards the analyst had selected. While the ranked utility indices with a  $W$  of .92 had reflected on the intrinsic lawfulness of the Rorschach, the performance of individual analysts demonstrated a similar stability - a  $W$  of .80 on the thirty analysts' Utility Scores on three protocols reflected on the consistent efficiency levels of the analysts. Their mean Utility Scores ranged from .41 to .72. Since the Utility Scores correlated  $-.65$  with the number of cards selected, the efficient analyst was apparently cautious and economical in terms of the amount of information he selected. A comparison of each analyst's three sequences yielded a  $W$  of .74, indicating a high degree of self-consistency and orderliness in Rorschach interpretation. His consistency was unrelated or, perhaps, only slightly related to his efficiency ( $r = .22$ ). His self-consistency was apparently more a function of his personality than of any diagnostic skill.

The Utility Scores and  $W$ 's to this point were quite unrelated to the sequence of card selection. Following a technique devised by Rimoldi, Devane, and Haley (23), the cumulative sum of utility indices in each analyst's sequence was plotted. This yielded some graphic evidence of some of the factors involved in an efficient diagnostic process. The amount and

type of information selected clearly differentiated the more skilled diagnostician from the less skilled.

When individual sequences were correlated with the "ideal sequence," these correlations showed a moderate degree of agreement with individual's Utility Scores.

Utility indices were found to have a direct relationship with the sequential positioning of a card as well as the dispersion of this positioning. Cards of high utility value tended to be selected earlier in sequence -- correlations between utility indices and median quartile placements were  $-.62$ ,  $-.67$ , and  $-.59$  on the Schizophrenic, Normal, and Organic protocols, respectively. This relationship was most evident at the extremes of utility values.

A similarly close relationship was found between utility indices and dispersions. Correcting for an artifact of the data, dispersions were found to increase as utility indices decreased. Cards of high utility value were more accurately positioned in sequence.

Although the diagnoses themselves were considered of secondary importance, it was interesting to note that approximately two-thirds of the analysts on each protocol achieved diagnoses which were basically correct.

Slightly more than two-thirds of the analysts diagnosed two or more protocols correctly. The accuracy of diagnoses bore no relationship to the amount of information on which they were based. The sequential order of selecting cards and efficiency levels similarly bore no relationship to accuracy.

There were several approaches to the present analysis typifying different analysts' orientations. These were

1. Personality-oriented,
2. Rorschach-oriented,
3. Diagnosis-oriented in terms of multiple possibilities, and
4. Diagnosis-oriented in terms of specific pathological indicators

The first type typified the majority of our sample. The second type was frequently alternated with the first and tended to reflect a more naive view of personality assessment.

About a third of the sample were diagnosis-oriented. The analyst who did not restrict the diagnostic possibilities proved to be less subject to error.

A great deal of erratic behavior was interspersed between logically consistent sequences, although individual differences among analysts were striking. They ranged from rigid, predictable logic to quite arbitrary,

random choices. Analysts with high Utility Scores generally evaluated data more critically and proceeded with greater deliberation.

Several refinements of the procedure in this study were suggested in the course of analysis. Occasionally an analyst expressed some confusion regarding the type of diagnosis the investigator expected of him. Several analysts were accustomed to expressing diagnoses in operational terms and felt somewhat hampered in having to reorient themselves in terms of psychiatric nosology. For the sake of uniformity, it seemed desirable to persist in this requirement. This sometimes entailed some discussion and review in the analyst's attempt to refresh his memory. The possibility of biasing the procedure could have been eliminated by presenting each analyst with a check list of diagnostic categories prior to his analysis. This device would also have obviated the leniency that was necessarily exercised in this study in determining the fine lines of distinction between correct and incorrect diagnoses.

An alternate procedure for gathering introspective data might lend greater precision and continuity to the introspective record. Due to the permissive orientation in the instructions, a sequence of five or six cards was occasionally selected in complete silence. Valuable data was simply lost by failing to get some accounting for these choices. Even in the vast

majority of cases where analysts verbalized freely, they felt no pressure to produce anything more than the most readily-articulated, fleeting thoughts of the moment. While the introspective procedure with its natural spontaneity was sound, it might be greatly reinforced by supplementing it with an interrogation session. After the diagnosis had been concluded, the investigator might review the entire record with the analyst. He might ask the analyst to retrace his entire diagnostic processes, with the aid of the investigator's verbatim notes, and account for each card selected, attempting to reconstruct the reasoning which had motivated each choice. In the present study, a partial review was sometimes spontaneously volunteered by an analyst attempting to justify certain choices. The investigator would have to be alert to the possibility of retrospective falsification, but it seems a worth-while attempt at a comprehensive introspective record. Some device for distinguishing "main" and "additional" comments might be incorporated into the analysis.

Rimoldi's study of medical diagnoses ( 22 ) differentiated items dealing with ( 1 ) interview and history, ( 2 ) laboratory data, and ( 3 ) physical data. He then noted the different emphases placed on these three areas by junior and senior medical students. This suggests an interesting corollary to the present study. Items might be classified according to types



of scoring categories, for example, ( 1 ) location scores, ( 2 ) determinants, ( 3 ) content categories, and ( 4 ) numerical ratios. The relative emphases in these various areas by different analysts might yield some fruitful findings. A tentative exploration of this problem indicates considerable differences among analysts. Some explore one area thoroughly, for example, location scores, before moving on to another, for example, determinants. There appears to be a quite deliberate, though perhaps unconscious, concentration on one area at a time. Others, on the other hand, transfer continually from one area to another, suggesting a more macroscopic view of the Rorschach.

Many of the analysts found the task a fairly stimulating intellectual exercise. A few commented that it challenged the logic of their analytic procedure, in some instances, actually revealing new insights regarding their own approach to Rorschach data. Positive impressions of this nature suggest the potential value of the Rimoldi technique as a didactic device in advanced courses in the Rorschach technique. It might be utilized as an instructional technique to aid the student in refining his interpretations. The investigator's experience has clearly demonstrated that this technique supplies the administrator with a most perceptive instrument for individual evaluation of diagnostic proficiency.

Some of the more verbal introspective records would provide interesting and provocative material for class discussion. Group appraisal of the introspective records, as done in this study, does not do justice to the fine nuances of logical reasoning and speculation found in the verbatim individual records.

It is the investigator's earnest hope that some of the suggested possibilities for further research stir the reader's interest and curiosity sufficiently to motivate further exploration in the process of Rorschach analysis.

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APPENDIX I

ILLUSTRATION OF CARDS  
USED IN ANALYSIS

M responses

6

F%

M responses - 5 responses:  
Card II - 2 people sitting, holding torches  
III - 2 people bending backward stooping  
VII - 2 old maids gossiping  
X - Person standing on one leg  
Man peering down from hill

See location chart

12

F% = 22%

### ILLUSTRATION OF PROTOCOL FOLDER

Content: P1	27
Content: N	28
Content: Geo	29
Content: Art & Des	30
Content: Arch	31
Content: Emblem	32
Content: Clouds	33
Content: Blood	34
Content: Fire	35
Content: Mask	36
Content: Abstract	37
Popular Responses (P)	38
Original Responses (O)	39
Total Responses (R)	40
Total Time (T)	41
Average time per response (T/R)	42
Average reaction time - Achromatic:	43
I IV V VI VII	
Average reaction time - Chromatic:	44
II, III, VIII, IX, X	
$\frac{F_1 + F_2}{N} \%$	45
F+ %	46
A %	47
(H + A) : (Hd + Ad)	48
Sum C	49
$\frac{VIII, IX, X}{R} \%$	50
Win	51
Succession	52



### APPENDIX III

### INSTRUCTIONS

Do not remove any card until asked to do so.

This is a test to estimate your ability to evaluate Rorschach data for the purpose of diagnosis. It consists of a set of cards on which an authentic protocol is given on a certain individual whose condition you are to diagnose if the available information makes it possible. On the back of these cards you will be able to obtain the information you require. Your problem will be to select in the best order those cards that are necessary and sufficient to arrive at the diagnosis. You are requested to read all the items before selecting any card.

Card A has certain basic data about the person. This card should be selected first. The remaining cards numbered 1, 2, 3, ... have all the quantitative data, verbalized responses, and so forth. When you select a card draw it from its pocket, read the information on the back and insert it upside down on the spindle. Proceed in this fashion for all the cards that you find necessary to select.

## APPENDIX III continued

### INSTRUCTIONS

Avoid selecting a card unless you feel that you really need it for the purposes of diagnosis. You may make notations in the course of your interpretation on the paper provided. A location chart will be supplied with each content category selected. According to your clinical judgment you may select as few or as many cards as you wish.

Do not replace any card in the pockets of the board after it has been used. You may reread any card previously drawn without removing it from the spindle. As soon as you feel quite sure of the diagnosis, write it on a piece of paper and stop drawing further cards.

## APPENDIX IV

### ILLUSTRATIVE RECORD: ANALYST BB's INTERPRETATION OF NORMAL PROTOCOL

Card	Introspective Data
A	Let's see --- male, 20 years.
40 R	Pretty productive person, 46 responses - now, to be clever, I could find out W and M from one card - well, this person, unless he has a very high FK+F+Fc%, isn't very constricted - I'm using that very generally.
6 M	(Reads) Hmm, this guy's a little on the twisted side - that's a beaut! Well, he's got three of the most popular M's - we don't think too much in terms of hysteric with 5 M's - might think of person who goes in for unusual details, but none of these people are doing a heck of a lot of moving - fantasy may not be lively - this fellow has an original element in my experience in almost all of these even though three are in popular places for M - what do I want to see? He sees whole humans or at least he sees humans - M: sum C.
49 Sum C	Sum C is 3, a little introversial, but not too much as far as what I can see - three of them here - think I'll go back to my fantasy for awhile.
7 FM	Ah, you are just jumping with immature fantasy for a 20 year old, I doubt if this guy's normal, M's not lively enough (reads) - V, Oh, cut off! I'm beginning to be curious about what color responses are like - this guy's got some interesting

## APPENDIX IV

### ILLUSTRATIVE RECORD: ANALYST BB's INTERPRETATION OF NORMAL PROTOCOL

Card	Introspective Data
13 Fc	<p>oral material, cutting things off, human responses, has a tendency to go out on some immature fantasy, actually this isn't too horrible to perhaps get involved in - I guess I'll just proceed - let's try to be economical - I think before I'd make a diagnosis --</p> <p>Flake of snow -- (reads) Hmm -- 5, but these are not very encouraging ones - there's some indication of capacity to relate all right, at this level, just as there's some capacity to understand other people's motives, but it's attenuated and he certainly has a devil of a time in his family - getting to look sort of schizoid -- any minus responses yet? -- Compulsion neurosis? Is he -- we have just percentage of Dd/S -- Fc -- I wouldn't think the prognosis is too bad, but question in my mind is at what level is this guy able to function actually -- he's not doing a beautiful job - W's -- He doesn't really have whole W's, tendency to have cut-off W's, let's see about his FC responses.</p>
16 FC	<p>Four! Flower petals (reads) -- Now he's got a sum C of three and four of these are FC so he's got a CF response somewhere, and the indications are that he's probably not too bad -- I'm beginning to think that this guy's something of a compulsive, but not a very constricted compulsive - there's a lot going on - kinda nice color responses, they're</p>

APPENDIX IV continued •

ILLUSTRATIVE RECORD:  
ANALYST BB's INTERPRETATION  
OF NORMAL PROTOCOL

Card	Introspective Data
	<p>not awfully original, but in my own judgment, beautiful rocks has more of a CF tendency, of course -</p>
14 c	<p>None - Could've saved myself that one, he might have C' though</p>
15 C'	<p>Four - so - FC and the C' balance the FM rather well, just about perfect (reads), this guy's pretty intelligent, pretty sensitive - well, I think, right now, without going much further, that this is either a compulsive personality or a compulsive neurotic - actually there's a slight shortage of color responses, but not enough to impress me - What do I want to know to nail this down? Pays attention to small details, uses them and cuts them off of his W's - might want to know what he has in the way of insight and free anxiety.</p>
11 FK	<p>Three - that's pretty good - you can sure see some of the dynamics - at a fairly early point he had difficulty relative to satisfying mother - at the level of creating a neurotic disposition rather than psychotic - this guy wouldn't appear to be a clean case at all - maybe hasn't asked for help at all maybe sub-clinical compulsive, if he hasn't asked for help, he's inhibited, not enjoying himself, not sure I'll even be able to answer the question - one of the things, two things - little m and K.</p>

# APPENDIX IV continued

## ILLUSTRATIVE RECORD: ANALYST BB's INTERPRETATION OF NORMAL PROTOCOL

Card	Introspective Data
8 m	Falling animal - Oh! Two of these are M responses in the tension not of a very strong sort - couldn't be sure whether he would be asking for help.
10 K	Doesn't impress me much as far as K responses - VII is normal place to pick clouds - he's introspective, but I don't see him as greatly agitated, wondering what people are thinking about him, intellectualized anxiety, cutting off things - he's got C' of four, not too terribly much, he could be subject to moments of depression and in that sense he might need some help - as far as I'm concerned, compulsive, but is he clinical or just a student that volunteered? I have a feeling that he volunteered and that this is an early beginning, I don't think I'm going to find anything that will change my mind - let's see how many populars has he got (counts) - five populars, at least, his percentage of FK+F+Fc is not overly high, he's got FK, Fc, he's got color responses, FM wouldn't necessarily bring him for help - might still be looking in fantasy for ways with which he would not need help.
48 H+A	I'm surprised, I thought Hd+Ad would be higher, wouldn't rule out slight schizoid tendency, therapy would be difficult with him, I don't find many additional - I'm not eager to treat this guy.

APPENDIX IV continued •

ILLUSTRATIVE RECORD:  
ANALYST BB's INTERPRETATION  
OF NORMAL PROTOCOL

Card	Introspective Data
17 CF	<p>Oh! Still wouldn't be asking for help, but closer to needing it - he might be, between FC's and this and falling response - he might be a little more concerned about himself than I thought - I never would have thought it, that goes along with the fact that his last two M's are these little things, some castration anxiety, he may come for help - what would tell me is he a clinical case or not -- he would be able to go along with people, I don't think he would be sent to treatment, he's able to have -- possibility whether this guy is agitated enough to get into treatment</p>
44 ChrT	<p>Three seconds</p>
43 AchrT	<p>Six - Hmm, but still that's not much - percentage on last three, that wouldn't be too low - W to M, that's just about normal, I'm losing curiosity about this by the minute, see all the C and I haven't seen this - k, would he have small k - I doubt it.</p>
9 k	<p>None - no small k, he could have made more progress away from treatment if he had more small k --</p>
25 Sex	<p>I don't think he's come in for treatment yet <sup>1</sup> <u>Compulsive personality, non-clinical case</u></p>

### SEQUENCE OF CARD SELECTIONS OF THE SCHIZOPHRENIC PROTOCOL

ANALYSTS	CARD NUMBERS AND CORRESPONDING SCORING CATEGORIES																																																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	37a	37b	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52						
	W	W%	D%	d%	Dd/S% M	FM	m	k	K	FK	F%	Fc	c	C'	FC	CF	C	H	Hd	A	Ad	Aobj	At	Sex	Obj	Pl	N	Geo	Art	Arch	Embl	Cl	Bl	Fire	Mask	Abet	Expl	Fossil P	O	R	T	T/R	AchT	ChrT	Fc	F+%	A%	H+A	SumC	VIII IX, X, W:M	Succ									
AM*	1	3	42.5	11	42.5	19	20	22	28	27	24	10	25	26	29	42.5	30	42.5	42.5	21	42.5	42.5	42.5	15	16	42.5	42.5	42.5	42.5	42.5	42.5	42.5	17	42.5	42.5	42.5	23	42.5	8	9	2	42.5	4	14	13	5	6	42.5	7	42.5	12	18	42.5							
AT	11	39.5	39.5	39.5	12	1	2	3	39.5	39.5	39.5	17	39.5	39.5	39.5	6	5	4	39.5	39.5	39.5	39.5	39.5	16	39.5	39.5	39.5	21	39.5	39.5	39.5	39.5	20	39.5	24	19	18	39.5	39.5	14	15	9	39.5	39.5	23	22	6	7	10	13	39.5	39.5	39.5	39.5						
AJ	21	9	38	38	38	1	7	38	38	14	15	2	38	38	38	20	38	3	17	38	5	38	38	13	6	38	38	38	38	38	38	19	4	38	38	18	38	38	11	38	10	38	38	38	38	38	38	38	38	38	38	38	38							
AB	32.5	3	32.5	7	32.5	2	5	32.5	32.5	32.5	8	1	32.5	32.5	32.5	9	8	10	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5					
AK	36.5	36.5	36.5	16	10	1	12	13	36.5	36.5	36.5	9	36.5	36.5	36.5	36.5	2	4	36.5	36.5	36.5	36.5	15	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5					
BL	15	37.5	37.5	37.5	37.5	4	5	6	37.5	37.5	37.5	3	37.5	37.5	37.5	37.5	10	37.5	11	13	12	14	37.5	7	8	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5				
BM	38.5	16	17	18	19	5	6	10	38.5	38.5	4	1	3	38.5	38.5	38.5	14	38.5	7	38.5	38.5	38.5	38.5	21	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5			
BW	5	34	34	34	7	9	10	34	34	34	34	2	11	34	34	34	34	34	34	4	8	34	12	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34			
BP	43.5	4	5	6	7	9	10	11	24	23	22	2	18	19	20	12	13	14	25	26	43.5	31	43.5	30	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5			
BB	23	40.5	22	26	2	3	5	7	40.5	21	25	40.5	6	8	9	4	10	12	40.5	18	40.5	40.5	40.5	20	19	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5				
CH	40.5	17	13	15	18	2	3	19	18	20	40.5	6	8	21	5	10	11	22	40.5	40.5	40.5	40.5	40.5	12	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5			
CM	11	10	39.5	39.5	7	15	16	6	18	39.5	20	2	19	9	17	21	14	13	4	12	5	39.5	39.5	8	39.5	39.5	39.5	24	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5			
CL	34.5	2	3	6	4	14	34.5	34.5	34.5	13	34.5	5	34.5	34.5	34.5	8	9	10	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5					
CE	37.5	37.5	37.5	37.5	37.5	1	20	17	37.5	37.5	37.5	2	37.5	13	12	37.5	7	37.5	6	11	19	18	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5				
CG	32.5	8	9	10	32.5	6	5	32.5	32.5	32.5	32.5	1	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5				
DB	1	4	2	38	3	5	38	38	38	38	13	6	14	38	15	7	8	9	38	12	38	38	38	16	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38			
DF	11	33	33	33	33	5	6	9	33	33	10	3	33	33	33	4	8	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33		
DQ	39	39	39	6	7	39	4	39	39	17	18	39	39	39	21	39	23	22	13	39	39	39	15	14	12	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39		
DK	17	5	6	7	8	14	15	16	23	22	21	1	18	20	12	13	52	31	32	33	34	38	35	36	37	52	43	48	39	52	29	40	41	42	43	44	47	45	46	9	10	3	24	25	26	27	52	2	4	30	11	28	52	29	39					
ED	17	39.5	18	15	16	39.5	6	19	39.5	39.5	4	21	39.5	9	1	7	39.5	8	39.5	10	39.5	39.5	12	20	11	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5		
ET	12	40	40	14	13	2	3	8	40	40	40	4	10	40	9	19	20	18	16	17	23	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40		
EN	37.5	37.5	7	8	17	37.5	10	11	37.5	20	19	9	16	37.5	15	13	12	14	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5		
EM	2	3	25	29	14	5	6	7	28	27	26	8	44	9	44	10	11	16	31	44	33	44	44	44	30	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44		
EG	2	17	18	19	20	4	5	14	13	12	11	10	7	15	16	6	9	25	26	24	27	26	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	4	3	23	1	51	51	51	51	47	46	21	51	45	51	44	44	19	51				
FL	1	33.5	33.5	33.5	33.5	2	5	11	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	12	3	8	4	9	33.5	10	7	6	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5
FW	32	32	32	32	32	1	32	9	32	32	32	2	32	32	32	6	4	8	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32					

\* Non-Loyola analysts are underlined



APPENDIX VI  
SEQUENCE OF CARD SELECTIONS OF THE NORMAL PROTOCOL

[illegible]

\* Non-Loyola analysts are underlined

APPENDIX VII  
SEQUENCE OF CARD SELECTIONS OF THE ORGANIC PROTOCOL

ANALYSTS	CARD NUMBERS AND CORRESPONDING SCORING CATEGORIES																																																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52				
	W	W%	D%	d%	Dd/S%	M	FM	m	k	K	FK	F%	Fc	c	C'	FC	CF	C	H	Hd	A	Ad	Aobj	At	Sex	Obj	Pl	N	Geo	Art	Arch	Embl	Cl	Bl	Fire	Mask	Abat	P	O	R	T	T/R	AchT	ChrT	Fc	F+	A%	H+A	SumC	IX	X	W:M	Succ			
AN	13	10	11	12	41.5	41.5	41.5	41.5	15	41.5	41.5	14	17	16	41.5	41.5	18	41.5	30	41.5	22	41.5	41.5	25	41.5	24	41.5	41.5	41.5	27	28	23	41.5	41.5	41.5	26	41.5	19	20	1	41.5	2	7	9	6	5	21	29	4	8	3	41.5				
AT	7	42.5	42.5	42.5	18	1	2	3	42.5	42.5	28	12	42.5	42.5	27	5	4	6	25	26	23	24	42.5	20	29	42.5	42.5	42.5	18	42.5	15	42.5	42.5	42.5	14	13	17	18	9	32	31	22	32	11	8	42.5	10	42.5	30	42.5	42.5					
AJ	6	9	17	35	35	35	7	35	35	35	15	10	35	35	35	12	16	11	13	35	35	35	35	35	14	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35			
AB	36	19	36	18	36	2	16	36	13	12	11	1	14	15	4	7	8	9	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36		
AK	15	35	35	14	35	2	7	35	35	35	35	13	12	35	1	35	10	8	35	35	9	35	35	17	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35		
BL	13	36	36	36	36	3	6	36	36	36	36	2	36	36	5	16	11	15	36	36	12	36	36	18	39	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36		
BM	37.5	37.5	37.5	37.5	37.5	6	7	9	37.5	37.5	37.5	2	5	20	4	37.5	17	8	14	37.5	18	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	
BW	18	35.5	35.5	35.5	35.5	35.5	8	35.5	35.5	35.5	35.5	5	10	15	9	7	3	35.5	11	35.5	2	13	35.5	14	12	17	35.5	35.5	16	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5
BE	1	40.5	20	19	18	10	11	26	40.5	40.5	40.5	3	17	16	15	14	13	12	27	28	40.5	40.5	40.5	24	25	7	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	
BR	39	39	39	39	19	1	9	11	38	18	38	14	38	38	20	5	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38		
CH	14	40	40	40	13	4	5	6	40	15	9	3	10	16	20	11	12	17	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40		
CM	37.5	37.5	37.5	37.5	37.5	2	5	6	37.5	15	37.5	3	8	10	9	37.5	4	7	12	14	18	19	37.5	13	37.5	20	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5
CL	38.5	2	17	38.5	38.5	7	38.5	38.5	22	19	18	3	16	38.5	20	13	12	14	9	24	10	38.5	38.5	38.5	18	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5
CB	41	41	41	20	19	1	10	16	28	41	41	3	41	4	24	9	7	8	2	18	17	41	41	22	25	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	
CG	33	4	3	33	33	7	8	33	33	33	33	1	33	33	12	10	9	13	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	
DB	2	37.5	37.5	37.5	37.5	3	14	37.5	37.5	37.5	37.5	12	15	37.5	13	11	10	4	22	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5			
DF	33.5	33.5	33.5	33.5	33.5	4	33.5	11	33.5	33.5	12	3	14	33.5	7	6	8	8	9	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5				

<sup>a</sup> Non-Loyola analysts are underlined

### APPROVAL SHEET

The dissertation submitted by Anthony B. Tabor has been read and approved by five members of the Department of Psychology.

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the dissertation is now given final approval with reference to content, form, and mechanical accuracy.

The dissertation is therefore accepted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy.

January 22, 1959  
Date

Frederick K. Ober  
Signature of Adviser