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METHODS FOR STUDYING WORK AND EMOTIONALITY IN GROUP OPERATION

THE HUMAN DYNAMICS LABORATORY

UNIVERSITY OF CHICAGO

1954

METHODS FOR STUDYING WORK AND EMOTIONALITY IN GROUP OPERATION

A report of investigations conducted under contract with

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Project Assistants: Saul Ben-Zeev, Ida Gradolph, Philip C. Gradolph, William F. Hill

Human Dynamics Laboratory
University of Chicago

1954

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A number of persons have contributed toward the development of the methods described in this monograph. The staff of this project is indebted to the creative insights of Dr. W. R. Bion whose formulations have offered a theoretical frame of reference for our work. We are also indebted to earlier researches which have been conducted by Robert DeHaan, Joe McPherson, Dorothy McPherson, Bernard Rosenthal and William Soskin, and which have suggested profitable direction of investigation. John C. Glidewell and Bettie Belk Sarchet have conducted research making use of some of these procedures, and have helped indicate to us their range of application.

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ERRATA

Page 29, 2nd paragraph, line 1: For "and creative", read "and interpretive".

Page 42, line 3: For "1-14", read "10-14".

Page 59, line 7: For "six through eleven", read "eight through eleven".

Page 67, last line: For "producibility", read "reproducibility".

Page 69, 5th paragraph, line 3: For "D", read "D^1".

Page 96, 3rd paragraph, line 6: For "change", read "chance".

Page 105, line 1: Omit "Overt".

Page 104, Table VII: Covert F: for "8", read "9"; Total F: for "10", read "12"; Total F1: for "7", read "8".

Page 107, paragraph beginning "It appears. . .."; line 3: for "a", read "at".

Page 118, Table VIII: RGST Score totals, F: for "10", read "12"; RGST Score Totals, F1: for "7", read "8".

Page 124, Table X: Correlation of Clinician B_1 with Subject 4: For "-.48", read "-.48".

Page 125, Table XI: Group E, No. r's $\geq +.71$: For "0", read "4".

Page 171, 1st paragraph, line 3: for "maxims", read "maxima".

Page 194, Table XXVIII: Correlation of B_1 with B_2: For ".58", read "-.58".

Page 180: Item 31 has been omitted and subsequent items have been incorrectly numbered. Item 31 should read: "When Ben contradicted the leader, I" For "31." read "32."; for "32." read "33.", etc.

PART I

DEVELOPMENT OF THE PROJECT

Preface

The procedures reported in this monograph are a product of investigations which have extended over the past several years. These procedures have a history, a context, and a background in theory. Chapter I describes the organization of the project, the personnel associated with it, and relevant early studies. It also describes the experimental investigations which were undertaken in order to develop these procedures.

Chapter II summarizes briefly the theoretical framework which has formed the background for our work -- the formulations of W. R. Bion. It also reviews the procedures presented in the rest of the monograph and indicates their relation to the basic theoretical propositions.

CHAPTER I

THE LINES OF INVESTIGATION[1]

The Experimental Situation

This Project began with a proposal for research to be conducted at the National Training Laboratory in Group Development, Bethel, Maine, in the Summer of 1951. The purposes of the research were methodological, substantive, and practical. The methodological aim was to test the feasibility of sequential analysis as a means for diagnosing dynamics in training groups. The substantive aim was to test the usefulness and interpretability of basic categories of emotionality and work, as proposed by Bion and given partial operational definition through preceding work in the Laboratory. The practical aim was to test the effectiveness for group growth of feedback to the training groups of research data on interaction. It was planned that the project would run for three months.

The project was carried out. Staff members were selected during April at Chicago,[2] and trained to make ratings of behaviors within the basic theoretical categories. It was decided also to develop further a sentence completion instrument that could be used to relate personality to behavior in the group. Other data to be collected included daily sociometrics, post-meeting reactions sheets to get member perceptions of each meeting, and specially constructed "Hypothesis Checking Sheets" to check observer diagnosis of meetings against perceptions of members. Four groups were studied, with two observers in each. After reaching Bethel it was decided to administer a self-perceptual Q sort to two of the four groups.

At Bethel, the research team worked with both of the three-week laboratories that were held that summer. The data collected during the first laboratory were regarded as practice data, and this initial trial period was invaluable for sharpening categories and making techniques routinely operative.

By the end of the second laboratory, it was apparent that the graphic method had strong possibilities for both practical and theoretical investigations and the advisory Board of the National Training Laboratory accordingly recommended that the study be considerably expanded and extended.

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[1]This summary was prepared by Herbert A. Thelen.

[2]Saul Ben-Zeev, Ida Heintz Gradolph, Paul Hare, William F. Hill, Joe McPherson, Robert R. Rodgers, Dorothy Stock and Herbert A. Thelen, Project director.

A proposal was sent to the Group Psychology Branch of the Office of Naval Research. They accepted the proposal and have supported the project ever since. The initial proposal to ONR identified and blocked out the work which is summarized in this monograph. The purposes were a) to develop a coherent body of methods for studying interaction in groups--to include procedures for relating individual personality to behavior in groups; for charting the "processes" during group meetings and diagnosing problems of groups from such charts; for identifying subgroups within the total group as clusters of people cooperating to meet particular group and shared individual needs; and for analyzing the changes occuring during the course of several meetings. b) To develop within a single consistent frame of reference a parsimonious set of theoretical categories that would be applicable to all the data--from individuals, group, and subgroups. c) To formulate principles of training (technological) that seemed to be supported by the research experience.[3]

During the first year, the Project staff made a series of pilot investigations to block out the major lines of attack. In 1952, the work was subdivided along the lines of the organization of this monograph. A preliminary statement was completed by the staff of the Project in December, 1952;[4] and a later summary was presented at an American Psychological Association symposium, 1953.[5] The present monograph is the complete statement of methods with illustrative case material. This monograph was written by Dorothy Stock, project director, Saul Ben-Zeev, Ida Heintz Gradolph, Philip Gradolph, and William F. Hill under the general supervision of Herbert A. Thelen, Principal Investigator and Director of the Human Dynamics Laboratory.

Overview of the Development of Basic Methods

Three basic complementary methods of investigation are here presented. Each of these methods had more or less been explored in work prior to the beginning of this project. We wish here to indicate the various phases of the development of each of the three methods.

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[3]The final formulation of training principles appears as a didactic presentation in Chapter V, of Thelen, H. A., Dynamics of Groups at Work. The University of Chicago Press, July, 1954.

[4]Ben-Zeev, Heintz, Hill, Stock, Thelen, Methods for Research on Interaction in Groups. Human Dynamics Laboratory, 1952. (Dittoed.)

[5]Thelen, Stock, Ben-Zeev, Hill, I. Gradolph, P. Gradolph, The Application of Bionic Theory to the Study of Small Groups. Human Dynamics Laboratory, 1953. (Dittoed.)

Phases in Development of the Reactions to Group Situations Test (RGST)

The sentence completion test as an instrument to predict behavior of individuals in a training group was explored by Bernard Rosenthal and William Soskin at the National Training Laboratory, Bethel, Maine, in 1949. They developed an instrument known as the "Jack and Jill." The test was re-written to present group-situational stimuli, and prediction to observed behavior in the group was investigated by Joe McPherson.[6] He also showed that the Sentence Completion test was more effective than the Thematic Apperception test for predicting Bion's categories of work and emotionality communicated by individuals to the group.

The present project staff re-wrote the stimulus statements to incorporate the work and emotionality categories. They also developed the quantitative scoring system presented in Chapter VII. The validity of the test for predicting behavior was tested by Ida Heintz Gradolph and Philip C. Gradolph (Chapter IX).

Concurrent with the development of the instrument since 1951 were a number of studies which demonstrated its usefulness for different purposes. Chief among these are Bettie Sarchet's prediction of sociometric ratings,[7] and Glidewell's use of dynamic characterization of the group-as-a-whole, and successful prediction of characteristics of group products.[8]

Phases in the Development of the Method of Sequential Analysis

The first investigation in which a graphic summary of ratings was attempted was by Robert DeHaan,[9] who rated contributions to the group in the emotion-work categories. The plotting procedure involved subtraction of emotion from work, and one point was plotted for each successive group of five statements. DeHaan used the graph successfully to identify people who tended to contribute to maintain emotion, maintain work, or try to change one to the other.

The project team during the summer of 1951 decided to present work, emotionality, and

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[6] McPherson, Joe H., "A Method for Describing the Emotional Life of a Group and the Emotional Needs of Group Members." Unpublished Ph.D. dissertation, Department of Education, University of Chicago, August, 1951, p. 234.

[7] Sarchet, Bettie Belk, "Prediction of Individual Work Role in Two Adult Learning Groups." Unpublished Ph.D. dissertation, Committee on Human Development, University of Chicago, December, 1952, pp. 161.

[8] Glidewell, John C., "Group Emotionality and Productivity." Unpublished Ph.D. dissertation, Department of Psychology, University of Chicago, December, 1953, pp. 339.

[9] DeHaan, Robert F., "Graphic Analysis of Group Process." Unpublished Ph.D. dissertation, Committee on Human Development, University of Chicago, December, 1951, pp. 214.

rate of interaction as separate lines, and to graph the amount of each during each minute. The team also subdivided Bion's single work category into four sub-categories which were then given different weightings. (See Chapter III.) Further developments include the development of the utilizing procedure for dividing the graphed periods into "natural units," by Ben-Zeev (Chapter V) and the development of the "field graph" for summarizing the course of meetings by Thelen (Chapter VI).

Phases in the Development of the Q-sort Method for Studying Subgroupings and Group Growth

The basic method was developed by William Stephenson and is now detailed in his book.[10] The use of Q-sorts for understanding phenomenological aspects of behavior in groups was explored in a variety of studies in the Laboratory. The ones most directly contributory to the present methods were: the demonstration by Dorothy McPherson that one's own role as perceived by the individual changes more than his perception of his ideal role, and that both kinds of information are useful in explaining behavior of individuals in the group.[11] Dorothy Stock showed that Q-sorts in which the individual characterized his own role and also the roles of each other member in the group could be used for prediction of sociometric relations within the group.[12]

Since 1951, Stock has applied factor analytic techniques to the Q-sort data, and, from this, has identified subgroups. (Chapter X.) William F. Hill has developed some principles for interpreting group process in terms of the relationships among these sub-groups. (Chapter XI.) Stock is currently using the factor analytic method to appraise group growth in terms of changes in sub-group character and membership. This work will be reported at a later date.

The Character of the Groups Studied

The methods here described were developed from study of "laboratory" training groups, and most of the data were collected in four such groups at the second summer Workshop in 1951 at Bethel, Maine. The decision to study training groups was influenced by a number of considerations:

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[10] Stephenson, William, The Study of Behavior. The University of Chicago Press, 1953.

[11] McPherson, Dorothy Whiting, "An Investigation into the Nature of Role Consistency." Unpublished Ph.D. dissertation, Department of Education, University of Chicago, December, 1951, pp. 253.

[12] Stock, Dorothy, "The Relation between the Sociometric Structure of the Group and Certain Personality Characteristics of the Individual." Unpublished Ph.D. dissertation, Department of Psychology, University of Chicago, December, 1952, pp. 148.

First, these groups tend to express and characterize their emotional reactions as they go. In other words, during the course of the training process they are continually trying to make "feelings" explicit, diagnose their problems of operation, and pay attention to the adaptations of individuals. These perceptions are valuable data for one who would understand dynamics of groups.

Second, since the groups are not bound by objectively-formulated problems, one has the opportunity to study the processes of developing commitment to emerging problems unhampered and restricted by imposed "demands" from the outside. The processes by which "felt" problems become identified and translated into explicit agreed-upon purposes are of paramount importance and can be studied in these groups. In effect, there is greater permissiveness than in most "task-oriented" groups because the reactions of each individual have to be taken into account and dealt with much more fully than in situations where performance criteria are "given" by prior defined purposes and problems.

Third, these groups, during their three-week lives, go through a remarkable and perfectly obvious course of growth. The changes are large and describable; so that there is excellent opportunity to test hypotheses about dynamic cause-effect relations.

The particular training groups studied contained approximately 16 members, a Training Leader, and a Training Associate. The members are adults, and come from high-level jobs in industry, armed forces, public health service, churches, universities, and the like. All the members have come to learn more about how groups operate, the factors affecting productivity, and insights into their own roles as leaders and members of groups. The Training Leader is typically a central staff member of the laboratory, and, at home during the year, he engages in research on groups, consultation to groups, and teaching. The training associate is generally someone who shows promise, on further development, of being a Training Leader.

The groups met in the morning for two hours a day, Monday through Friday, for three weeks; they did not meet the first and last days. Following the 2-hour laboratory experience, they remained in session a third hour for "theory" sessions whose purpose was to present research and other experience which would enable the groups to generalize from their experience and identify principles of group operation. In the afternoon, the workshoppers were regrouped for a study of specific skills in "application" areas, and in the evenings they attended "general sessions" and also met in small informal psyche-groups.

The interactions in the training groups are complex and subtle. There is initially a minimum definition of limits to behavior. Gradually the necessary boundaries become defined

and problems become "structured"--often without being explicitly verbalized. Throughout the life of the group, individuals tend to operate simultaneously to meet their personal-emotional needs and the needs of the group as a working instrument. It is our belief that our methods, which shed considerable light on these complex processes, should be useful also in dealing with more typical task-oriented groups.

CHAPTER II

THE CONCEPTUAL FRAMEWORK AS A GUIDE TO DEVELOPMENT OF METHOD[1]

Basic Concepts and Propositions

One of the original aims of the research was to test the usefulness and interpretability of the basic concepts of group operation put forth by W. R. Bion.[2] Bion's ideas seemed a particularly useful point of departure for several reasons. His formulation offers a parsimonious set of dynamic constructs which deal with two major factors in group life--cognition and emotionality. Further, he offers a way of understanding the interrelationships between these two factors. Earlier experimental work in the Laboratory as well as hunches drawn from experience with groups had indicated that an analysis of cognitive processes alone was inadequate for a full understanding of group operation. A more fruitful focus was cognition-and-emotion; a focus offered by Bion. We were interested in studying groups from the point of view of the total group, the individual and the sub-group. In his work, Bion dealt primarily with the group as a whole. However, his basic ideas seemed to us to be equally applicable to the individual and the sub-group. If this proved to be true, our analytic power would be greatly increased, since applying the same constructs to these three approaches would facilitate identifying the relationships among them. Bion used his constructs to diagnose underlying concerns and problems in the group. His concern was with therapy rather than with research and consequently his approach was intuitive and interpretive. We wanted to use these concepts in a more controlled manner as a research tool. But again, we felt that these constructs could be precisely defined and made operational. If so, the same constructs could be used on the level of observation and on the level of explanation. This too would be a considerable advantage in interpreting group interaction.

There are certain probably significant differences in the way we have used Bion's ideas and the ways in which he himself used them. Bion evolved his theory out of experience with

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[1] This statement of theory and overview of the methodologies was prepared by Dorothy Stock, Ida Gradolph, and Philip C. Gradolph.

[2] Bion, W. R., "Experiences in Groups: I," Human Relations, 1948, 1, 314-20.
Bion, W. R., "Experiences in Groups: II," Human Relations, 1948, 1, 487-96.
Bion, W. R., "Experiences in Groups: III," Human Relations, 1949, 2, 13-22.
Bion, W. R., "Experiences in Groups: IV," Human Relations, 1949, 2, 295-304.
Bion, W. R., "Experiences in Groups: V," Human Relations, 1950, 3, 3-14.
Bion, W. R., "Experiences in Groups: VI," Human Relations, 1950, 4, 395-402.
Bion, W. R., "Experiences in Groups: VII," Human Relations, 1951, 4, 221-28.
Bion, W. R., "Group Dynamics: A Re-View," International Journal of Psychoanalysis, 1952, 33, 235-47.

therapy groups. His focus was the total group; his approach was interpretative and global. Our work has been with normals in training group situations; our approach has been microscopic and experimental, and our emphasis has been on sub-group and individual factors as well as total group factors. These differences have led us to emphasize certain aspects of Bion's theory more than others, and to modify and reinterpret some of his ideas. In the following discussion we shall briefly summarize our current formulation of the theory. We will deal first with those aspects of theory relevant to total group operation; and then with those that are relevant to sub-group and individual factors.

The two basic variables in total group operation are Work and Emotionality. At any given time a group can be seen as dealing with both cognitive and emotional problems, i.e., it is concerned with working toward some cognitive task or goal (Work); at the same time it is concerned with resolving certain emotional or process problems.

The four significant emotional categories of group life are: Pairing, Dependency, Fight and Flight. Bion uses these categories to describe the psychological state, or in his terms, the "culture" of the group. For example, when he refers to the group as being in a Dependent (D) culture he means that the group is concerned with its inadequacy or weakness and is striving to find support or direction from its leader or from some source external to itself. When a group is in a Fight-Flight (F-Fl) culture it is concerned with avoiding or keeping from dealing with some particular problem by either withdrawing from or attacking it. In a Pairing (P) culture the group is concerned with finding strength from within itself by exploring interrelationships among members.

Our microscopic, experimental approach required further definition of these categories in behavioral, operational terms. When an individual in a group appeals for help from the leader, asks for structure, or expresses weakness or inadequacy--we say he is expressing Dependency. When an individual attacks, expresses anger or hostility, is critical, resentful or resistant, we say he is expressing Fight. In expressing Flight, an individual passively withdraws or daydreams; or actively attempts to divert the group from its task by talking off the point or expressing inappropriate humor. In expressing Pairing a member supports another member, expresses warmth, friendliness or partiality for another member or his ideas.

Group operation can be described in terms of the specific relationship between Work and Emotionality. One of Bion's major premises is that a certain relationship exists between Work and Emotionality such that at any time one particular emotionality expresses itself through work while expression of the other two emotionalities is suppressed. Operating as he

does on a fairly global level, Bion is able to perceive the group as being concerned with and operating within one culture for a long period of time. During such a period a group might be concerned with Pairing problems--exploring its "peer" relationships--to the extent of temporarily suppressing or not dealing with its relationship to the leader (Dependency concerns) or its aggressive concerns (Fight) or withdrawal tendencies (Flight).

We have found that although from a macroscopic point of view the group can be characterized as, for example, dealing with Pairing problems, on a microscopic level individual contributions may express any of the emotionalities. We feel that differences between our findings and Bion's assumptions are not irreconcilable but are the effect of approaching the group from two levels.

Group operation can be described in terms of alternating periods of varying W-E character. Bion postulates group interaction as a series of phases, each one of which is homogeneous with regard to its Work-Emotionality characteristics and different from the periods preceding and following it. For example, a group may be seen as operating in a W-P culture for a period of time; the W-P culture may then give way to a W-D culture; and this in turn may be followed by a W-F culture, etc.

Anxiety and need gratification account for the shift from one culture to another. Bion postulates that each Emotional and Work state carries with it certain inherent anxieties and satisfactions. For example, when a group begins to operate in a Dependency culture it is experiencing certain satisfactions associated with finding security and direction from the leader. However, after a time a group may begin to experience certain anxieties also associated with Dependency--e.g., with being immature and non-adult. Bion does not spell out in detail the specific anxieties and gratifications associated with each of the cultures, and our work has not so far illuminated this point. However, we do find that certain individuals tend to be more sensitive to the anxieties and satisfactions specific to certain cultures than others, and that these individuals may precipitate shifts from one culture to another.

Individuals in group situations may be characterized as having certain valency patterns; that is, certain predispositions for operating more frequently in certain Work-Emotionality categories than in others. Bion uses the term Valency in two ways. In its first sense, Valency accounts for the fact that some individuals participate in some emotional or work situations and not in others. In its second sense, Valency accounts for the "combination" of individuals. Not only do certain people seem to participate more in some situations than others, but the people involved also seem to be interacting or participating together--that is,

they coparticipate in a particular W-E culture. We have used the concept Valency in both of these aspects. The former provides a means of relating individual personality to behavior in a group. For example, we might characterize a given group member as being predisposed to react to certain group situations with Fight. Perhaps situations in which most of the other members are exhibiting Pairing is disturbing to him, and he reacts with aggression. Similarly, we could identify situations in which he will most probably exhibit each of the other modalities. The second aspect of Valency leads to the notion that group operation can be characterized in terms of the interaction of a limited number of sub-groups--each homogeneous with regard to Valency characteristics.

This, then, is a brief summary of the theoretical framework within which we operate. Substantively, the theory emphasizes the actual process which occurs during the course of group operation--the relationships between cognitive and emotional aspects, shifting phases of group life, and so on. It also indicates, through the concept of valency, a possible way of relating individual personality to group operation, and suggests the "Valency" sub-group as a profitable unit for studying group activity.

The Methods to be Developed

In order to explore further this framework and to make possible its application to problems of group operation, a series of specific techniques were required. The primary interest of the Human Dynamics Laboratory has been in the actual operation of the group--what happens when a number of people interact with each other in a group situation. We therefore required techniques for looking at group interaction. And because information about the individual and the sub-group can illuminate the character of group operation, these also became objects of study for which techniques were required.

Methodologically, then, our first need was to develop an instrument for describing behaviors in the group. The instrument devised for this purpose is a rating procedure which assesses each statement as it is made in the group for the character of the emotionality and the quality of work expressed in the statement. This instrument--which we have called the Behavioral Rating System--provides us with our most basic information about the group. That is, it characterizes, rather minutely and microscopically, the sequence of events in the group in work-emotionality terms.

The other instruments which we have developed are related to the Behavioral Rating System in that they help to summarize, explain or interpret the "core" data contained in the ratings. These additional instruments fall into two general classes.

The first group of instruments includes three procedures which organize and summarize the ratings of overt behaviors. These procedures are, firstly, a Minute-by-Minute Graph which summarizes the work and emotionality characteristics of the group for each minute of interaction and represents them graphically. A second device is a Unitizing Procedure which permits the objective identification of natural process units within the group. Such units may vary in duration, but each represents some quality of interaction distinguishable from the units preceding and following it. A final technique in this series, the Work-Emotionality Field Graph, represents the sequence of natural units for a single meeting on a field graph in which work and emotionality are the basic dimensions.

These devices deal with behavior within the group situation. Each successive procedure permits the investigator to focus on a somewhat more macroscopic level of group interaction: The Behavioral Rating System focusses on the individual statement; the Minute-by-Minute Graph on the minute; and the Field Graph on the natural unit. In every case, the emphasis is on analyzing the events which occur in the group sequentially. These four techniques, taken together, permit the Sequential Analysis of Group Process.

A second important group of instruments relate to the core data in another way. These instruments involve collecting additional information about the individual which is outside his actual operation in the group, but which can throw light on the individual's behavior in the group or on the probable character or course of group events. The first instrument of this type is the Reactions to Group Situations Test. This is a sentence completion test which focuses on those aspects of individual personality which are most relevant to predicting behavior, attitudes, etc., in a group setting. The second instrument in this group--a self-perceptual Q-sort--collects data from the individual about his perceptions of his own performance in a group situation. Statistical analysis of these data permits grouping individuals into similar types, so that the Q-sort facilitates looking at the group from the point of view of its sub-group composition.

In the paragraphs which follow, we will describe each of these techniques in more detail, emphasizing their relations to theory, and indicating in a general way the application they may have to the study of groups.

The Behavioral Rating System

The Behavioral Rating System is our basic descriptive tool. It takes as its unit the individual statement in the group. Each statement as it is made is rated for Work (four possible categories) and for Emotionality (four possible categories). The rater also identifies

the speaker, time to the nearest minute, and as much content as possible. The rating procedure thus provides a sequential record of the work and emotionality characteristics of each statement made during a group meeting.

The most fundamental theoretical assumption on which the rating system depends is that work and emotionality are two basic aspects of group life. It depends further on Bion's assumption that group emotional behavior can be characterized as Dependency, Pairing or Fight-Flight. In developing these views, Bion was looking at the group from the point of view of broad phases of group interaction. In adapting his general viewpoint to the rating system we made the further theoretical assumption that each individual statement (as well as broader phases of group activity) can be characterized as having both a work and an emotionality component. We found empirically that on the level of the individual statement observers are able to identify four levels of work and four kinds of emotionality: Pairing, Dependency, Fight and Flight.

The behavioral rating system is essentially descriptive, and is useful only to the extent that meaningful ways can be found for summarizing and interpreting the data. Because we have been interested in preserving a sequential approach to the analysis of group events, we have found graphing procedures, which permit the ordering of events along some time line, very useful.

The Minute by Minute Graph

This procedure summarizes the information yielded by the Behavioral Rating System and represents it graphically. The basic unit in this procedure is the minute. The weighted sum of work, the weighted sum of emotionality, and the total number of contributions are computed for each minute of interaction. These three sums are then plotted on a graph in which the vertical axis represents weighted frequency per minute and the horizontal axis is marked off into time in minutes. (For an illustration of this see page 37.) This graph provides a running picture of the relationships between these three basic components of the ongoing process of a group.

In terms of theory, this procedure is again based on the assumption that the basic aspects of group life are work and emotionality. It emphasizes, more than does the rating system, the fact that what is important for interpretation is the relationship between work and emotionality. That is, the graph permits us to see the differences between (for example) periods of high level work with little emotionality, high level work with much emotionality, low level work with much emotionality, etc. We have added "number of contributions per

minute" to this graph because we have found from experience that the rate of interaction (as well as its quality) is a highly interpretable characteristic of group interaction. To illustrate, low level work with much emotionality in which the majority of the group is participating all at once means something different for the group than the same work-emotionality characteristics when only one or a few persons are participating.

It should be pointed out that in moving from the level of the individual statement to the minute, we have also moved from a focus on individual behavior to a focus on the character of group interaction. The graph permits us to explore such questions as "What is the group doing?", "What phases of activity is the group engaged in?", "When and in what sequence does the character of the emotional atmosphere shift?", and so on. In addition to making it possible to look at interaction on a group level, the graphing procedure also permits looking at individual behavior from the point of view of the context in which it occurs, and facilitates looking at such questions as "What group needs does this statement satisfy?", "What in the group context has triggered off this anxious, off-target remark?", etc.

The Unitizing Procedure

The unitizing procedure permits one to divide a single meeting into a number of "natural process units." The procedure involves listing all the different speakers for each minute of interaction and determining, by a set of conventions, those points at which the participation pattern shows some marked shift. (That is, the point at which certain members drop out and others begin to participate.) Such points, termed "turning points," mark off the meeting into a series of "natural process units." We have found empirically that such units identified in the training situations we have studied may be from three to twenty minutes long.

The concept of valency provides the theoretical suggestion that identification of natural units can be based on changing patterns of participation. By "valency" is meant the characteristic predisposition of the individual to behave in certain ways in the group and to tend to participate with others similarly disposed in each situation. It follows that during the course of a group meeting we would expect certain individuals to "carry" certain kinds of situations; certain kinds of situations should stimulate some members to participate and others to be silent. In testing the unitizing procedure we have found that successive units do in fact differ not only in their participants but also in the W-E characteristics of the interaction within the group. The unitizing procedure permits dividing the sequence of contributions into units which are more interpretable than those obtained by arbitary time division. The fact that natural units may be from three to twenty minutes long means that a two

hour meeting can now be described and analyzed in terms of eight to twelve relatively homogeneous periods--rather than in terms of a single large unit or a large number of more minute units. The unitizing procedure is thus an essential step in permitting the analysis of group process in terms of broader phases of activity.

The Work-Emotionality Field Graph

The natural process units are used as the basis for analyzing meetings and for comparing different periods in the life of the group. The natural units identified for a single meeting can be represented sequentially on the Work-Emotionality Field Graph. The average work and the average emotionality per statement are computed for each natural unit. Each unit can then be located on a graph in which the vertical axis represents average emotionality per statement and the horizontal axis represents average work per statement. Two additional kinds of information are also placed on the graph: the average number of contributions per minute and the duration of each unit in minutes. This is done by representing each unit on the graph by a rectangle (rather than by a single point) in which the height of the rectangle is made proportional to the duration of the unit and the width is made proportional to the average number of contributions. Successive units are numbered and connected with arrows in order to indicate clearly their sequence. (See page 77 for an illustration). The field graph permits one to follow the course of events occurring during a single meeting, unit by unit, in terms of shifts in Work-Emotionality relationships.

The field graph is built on the basic theoretical assumption that the relationship between Work and Emotionality is a fundamental characteristic of group life. The field graph, in combination with the unitizing procedure, permits one to look at group activity on a fairly macroscopic level of phases of interaction. And (by referring back to the individual ratings) the Work-Emotionality characteristics can be clearly specified for each phase.

The most direct application of the field graph is in analyzing a single meeting in terms of successive units. The graph can also be used for comparing meetings: either successive meetings of the same group or comparable meetings of different groups. It permits one to explore such questions as: "What shifts in the quality of work occur from meeting to meeting?", "Does the range of expressed emotionality change or maintain itself during the course of group growth?", "How do several groups compare in range of emotionality, quality of work, and characteristic area of operation as represented on the work-emotionality field graph?"

The Reactions to Group Situations Test

The Reactions to Group Situations Test collects data from the individual independent of his behavior in an actual group situation. It is a sentence completion test especially constructed to get at those aspects of individual personality which are related to behavior and attitudes in a group. The test consists of a number of incomplete sentences: some present "pure" stimuli related to specific emotional or work modalities; others present mixtures of modalities. The individual taking the test must respond by completing the sentences. A scoring system has been devised in which each completion is judged for acceptance or rejection of the stimulus item, for the modality introduced in the response, and for the manner of response (action, feeling, etc.) Interpretation based on the score pattern and on the content of the responses permits one to form a general picture of the kind of behavior one might expect from the individual in a group situation. More specifically, it is possible to predict the extent and nature of his participation, the modality situations the individual can readily accept and deal with, the situations which he finds disturbing, the kind of response he makes to specific modality situations, the range of response available to him, and so on.

In terms of theory, the RGST is a device for predicting the valency pattern of the individual. The attribute of valency most directly related to this instrument is that the individual qua individual tends toward greater participation in some types of work-emotionality situations than in others. In the course of developing an instrument designed to actually measure such participation preferences we found we could amplify and refine this rather general definition. A full assessment of the valency characteristics of an individual includes these related kinds of information: the situations (defined always in modality terms) in which he will participate and not participate; the situations with which he can deal adequately and the situations which disturb or immobilize him; and his characteristic responses to different modality situations.

The RGST is our instrument for looking at the individual, but it emphasizes those aspects of the individual which are most relevant for understanding his group behavior. Thus, on the level of finding out about the individual, the RGST can reveal some of his predispositions for behavior, needs, areas of confusion, conflict or immobilization, etc. But we also assume that relevant information about the individual can help explain group conditions and the course of group growth. From the point of view of the group, the RGST can anticipate the kind of role the individual is likely to assume in the group, the kinds of work-emotionality situations he will tend to precipitate, maintain, reject, and so on.

The Self-Perceptual Q-Sort

The self-perceptual Q-sort is another instrument which collects information about the individual outside the group situation. The Q-Sort,[3] as we have principally used it, is a device for getting information about the ways the individual feels about his own behavior in a group. The test consists of a large number of descriptive statements which the subject must use to produce a self-description. He does this by sorting the statements into a specified (symmetrical) frequency distribution in which one end of the distribution represents "most like myself" and the other end represents "least like myself." The fact that the individual descriptions produced in this way are in a standard form means that they lend themselves to statistical manipulation: correlation coefficients can be computed to indicate the degree of relationship between any two sorts, and factor analysis can be applied to a group of sorts in order to define the communalities among a larger number of self-descriptions. The Q-sort thus produces a picture of the individual from within his phenomenological framework. The application of factor analysis permits us to identify the number and character of the phenomenological sub-types existing within a total group.

The Q-sort, like the RGST, is related theoretically to the concept of valency. However, rather than dealing with the valency characteristics of individuals per se (as does the RGST) the Q-sort relates to that aspect of valency which explains the combination or relation of individuals. Bion says that individuals, because of their valency patterns, combine to produce a certain work-emotionality situation in the group. Thus, for example, one might identify several individuals within a larger group who have strong positive valencies for Pairing and strong negative valencies against Dependency. One would expect these members to take the lead in developing close personal peer relationships within the group--i.e., in working toward or maintaining the kind of work-emotionality situation which satisfies their own needs and are in line with their valency characteristics. Although these members may or may not be aware of their communality of interest, one could say that they were "cooperating," or in Bion's terms "combining" to produce a certain W-E situation. The Q-sort is a device for identifying such valency sub-types within the total group. In working with such sub-types we have come to the further hypothesis that it may be profitable to look at the total group in terms of the phenomenological sub-groups of which it is composed. Group operation might then be perceived as the relationship or interaction between a limited number of fairly homogeneous sub-groups.

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[3] A procedure developed by William S. Stephenson and described in his book, The Study of Behavior, Chicago: University of Chicago Press, 1953.

Although the Q-sort begins with self-perceptual data about the individual, the statistical procedures we apply isolate as content those aspects of the individual which he holds in common with other group members. This technique permits us to explore such questions as: "What part of the group has most meaning or potency for the individual?" "What is the W-E range (or limits) inherent in the group composition?" "What shifts occur in valency sub-group patterning during the course of group growth?"

Q technique is a flexible method and can be used in a variety of ways besides the one described here. Within the framework of group problems, the Q-sort can be used to produce structured descriptions of the individual member or the group, by members, leaders or observers. An additional application of Q technique is described in Chapter VIII, where the validity of the RGST was tested by checking Q-descriptions of members based on the RGST protocol against Q-descriptions of the same members based on observation of the member in a group situation.

Selecting Techniques for Substantive Investigations

All the techniques described above were devised in order to permit the analysis of group process and to facilitate testing certain aspects of a theory based on Bion's propositions. In other words, all were developed within the context of a central theory of group operation. This has produced a certain cohesiveness among the various procedures which permits one to relate them readily to each other.

In the investigation of any substantive problem, we would expect to make use of several of the techniques within a single experiment. To illustrate some of the ways in which various techniques might be used together, let us describe briefly some of the work now being carried on in the Human Dynamics Laboratory:

In a study on group composition, Ida Gradolph is using the Reactions to Group Situations Test and the four techniques included under the Sequential Analysis of Group Process. She is composing groups of known valency types (individual valency patterns are determined from the RGST), placing them in a standardized experimental situation and observing individual behavior (the Behavioral Rating System) and group characteristics (the Minute-by-Minute Graph, the Unitizing Procedure, and the Field Graph). This study, besides exploring the general relationship between personality factors (valency type) and behavior, also permits the investigation of the influence of homogeneous and heterogeneous valency compositions on group operation, the behavior of the individual when placed with others of similar or dissimilar valency types, etc.

In some exploratory work on group development, two approaches have been employed. William F. Hill and Dorothy Stock have compared the course of growth of two groups by drawing

field graphs of each day's interaction and then noting day to day changes in the range of emotionality expressed, work level, units showing integration of work and emotionality, units showing loss of the work task, etc. In another approach to the same problem Dorothy Stock is determining the pre- and post valency sub-group structures of three groups (in which the leaders exhibit varying valency characteristics) and is comparing them for changes in the number and relation of sub-groups, convergence or divergence, position of the leader in the structure, etc.

In some of the basic exploratory work at the Laboratory several techniques might be brought to bear simply in order to aid in interpretation. For example, in analyzing a group meeting in terms of successive phases of interaction on a field graph, one particular unit appeared to be crucial to the course of development within the meeting. That unit could then be studied more intensively by getting "inside" the unit by looking at its minute-by-minute graph. One could also determine the stability of the behavioral sub-group through the use of the unitizing procedure, and determine the relation of the behavioral sub-group to valency sub-group structure of the total group and to sociometric information.

In exploring further the meaning of the natural process unit, Saul Ben-Zeev is investigating the relationships between the behavioral sub-group (as identified by the unitizing procedure), the valency sub-group (identified by the Q-Sort) and the sociometric sub-group. In a similar kind of study Philip C. Gradolph is comparing the kind of information yielded about the individual by the RGST--a projective device--and the Q-sort--a self-perceptual instrument.

The rest of this monograph is not, however, concerned with applications or interrelations. The following chapters present the techniques in essentially manual form--in sufficient detail so that readers may use them in their own research. Chapters III, IV, V, VI, VII, and X are primarily descriptive. Chapters VIII, IX, and XI are illustrative.

PART II

DIAGNOSING GROUP PROCESS THROUGH SEQUENTIAL ANALYSIS

Preface

The method of sequential analysis of group process includes four separate procedures.

The Behavioral Rating System:

A method for rating the work and emotionality components of individual contributions as they are made in the group. (Chapter III.)

The Minute-by-Minute Graph:

A method for summarizing graphically the work, emotionality and pace characteristics of each minute of interaction. (Chapter IV.)

The Unitizing Procedure:

A method for identifying "natural process units." (Chapter V.)

The Work-Emotionality Field Graph:

A method for summarizing meetings by representing the sequence of natural process units on a work-emotionality field graph. (Chapter V.)

The basic event in this method of analysis is the individual statement. By applying additional procedures it is possible to focus on the minute, the "natural process unit," the meeting, or the total life of the group as the unit of analysis. Each movement to a broader, more macroscopic level of analysis is rooted in the previous more microscopic level, and the entire system permits one to relate levels readily. The possibility of analyzing group process <u>sequentially</u> is preserved in each step.

CHAPTER III

CATEGORIZING BEHAVIORS IN THE GROUP: THE BEHAVIORAL RATING SYSTEM[1]

From observation of groups, Bion characterized broad phases of group activity (which he called cultures) in work-emotionality terms. He perceived that such periods could be described as being infused with certain emotionalities in combination with work. The emotional states which he defined were dependency, pairing and fight-flight. Bion deals almost entirely on the level of the total group and not with the individual. But he does point out that at times certain individuals seem to express affect for the group, becoming for a time "barometric" of the group culture.

In developing the behavioral rating system to be described here, we made a similar assumption: that detectable affect may be expressed by the individual in his verbalizations to the group, and that the quality of emotionality in the group as a whole must ultimately have its source in such expressions. Accordingly, in our early observations of groups we tested to see if dependency, pairing, and fight-flight could be detected in individual contributions. We found that such emotionality could be observed. We also found that when looking at individual contributions fight and flight can be seen as two distinct kinds of expression, and that each of the emotional modalities are expressed behaviorally in a variety of ways. As a result of this exploration, four emotional categories were adopted: dependency, pairing, fight and flight. Definitions were established, both generally (dynamically) and in terms of specific behaviors which typically fall within each category (operationally).

On his total group level, Bion deals with work wholistically and does not distinguish types or levels. Operating as we were on a more microscopic level, we found that we could detect different qualities of work in different contributions. Experience led us finally to the identification of four levels of work and to their incorporation into the rating system.

The rating system, then, consists essentially of four emotional categories and four work categories. Each statement made in the group is rated for both the quality of the work and the character of the emotionality expressed.[2] Thus the rating system supplies a sequential record of events occurring in the group, in work-emotionality terms.

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[1]The following persons participated in the development of the behavioral rating system: Saul Ben-Zeev, Ida Gradolph, Paul Hare, William F. Hill, Joe McPherson, Robert R. Rodgers, Dorothy Stock, and Herbert A. Thelen. This chapter was prepared by Dorothy Stock.

[2]Every statement is rated for work; a statement may or may not contain a detectable emotionality.

Two characteristics of the rating system make it possible to derive meaning from a limited number of categories: the approach is group oriented, and the characterization of individual statements is always in terms of some combination of work and emotionality. By "group-oriented" we mean that while we are looking at individual statements it is always from the point of view of their meaning for the group. This means, for example, that both boredom and facetiousness can be placed in one category--flight. If we were interested in a detailed description of the individual it might be necessary to separate these. But from the point of view of understanding the group process both these behaviors are "flight" from work on group tasks. Thus each of the emotional categories comprises a constellation of specific behaviors, each having some common denominator which is meaningful from the point of view of the dynamics of the group. The fact that each statement is described in terms of some combination of work and emotionality increases the interpretability of the ratings since each possible combination possesses some unique flavor. Work level 1 in combination with flight, for example, is very different in character from work level 1 in combination with pairing. Flight has a different meaning for the group when it is combined with work level 3 than when it is combined with work level 1.

A rating system of the kind we have developed poses some special problems. A great deal of judgment is required on the part of the observer because each category comprises a constellation of behaviors and because any particular behavior may at different times belong in different categories--depending on context, tone of voice, etc. Observers are required who possess a set of trained and internalized understandings of the dynamics of the various categories, and who are able to make rapid judgments within the framework of these understandings. Because of the reliance on observer-sensitivity, careful definition of categories and extensive training of observers is required in order to ensure comparable results from observer to observer.[3] As further insurance of valid and meaningful records we do not rely on the ratings of one person, but always use the combined judgment of two independent observers.

In the pages which follow, the behavioral rating system will be described in detail: We shall

A) Define the categories which guide observation.

B) Present a step-by step description of the rating procedure.

C) Present data on the reliability of the categories of observation.

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[3] In our work, approximately 25 hours were employed for practice observation, with extensive discussion by the group of differences among ratings. Training was spread over three months, and the last practice periods were in groups in the same situation as those from which data were collected.

The Categories Which Guide Observation

The Ratings of Emotionality

Four emotional categories have been identified and defined. These are Fight, Flight, Pairing, and Dependency. The rating system assumes that a statement made in the group might or might not express a detectable emotionality. If emotionality were present, it was placed in one or another of these four categories.

Fight.--Fight statements express hostility and aggression. The fight constallation may include attacking, rebuking, punishing, blocking, dividing (the group), warning, threatening, expressing hostile resistance, self-aggrandizing (at the expense of others), scapegoating, ridiculing, etc. The following illustrate some common ways in which Fight may be expressed:

Attacking, deprecating the group; aggressive impatience with the group.

f You say you're satisfied with the group and yet people feel withdrawn. I question the effectiveness of a group in which people don't feel involved.

f You (the group) feel you can just put people together and that will change their attitudes.

f Aren't we ready to go on? We've wasted enough time.

f This group is structured too highly. We could get all we've gotten out of a lecture. We should be less passive. Our job is not listening.

Attacking specific members.

f That's not fair.

f You missed the ball.

f I question his motives.

f Why did you do it, anyway?

f I would like to have the leader step out.

f Would you like to get into a conflict?

f You didn't do it in a way it could be resolved.

f We were waiting for you to change. You're the one who has to change.

f I wish you'd take your tongue out of your cheek.

f I had a feeling of a split in the leadership. If this had been in the open we would have felt more comfortable.

f You feel you're just an average person, don't you?

Blocking the group.

f I have not understood any of this.

f I can't understand why we're doing this.

f Do you ever get any expression in role playing that means anything? I wonder about the validity of the whole idea.

f I don't think its worth doing, but go ahead.

Self-aggrandizement at the expense of others.

f I had experiences the others didn't have.

f My sensitivities told me 15 minutes ago we didn't want to do this.

f I feel a responsibility to the group. I just can't sit back and let the group flounder.

f I resisted that idea every time it came up.

Projected hostility

f Tom, get up there and portray hostility for us.
I don't feel hostile.
f Well, if you did you could do a good job of it for us.
f I will volunteer to be the scapegoat.

Pairing.--Pairing statements express warmth, intimacy, and supportiveness. The pairing constellation may include expressions of intimacy toward individuals, warmth, supportiveness, friendliness, unusual responsiveness, side remarks to another, expressions of commendation, enthusiasm or warmth directed toward the group as a whole. The following illustrate some common ways in which pairing may be expressed:

Expressions of intimacy, warmth and supportiveness.

p He's learned a lot here.
p He's learned more than anybody.

p We're asking you once again to be a member, Joe.

I wanted to say things but didn't because they wouldn't contribute. A feeling for the group superceded status. Is that maturity?
p It's certainly travelling a long way toward it.

Support of another person's idea.

p I believe we missed Judy's idea--that observation of process is a good kick-off point.

p I think, Alice, you're right. We have developed goals in immediate terms, not for three weeks.

p John, I like your and Martin's suggestion--let's review what has happened in this group.

Expressions of commitment and warmth directed toward the total group.

p We were really on the ball today.

p We've come a long way since the first few days.

p This whole experience has been very meaningful to me.

Dependency.--Dependency statements express reliance on some person or thing external to the membership. The dependency constellation may include appeals for support or direction

from the leader, looking for leader approval, undue attention to the leader, expressing reliance on outside authorities, expressing reliance on structure, procedure, or tradition. It may also include expressing group weakness, fear of trying things, etc. The following illustrate some common ways in which dependency may be expressed:

Appeals for support or direction.

d I don't know--what is the correct way?

d I'd feel better if Bob (the leader) would tell us just what he expects of this group.

d I think it would be interesting to follow Dave's (the leader's) suggestion.

d We need someone to coach us.

Reliance on a definite structure, procedure, or tradition.

d I think an analysis of the PMR (post-meeting reaction) data would be helpful.

d I have notes on leadership from the theory hour--want to hear it?

d Why don't we appoint a chairman?

Reliance on outside authority.

d Is this the sort of thing that happens in other groups?

d If we want to learn about leadership why can't we each read an article and report back to the group?

d We'd get farther faster if we know how other groups handled this.

Expressions of weakness or inadequacy.

d We're on a merry-go-round. We're disorganized.

d I'm all confused. Where do we go from here?

d We <u>are</u> disorganized. Can't someone tell us what we do next?

<u>Flight</u>.--Flight statements express avoidance of the problem or withdrawal from participation. The flight constellation may include light-veined humor, jocularity, fantasy, over-intellectualization, over-generalization, statements out of context emotionally, inappropriateness, tension releasing laughter, dealing with trivia, off-the-point comments. The following illustrate some common ways in which flight may be expressed:

Withdrawal or lessened involvement.

This is commonly expressed by silence and in this form cannot be represented in rated statements. Withdrawal can also take the form of expressed boredom.

Humor, fantasy, facetiousness, tension releasing laughter.

You say its stupid to get involved and 20 minutes later you're in it.
fl I feel like the tar baby.
fl (Group laughs)

(the dog barks, in response to a general tension in the group)

fl He's our alter ego.

fl (group laughs)
She's been pawing me.

fl She wants coffee.

fl She's smarter than we are.

fl (group leaves room)

Monday is the day we introduced ourselves. Tuesday is the day we took it back.

fl (general facetious characterization of the meetings by eight members: "Thursday was the great divide.")

fl Harvey is following us closely. (Harvey is an imaginary member)

f He's been rejected.

fl He's much too prosaic.

fl You don't know Harvey.

Inappropriate, over-intellectualized, over-generalized statements.

fl Any correlation between emotional tension and productivity is inverse...(etc., etc.)

We're asking you once again to be a member, Joe.

Fl A group working together is a combination of resources and material....(etc.)

Total irrelevancy.

fl How many beers did you have last night?

fl I had eight--I was researching on how many I could get people to bring me.

fl He was just sitting there and asking people to bring him beers.

fl I suggest coffee.

fl We went to the best restaurant in Quebec.

Statements Which Are Not Rated for Emotionality

Statements that have no detectable emotionality are given no E rating:

There are certain parallels here with our experience yesterday.

Why not have two people do it?

How does this fit your back-home situation?

In order to learn we have to feel safe enought to risk ourselves.

Let's compare our expectations with what has happened.

There's a difference of opinion as to whether we have arrived at a decision.

Special Problems in Rating Emotionality

1. Mixed responses.--Occasionally a statement seems to the observer to include more than one detectable emotionality. When such is the case, the statement may be given a double rating.

pd I have the same feeling as Ed. I see John and Murray (psychiatrists) sitting together--two powerful father figures sitting close together--it affects me.

fd We ought to have been told.

fd I need to know where we are. We don't know what we're doing.

2. "Big" and "little" expressions of emotionality.--A specific emotionality might be expressed more indirectly or subtly. For example, the following two statements would both be rated fight:

> If that's the way you feel I don't see why you came--you do nothing but disrupt the group.
>
> I had a feeling of a split in the leadership. If this had been in the open we would have felt more comfortable.

The first statement is a direct, gross expression of fight while the second is a more indirect and cloaked expression. To distinguish between such expressions the first statement would be rated "big" fight (F) and the second would be rated "little" fight (f).

3. Non-participation.--It has been noted above that non-participation may reflect certain emotional states--probably the most likely one is flight (withdrawal or boredom), but one can also imagine times at which non-participation reflects fight (sullenness, negativism, passive resistance), or pairing (comfort, ease, warmth). This observational system deals only with overt expressions of emotionality. There is no direct way of assessing the emotional meaning of silence.

4. Non-verbal interaction.--Pairing is frequently expressed by private buzzing on the part of two individuals or by eye interactions. When an observer catches such expressions he records them by means of the notation: (6 & 8 p).

5. Group responses.--Sometimes the group responds as a group, with a chorus of "No's" or "Yes's" or with general group laughter. When such responses occur they are counted as one contribution (the contributor is the group, "G") which is rated for work and emotionality in the same way as any other statement. Group laughter is frequently flight, though it may also be pairing.

6. Special problems in distinguishing pairing and dependency.--A common confusion here is reflected in the following questions: "Is pairing with the leader always dependency?" "Is it possible to express dependency toward another group member as well as to the leader, or is this always pairing?" We have found it impossible to establish rigid ground rules with respect to these two questions. Expressions of warmth or agreement directed toward the leader may sometimes be dependency and sometimes pairing--the judgment depends on context, tone, etc. Similar expressions directed toward group members may again be pairing or dependency depending on contextual factors.

The Ratings of Work

Four levels or qualities of work have been identified. The levels are defined in such

a way that all statements made in a group are classified as either 1, 2, 3 or 4-level work.

One-level work.--One-level work is personally need-oriented. One-level statements are triggered off by what is happening in the group but they are expressions of personal need and are not group-oriented. Energy is bound up with the internal situation of the individual rather than with the interactive situation. An observer watching one-level work feels that it is an expression of needs of the individual and that it interrupts the flow of the group. The following are some examples of one-level work:

- I was amazed when the group laughed at what I said. I didn't think it was funny.
- I'm used to dealing with people who express things more directly.
- I was so tickled when Bob said "ouch."
- I sort of free-associated--nobody stopped me.
- I wasn't following the discussion.
- I think if we talked about my problem it would help all the way around.
- If others say I'm effective, O.K., I'm too modest.
- Nobody stopped me (from reading notes). You were willing to hear it.
- I wasn't asking just out of curiosity about what you think of me.

Two-level work.--Two-level work involves maintaining or following through on the task the group is working on. The particular task the group is engaged in may involve attempting to define a task, taking care of the housekeeping details, searching for a methodology, clarifying already established plans, etc. An observer watching two-level work feels that it is group-oriented and necessary, but routine. The following are some examples of two-level work:

(Setting up a role playing scene)
- He'll tell us the problem, won't he?
- Each of the roleplayers will tell their roles--everyone will know the roles except Lydia.

(Assigning responsibilities to members)
- Jane, you be the representative from Adult Education.
- No, I'd rather not.
- I'd like to be the observer.
- Margaret, you take Ida's place.
- O.K.
- We need a member-at-large.
- I'll do it.

(The group is discussing a role playing scene just finished.)
- This group had the experience of the first group to build on.
- Observing is a difficult thing to do.
- There was a lot of similarity between the first scene and the second.
- Bob was good, but Dave monopolized.

- When should the recorder start?
- What will we get out of having a recorder?
- Does Joe really want to be the recorder?
- Let's ask him.

Three-level work.--Three-level work is group-focused work which usually has some new ingredient. It tends to be recognizable as active problem-solving. Three-level work includes the suggestions of new methods of attack on a problem, the visualization of goals, reality testing of ideas. The content of three-level work may be directed toward task or process problems. This is the kind of work that moves the group from one task to another. An observer watching three-level work feels that it is group oriented, focused and energetic, and that it has direction and meaning for the group. The following are some examples of three-level work:

- Have we arrived at an institution in this group which prevents the expression of feeling?
- Are we free or aren't we?
- How free do we need to be? How much freedom do we need?

- So far, we've covered three parts of this plan, is there anything left to do?
- Well, we ought to get into the question of what we're going to do with this information after we get it.

- I'm not sure we should spend time trying to make a decision unless we're sure we have the authority to carry it out.

- Do we have to make provisions for releasing these feelings in the group? We haven't analyzed feelings like some groups have. I thought it was good. Now I'm beginning to wonder if we were right. In my own case I should have had the opportunity to release feelings so I could be part of the group.
- As a group matures it ought to be able to express feelings.
- Feelings ought to be expressed in mature ways--rather than the chaos some groups have gone through.

Four-level work.--Four-level work is creative, insightful, and creative. Four-level work usually involves an appropriate (i.e., the group is ready for it) and insightful interpretation which brings together for the group a whole series of experiences and infuses meaning into them, and at the same time has immediate relevance to present problems. The series of experiences which a four-level statement serves to integrate may have occurred during a single meeting or may have been building up over many meetings. An observer watching four-level work feels that it is creative, exciting, and insightful.

- We are afraid of what will happen to us if we say things. The problem is--can we by-pass all these undertones and still be able to carry on productively on this other level.

- We get to functioning too smoothly and this keeps us from getting into things we need to get into. We don't want to disturb this smoothness yet we have a feeling of void.

- Permissiveness can be a trap. When you have something to fight you might get a lot more involvement. And then there are hazards along with that--things may get destructive. The question is how to get involvement along with permissiveness.

Special Problems in Rating Work

The role of context.--Context is especially important in making work ratings. A state-

ment, for example, may be rated four-level if it summarizes experiences of that group, if it is immediately relevant to the subject being discussed, and if the group is ready for the interpretation. The same statement under other circumstances might be two-level work. In order to make adequate ratings of work, the observer has to be continually in touch with the goals and aims of the group and with the issues being currently considered, since these are the criteria against which the work quality of successive statements are always being measured.

Step-by-Step Description of the Rating Procedure

The following is an outline of the rating procedure.

The observational situation.--The group members and two observers are seated around a large table, preferably round or oval, so that everyone is clearly visible to everyone else. Each member's name and number is printed on a placard placed on the table in front of him. (This observational system requires the immediate physical presence of the observers. It has been our experience that members quickly accept non-participating observers as part of the situation.)

Equipment.--Each observer should have available to him a pad of rating forms (see sample, page 31), a pocket watch with a sweep second hand, and some pencils. (Recording equipment, if available, can be very useful in helping the observers prepare an official record of the meeting after the meeting is over. It can be used to check content and participants, and a time signal can be built into the recording. A record is also helpful as a device to recall the meeting to the observer. It cannot be used as a substitute for direct observation--a sound record or even a sound film is too flat and dead, and too removed from the observer, to provide an adequate situation for making the kinds of judgments required.)

Preparation.--Watches should be synchronized to the nearest minute and second. The observers should agree ahead of time as to how much of the meeting is to be rated. (It is desirable to rate as much of the meeting as possible, but this must be weighed against fatigue factors.) The convention we followed was to alternate twenty minute rating periods with twenty minute periods in which anecdotal records only were kept. This system tended to break down during meetings when the group was meeting in sub-groups most of the time, or when the meeting was so interessing that observers rated the whole session in order not to lose data. For later analysis by "natural units" observational periods of about forty minutes are suggested.

The rating task.--As each contribution is made, the observer notes the number of the speaker, the work level, the emotionality expressed (if any), and as much content as possible.

Group _____ Observer _____ Date _____ Page _____

Time	4	3	2	1	E	e	Content
				14		f1	8 says I express things in my face
			8				different levels of expression
		17					this is one way to implement feelings
			2				
19			5			f	I'd like to know how 7 feels
			7				what's all this
			5				dissatisfaction
20			7				we had a truth party in our C group last night. We tried to say what we really felt
21	7						In this group we are afraid of what will happen if we say things; the problem is--can we by-pass all the undertones
	7						and still carry on on the other level
			8				depends on the person
		7					felt we had a feeling field day--glad we went to work
22		17	(to 5)				did you hope 7 would express something you feel?
			5			F	I've been feeling disgruntled
			14			f	You've been looking good--I was interested in people who
							chose the hostility problem--it wasn't hard to feel hostile that day
23			5				I feel better today

In addition, time is noted every 60 seconds. To save one operation, the number of the speaker is entered in the appropriate work column. Emotionality ratings are placed in column E or e, depending on whether the observer felt this is a gross or a more indirect expression of feeling ("Big" or "little" E). Since the unit being rated is a complete contribution, the unit might consist of one word or of several minutes of talk. When a statement lasts several minutes or runs over from one minute to the next, it is given a separate rating for each minute in which it occurs. (See the sample rating sheet, showing five minutes of interaction, on preceding page.)

Producing an official rated record of the meeting.--After the meeting is over the two observers meet in order to compare and combine their individual ratings and produce a single record which is as complete and accurate a picture of the meeting as possible. This procedure involves synchronizing time and speakers when the two records do not agree, arguing out disagreements in work and emotionality ratings, and combining notes on content into a fuller content record.

Reliability of the Categories of Observation

In actual practice, two observers rate the same sample of behavior independently. Neither observer's judgment is accepted as the final record for the sequence. After independent ratings are made the observers review their ratings together, and all disagreements are discussed and resolved. The team thus produces an "official" record of the sequence which both can agree is an accurate representation of events in the group. Work, emotionality and number of contributions are then summarized for each minute of interaction, and these summaries become the basis for interpretation. (The procedure for presenting and interpreting interaction on a minute by minute basis is presented in Chapter IV.) We do not expect perfect agreement between the two members of a single observing team. In fact, it is helpful to pair observers in such a way that their individual sensitivities (or biases) complement rather than reinforce each other.[4] However, we do expect the "official" ratings produced by a team to be a reasonably accurate picture of what happened in the group, and we also expect reasonable correspondence from team to team.

In order to test the minute-by-minute agreement between several different observing teams, four teams of two observers each rated the same 20-minute sequence of a group meeting. None of the observers had had previous experience with this group. Each team prepared a

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[4] A sample sequence showing the independent ratings of two observers and the manner in which they are combined to produce an "official" record is presented in Appendix A.

rating sheet (like the one on page 31) which represented the final ratings for that team. Each team then summed the number of contributions, work, and emotionality for each minute of interaction, and these totals were compared from team to team. It was found that the average intercorrelation for work among the teams was .90. The average intercorrelation for number of contributions was .83, and for emotionality, .60.

CHAPTER IV

GRAPHIC SUMMARY AND ANALYSIS: THE MINUTE-BY-MINUTE GRAPH[1]

The rating system described in the preceding chapter provides a characterization, in work-emotionality terms, of each individual contribution. In order to interpret a long sequence of interaction it is necessary to enlarge the perspective--to see each contribution in its context and to perceive the group meeting as a sequence of developing phases. The minute-by-minute graphing procedure was devised in order to facilitate this type of interpretation.

In the graphing procedure the unit is enlarged: we now deal with the characteristics of each minute rather than with the characteristics of each contribution. The same basic factors--work and emotionality--are central, but because the time unit is broader we add a third factor: interaction rate. The minute-by-minute graph is a three line graph. One line represents emotionality. Each point on this line is the sum of emotionality expressed during the preceding minute. Similarly, for the line representing work, each point is the weighted sum of work expressed during the preceding minute. For the line representing interaction rate, each point represents the total number of contributions for the minute. Taken as a whole, the graph provides a running picture of the continuing, shifting relationships between work, emotionality and interaction rate. From it, one can see the general relationships between these three basic factors, and one can identify the points at which significant shifts occur in the nature of this relationship.

This chapter includes both a detailed description of the graphing procedure, and some illustrations of the ways in which the graph may be used as a basis for interpreting group events. The specific outline for the chapter is as follows:

A. The graphing procedure.

B. Interpretation of the graph.

1. Using both graph and content as the basis for interpreting group events.

2. Using the graph only as the basis for interpreting group events.

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[1]The following persons participated in the development of this procedure: Saul Ben-Zeev, Ida Gradolph, Paul Hare, William F. Hill, Joe McPherson, Robert R. Rodgers, Dorothy Stock, and Herbert A. Thelen. The procedure described here has its roots in earlier work at the Human Dynamics Laboratory performed by Robert DeHaan and described in his unpublished doctoral dissertation: "Graphic Analysis of Group Process." This chapter was prepared by Dorothy Stock.

The Graphing Procedure

The graphing procedure uses the minute as its basic unit. The specific procedure is as follows:

1. The following three sums are computed for each minute of interaction:

   a. The weighted sum of work. (If, for example, four persons spoke during a minute and two of the statements were rated as 2-level work and two were rated as 3-level work, the weighted sum would be 10.)

   b. The weighted sum of emotionality. A "large" expression of emotionality is given a weight of 2; a "small" expression of emotionality is given a weight of 1. (If, for example, out of four contributions, two statements have been given an emotionality rating--one a "large" F and one a "small" p, the weighted sum would be 3.)

   c. The total number of contributions.

2. These three sums are recorded on a summary form (see sample on following page). The graph is based on the last three columns of the form which represents the best picture of the group the observers can reconstruct by agreement and resolution of differences between their individual records after the meeting is over. (There is space on this form for each observer to record his individual work, emotionality, and contributions sums. These columns can provide the basis for checks on agreement between independent ratings by the observers.)

3. The graph is plotted on the minute-by-minute graphing form (shown on page 37). The graph consists of three lines--one representing the number of contributions, another representing emotionality, and a third representing work. To aid in interpreting we commonly add a fourth line, which represents 2-level work (that is, this line shows where the work line would be if all work were 2-level.) The convention was adopted of representing interaction rate as a black line, work as a blue line, emotionality as a red line, and 2-level work as a black dotted line.[2]

4. Specific w-values are entered in the W column on the extreme right of the graphing form. This is information which cannot be obtained from the graph alone. A w sum of 8, for example, for a minute in which four persons spoke, might represent individual work ratings of 2,2,2,2; 3,3,1,1; or 3,2,2,1. The W column permits us to retain this information. All contributions given work ratings of 1, 3, or 4 are recorded in this column, together with the speaker. (Two-level statements are omitted to save time; it was found that 2-level work occurs more frequently than any of the others.)

5. Specific e-values assigned to each contribution are entered in the E column at the right of the graphing form. This information cannot be obtained from the graph alone since the emotionality line represents the combined sum of all the emotionality expressed. In this column all contributions which were rated for emotionality are recorded, together with the speaker.

6. The code number of the speaker and the content of the statement are entered in the first third of the graphing form. Along the extreme left margin the numbers of the participants for each minute are entered, in their proper sequence, along with the content of the contribution.

The middle area of the graphing sheet is reserved for any interpretative comments the observers wish to make. It is assumed that these comments will be based on all the information available on the page--content plus graph plus specific ratings. The observational

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[2] On the graph on page 37, contributions are represented by a heavy solid line, Work by a dashed line, Emotionality by a line of alternate dots and dashes, and 2-level work by a light solid line.

Summary Form

T Group_____ Meeting No._____ Time Begin_____ End_____ Page_____

Observation Period: Summary, Ratings Each Minute

Time Min.	Obs._____ Pgs.__			Obs._____ Pgs.__			Reconstruction		
	Contri-butions	Work	Emotion-ality	C	W	E	C	W	E
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
Total									

Figure 1

Illustration of the Minute-by-Minute Graph Form

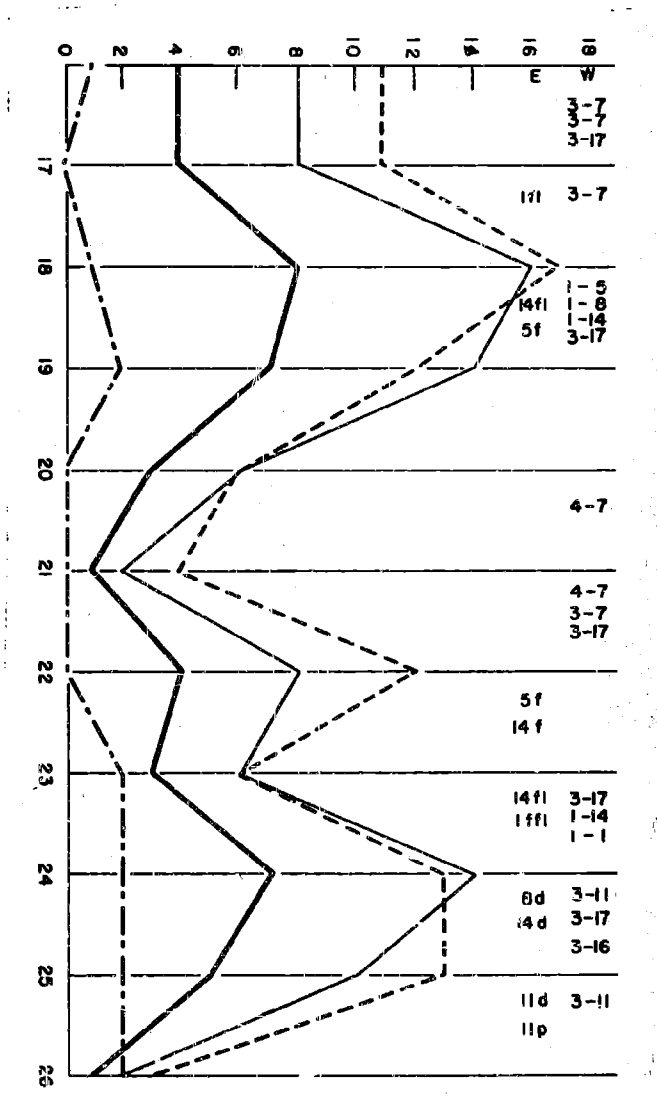
T Group_____ Meeting No.___

7--how free do you need to be--how much freedom is appropriate or necessary?
17 (lost); 7 (lost);(Pause)
17--do we feel free or not free?

5---the dead silence following 7's statement was interesting
14--we're trying to think it thru; 1-(lost); 8--we can try it in our group (refers to 10's statement); 7--let's try it;
5--what will come out? 8--something will come out.

5--such as? 8--(lost); 14--8 says I express things in my face; 8--there are different levels of expression; 17--this is one way to implement feelings; 2--(lost); 5--I'd like to know how 7 feels.
7--(lost);
5--(lost);
7--we had a truth party in our T group last night--we tried to say what we really felt.
7--In this group we are afraid of what will happen if we say things. The problem is--can we by-pass all the undertones and carry on on the other level.
7--(lost); 8--depends on the person; 7--I felt we had a feeling field day--glad we went to work.
17--(to 5)--did you hope 7 would express something you feel?

5--I've been feeling disgruntled the last few days.
14--You've been looking good. I was interested in people who chose hostility as a problem--it wasn't hard to feel hostile that day; 5--I feel better today.
7--put up your dukes; 9--we should let people express hostility--I don't feel hostile, I just feel normal; 7--I doubt that's true; 9--(lost); 14--(lost); 1--(lost); 17--what prevents feeling from coming out?
11--Do you feel the RP was hostility against 17? 8,7,14,5 (defend M); 17--If there is hostility, do I prevent it from commencing? 16--I would like to extend this toward other feelings.
11--16 is expressing something basic to the group--we've been blocking because we can't see that 17 is human and can make mistakes.



teams commonly used this column to identify phases and to represent process on a higher level of abstraction generally. These daily diagnostic hunches became a valuable source of hypotheses in the subsequent more systematic interpretation.

If the observational form is filled in completely, all basic information is preserved in concise summarized form.

A minute-by-minute graph together with the content which it represents is presented in Figure 1. Minutes 19 to 23 are the same minutes shown on the observation form on page 31.

Interpretation of the Graph

The minute-by-minute graph is particularly useful as an aid in interpreting group process. We have found that by looking at content in the context of the graph, we can produce a somewhat abstracted interpretation of group process which is more useful than a detailed following of content. Our first experience with the graph involved looking at graph plus content, and, on the basis of these two sources of information, constructing an interpretation of the experience the group was having. Figures 2 and 3 in the pages which follow illustrate this interpretive process. We have also done a limited amount of work on the blind interpretation of the graph (that is, interpreting from the graph alone, without access to content). This kind of prediction is illustrated in Figure 4.

Using Both Graph and Content as the Basis for Interpreting Group Events

Two illustrations are included in this section. They have been selected because each is in some sense a unit in itself, and because each represents a very different kind of group situation. The first illustration represents effective group problem solving, while the second represents the breakdown of a group into fight-flight, with concomitant abandonment of the work task. In both cases, the graph and the content will be represented side by side. Following this an interpretation will be presented and the relation to the source data will be indicated.

Interpretation of Figure 2

Both content and graph suggest that this 14-minute period can be divided into four phases. Let us identify each phase, and indicate the ways in which both content and graph contribute to interpretation.

Phase 1 (minutes 1-3): The leader proposes a plan.

content: The leader presents a plan to the group. He begins by defining the broader problem facing the group (increasing sensitivity) and then suggests a specific way of getting at this problem (setting up and analyzing four 2-person

Figure 2

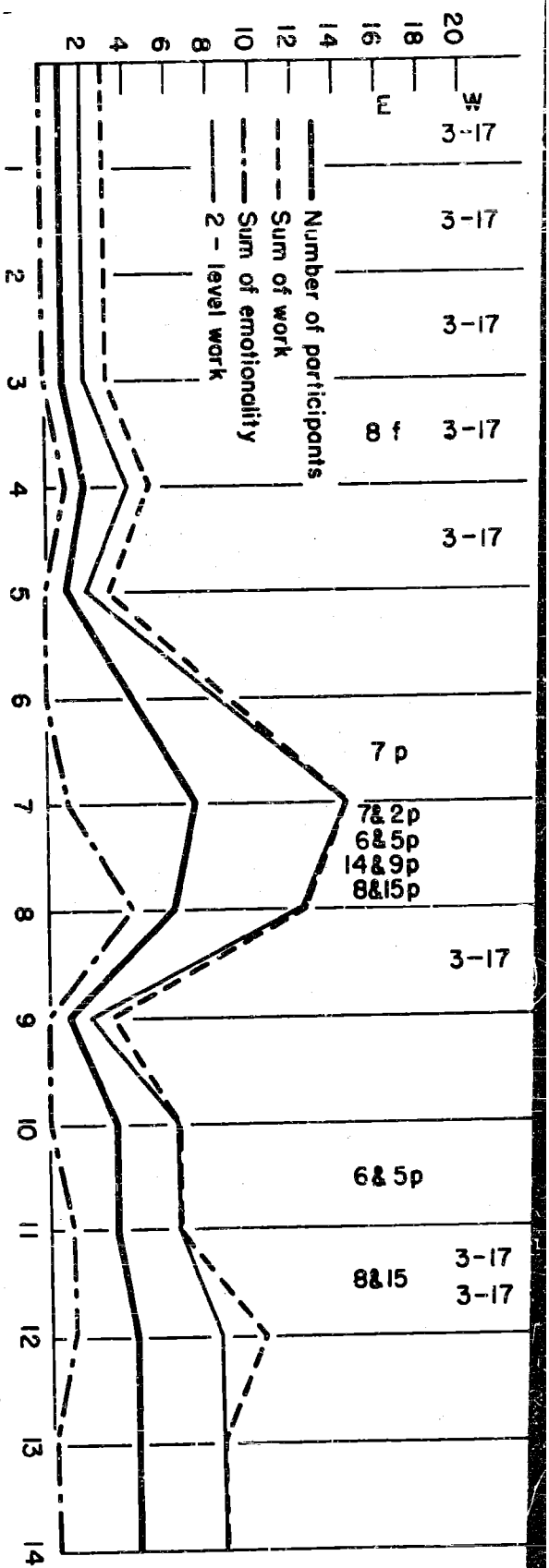
Interpretation of the Minute-by-Minute Graph: Illustration A

An example of effective group problem solving.

17 (leader): I was thinking of the problem of getting at sensitivity, and I have a proposal to make to the group--see how you want to do it. I suggest taking the simplest situation--2-person interviews. We can look at what's going on at the manifest level and at the covert level. Sensitivity means looking at the covert level. For example, if I'm trying to sell 10 something, she might show overt acceptance but covert resistance.
I suggest rapidly working up four skits--our job would be to set up hypotheses about the covert level.
Let's think for a few minutes about what kinds of resistances might be involved.
8 This is not clear to me at all.

17 Say that 10 has heard that I am irresponsible, or there might be a status problem that is operating. Our job would be to see if we can detect this hidden resistance. This is a direct attack but I think it's what we need.
3 uhhuh
17 Not so amorphous an approach.
8 I think you can think about this in terms of people.
2 Their job will be to manufacture a hidden agenda
7 That's right.
17 It will protect us from having a real hidden agenda to have to tussle with. 3-uhhuh. 5-I suggest a third person to warm them up. 8-good idea. 17 (lost).
5 Yes. 17-it's my feeling I can do that. 3-uhhuh.
8 (lost) 17-we need to list covert things on the board to get a feeling of range. 3-yes, that's the way to get at it.
17 It might be easier to think of the manifest and covert together.
A salesmanship kind of idea is good.

10 What would be the manifest level for the hidden agenda?
3 Wouldn't any interaction situation do--health agency?
7 Hiring personnel
11 Also welfare, job interview, caseworker-client.
7 Even a small committee meeting.
17 Selling a washing machine, subscription to the community chest.
5 Door-to-door subscribing.
17 Think of some others? Maybe types of hidden agendas?
11 Friendly conversation, giving advice.
17 We can work on both lists, back and forth.
3 One factor--distrust. Giving confidential information.
17 (rephrases 3's point)
5 Prejudice of various sorts.
17 Might be related to class.
8 Feelings of guilt.
17 (lost)
11 Sex feelings--prefer being interviewed by a man.
17 That is, . . .



graph: During this period only one person participates and he consistently expresses 3-level work to the group. No affect is expressed. This suggests a rather measured, (no E), extended statement which involves introducing some new ingredient which is relevant to group problem-solving (3-level w).

Phase 2 (minutes 4-5): A member asks for and gets clarification of the plan.

content: A member raises an objection which results in the leader's further clarification of the plan.

graph: The high work level is maintained, and a statement containing affect is introduced by someone other than the leader. The fact that this statement contains fight, and is followed by another 3-level, affectless statement by the leader, suggests that it is some kind of attack or criticism which is immediately responded to by the leader.

Phase 3 (minutes 6-9): The group tests and builds up commitment to the plan.

content: In this period many members of the group try the idea on for size. Some contributions represent further personal clarification: "Their job will be to manufacture a hidden agenda."; others represent fitting the plan into the needs of the group: "It will protect us from having a real hidden agenda to have to tussle with." or amplifying the plan: "I suggest a third person to warm them up."; or committing oneself personally to the plan: "uhhuh," "good idea," "that's the way to get at it." The period ends with a procedural suggestion: "We need to list covert things on the board to get a feeling of range." This statement has the effect of closing the period of testing and commitment and shifting the group into the next phase.

graph: This period of testing and commitment is reflected in the graph in several ways. To begin with, participation increases greatly--more members are getting into the discussion. The statements here are 2-level work, indicating that this is a period of follow-through rather than of new direction or widening limits. The expression of affect increases, but the feeling expressed is pairing rather than fight. This would seem to reflect the mutual support and commitment which is building up during this period. In the last minute interaction rate and affect drop while work level increases. This is an indication of closure on this phase--the task of testing is completed and some new task is being defined for the group.

Phase 4 (minutes 10-14): The group begins to work on the task.

content: The content consists almost entirely of a series of suggestions from various members regarding specific factors which might be built into the role-playing scenes. There is no attempt to integrate or summarize--this is merely a bright-idea phase.

graph: Interaction is steadily paced and is mainly 2-level. Two-level work is by definition exploratory or routine. In this case it represents exploratory suggestions. The expression of affect falls off, but the prevailing expression is still pairing.

Summary.--This 14-minute sample represents an extremely orderly period of group problem-solving. Without making it explicit in any formal way, the group moves through four necessary and consecutive phases often involved in effective problem-solving: the presentation of a plan, clarification, testing and building up commitment, and actually working on the plan. The leader takes an active role in initially presenting and clarifying, and then later in interpreting to the group what it is doing and implicitly sanctioning a shift from one phase to another. The emotionality which is expressed is supportive of the work task. That is, emotionality is in every case consistent with what the group is doing task-wise: fight helps lead to clarification, and pairing aids in the building of commitment.

Figure 3

Interpretation of the Minute-by-Minute Graph: Illustration B

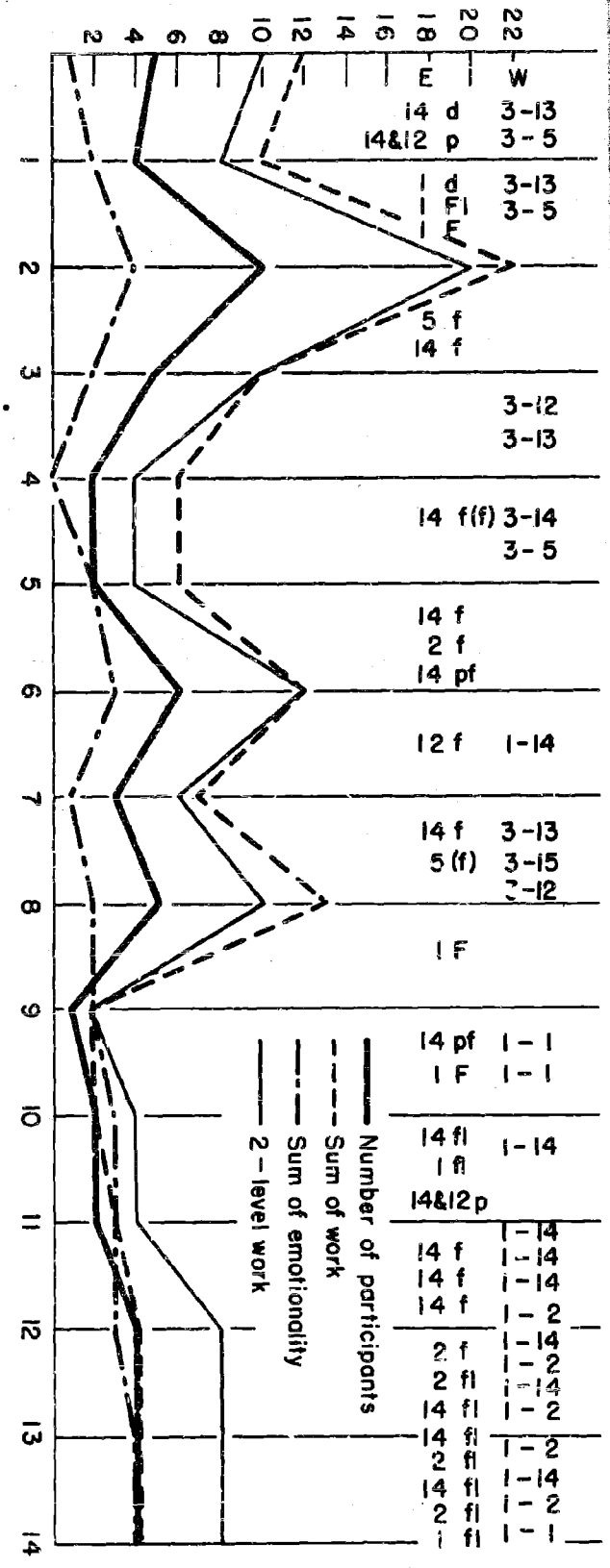
An example of breakdown into fight-flight, with loss of the work task.
(Role players have just left the room; rest of group is to decide what to observe)

(14 & 12 p) 13-Are we going to know who plays who?
14-(lost) 5-Don't we need to know . . .
12-I'm not clear on this.
1-We're supposed to identify the hidden motives. 12, 1, 15 (lost) 1-We're supposed to play Sherlock Holmes.
12 (lost) 13-Could we look at manifestations-gestures?
14-Posture. 5-(points out importance of non-verbal)
1-My sensitivities told me 15 minutes ago we didn't want to do this.
5-A for effort, 1. 14-Maybe just some of us don't want to. 1-I suppose they'll tell us what they're doing. 14 (sigh)-well, 1-(lost)

12-The mechanics of role playing sometimes get in the way of what people are trying to portray.
13-That may be one of the things we need to be alert to.

14-Do you ever get any expression in role playing that means anything? Personally I never can do it.
5-That's why we need someone to coach us--get us in the mood.
12-We need either training or warm-up. 15-When you really get into a situation its amazing how much you put in. 14-Yes, if you get in. 2-Role playing gets pretty real. 14-You're a good actor. 1-We can presume that those who work up a scene are warmed up.
12-Are you judging on the basis of their having gotten up and left the room? 1-Partly--different situation appeal to different people, and they volunteered. (Pause) 14-lost) (Long pause)
13-What we've been saying contradicts the notion of spontaneity in role playing. 15-There's a difference between warm-up and rehearsal. 12-You can only be spontaneous when freed of mechanics. 5-17 gave an excellent description of warm-up. 14-(lost).
1-I wonder about the validity of the whole idea of role playing. (Extended intellectual statement about difficulties of RP.) Well, we'll find out

14-There's a question as to whether we have extra-sensory perception anyway.
1-In one of Ellery Queen's cases . . . (long anecdote)
14-(laughs)
(14 and 12 pair)
1-I wonder if they're expecting us to come and get them.
12-17 will come in. 14-We went to the best French restaurant last weekend. (pause) 14-"2-get up there and portray hostility for us." 2-I don't feel hostile.
14-Well if you did you could do a good job of it.
2-I could whip up something. 14-How many beers did you have last night? 2-I had eight. I was researching on how many I could get. 14-He just sat there and asked people to bring him beers.
2-The more sophisticated, the more easily they jumped. 14-I don't know what it proves. 2-Most of them had no good reason. 1-(lost).



Interpretation of Figure 3.--In this illustration the graph suggests that there may be two major phases during this 14-minute sequence. By inspection only, minutes 1-9 look different from minutes 1-14. During the first period the graph has an "open" look--the lines are well separated, and work level is two or better. During the second period the graph is more "constricted"--the lines seem to twist around each other, work level is one, and the amount of affect expressed (relative to the number of contributions) increases sharply.

In considering this illustration, let us assume that these two periods are in fact two different phases of group operation, and again look at both graph and content in terms of what each can contribute to an interpretation.

Phase 1 (minutes 1-9) Members are engaged in relevant group work, with some tension present.

graph: The fact that work level during this phase is 2-level or better indicates that the group is engaged in relevant work. But the somewhat high rate of participation and especially the high and mixed character of the emotionality expressed (hostility, defensiveness, aggressive outbursts, dependency, pairing) suggests a struggle and tension within the group.

content: The content amplifies this picture. The task the group is engaged in is deciding what to observe in some role playing scenes about to be presented. The discussion takes the form of a struggle between those who want to pursue the task and those who reject it. As the period moves on, more and more members join in rejecting the task.

More specifically: during the first minute an appeal is made by several members for clarification. The response to this appeal reveals mixed feelings in the group. Some accept the plan (13), some reject it quite violently (1). There follows a period of alternate attacks on the idea of role playing and attempts to defend it. (In minutes 4 and 5, member 12 attacks, 13 defends, 14 attacks, and 5 defends.) As time goes on, more and more members desert the defense and join the attack. Member 14, for example, supports the idea in minute 2 ("We can look at posture"), vacillates in minute 3 ("Maybe just some of us don't want to"), and attacks in minute 5 ("Do you ever get any expression in role playing that means anything? Personally I never can do it.") The same movement from defense to attack can be observed for members 13 and 12. In the final minute of this phase member 1 sums up the attack and in effect closes off further constructive consideration of the problem by saying, "We'll find out."-- i.e., "We can't find out by talking, only by waiting."

Phase 2 (minutes 10-14) The work task is abandoned.

graph: The work level for this period hovers around one. By definition, this means that members are expressing individual concerns which are irrelevant to the work task. As the period goes on, more and more 1-level statements are made: the last three minutes are solidly 1-level, indicating that there is no longer any attempt on the part of any member to retrieve the work task. The consistent expression of emotionality suggests that considerable tension is present, while the predominance of flight suggests that the group is engaged in total irrelevancy.

content: the group is discussing Ellery Queen, French restaurants, and beer. The original task (deciding what to observe in the role playing scene) is completely lost. The subsidiary task on which the group was working during the preceding phase (is or is not role playing worth while) is also lost.

Summary.--The group begins with a clear-cut task: "What shall we look for in the role-playing scenes about to be presented?" An initial attempt to clarify and explore the task meets with mixed responses: some are willing to go on, others express hostile resistance. Those who resist

take the position that role playing is no good anyway. The question of the general value of role playing is implicitly redefined as the problem for the group. This point is debated with much tension and expression of feeling. The argument is closed off but not resolved when one member implies that they can only find out by waiting and watching the role playing. From this time on the group is in total flight from any group-oriented topic.

To interpret somewhat more deeply requires information about group events preceding this incident. To understand this sequence it is necessary to understand why the group was unable to work on this seemingly simple task. The group had role played previously and had shown no resistance--in fact it had evidence from its own experience that role playing could be useful. Why, then, did it resist role playing and make such an issue of it? An outsider might hypothesize several underlying reasons: the group was not thoroughly committed to the task, or, individual rejections reflected some personal need to express hostility to the group, or, the task was railroaded through without adequate exploration. To choose among these or other possible hypotheses requires further information about the broader context of group events within which this sequence occurred. In the past history of this particular group member 1 had long been a special problem to the group. He had attacked the group in a hostile way again and again. Resentment had built up but the group had been unable to deal explicitly with its feelings about this member until a few days before the present illustration. At that time the group explored its feelings about member 1's hostility and finally resolved the problem to their satisfaction. Member 1's hostility subsided. In the present illustration, member 1 is again attacking the group in a hostile way--for the first time since the group had exposed and explored its problem with him. Some of the underlying feelings influencing members at this time might be something like the following:[1] "I thought we'd settled this." "Do we have to open this up again?" "We can't keep going over and over this problem--let's deal with it on a task level." "Maybe role playing is the real issue." "We can't attack him again, I still feel guilty about the last round." In order to deal directly with the problem facing it, the group would have to reopen its major problem with member 1. The group apparently is unwilling to do this. One major reason may be that the members participating during this sequence are only a part of the total group. This sub-group may need the strength and support of the total group in order to make such a move; or, they may be unable to act without at least the sanction of the total group. In any case, in order to avoid dealing directly with member 1, the group "pretends" that the real problem is the

[1] We do not mean to imply that members are necessarily consciously or explicitly aware of the kinds of underlying feelings or motivations.

value of role playing. When, in minute 9, even this "pretend"-problem is closed off, it is again member 1 who does it. The group is left without even a topic. Total flight into irrelevancy is the only alternative.

In comparing the interpretations of illustration A and B one methodological point stands out: In the first case there was no need to go beyond the sample presented in order to understand what was going on, while in the second case this was necessary. The important difference between the two illustrations seems to be that in the first case there was no hidden agenda operating. In the second case the "real" problem with which the group was struggling was hidden and never expressed directly. In order to interpret the sequence some understanding of the group's history was required.

This comment illustrates something about interpreting group operation which we have come to feel is quite important. In order to produce useful interpretations it is necessary to focus on the appropriate level--not too superficial, not too deep, but somewhere in between, where what one says about the group has meaning for understanding its underlying consistency and character. In illustration B, the more superficial level of interpretation represented in the first paragraph of the summary, while accurate, was not deep enough to provide a real understanding of the sequence.

Using the Graph Only as the Basis for Interpreting Group Events

Experiences with the graph have encouraged us to explore the possibilities of interpreting from the graph alone, without recourse to content. Graphs of various sequences show considerable variation, and there is some indication that certain graphical patterns may be fairly consistently related to specific kinds of group interaction. Some of these are represented in Figures 2 and 3. For example:

1. Effective problem solving (Figure 2).--The graph is "open"--i.e., the work, emotionality and interaction lines are well separated. Work is consistently 2-level or better and emotionality is present in moderation.

2. Group-oriented discussion with tension (minutes 1-9 of Figure 3).--Here interaction rate tends to be higher than in the preceding case, emotionality is high and is mixed in character. Work level remains 2 or better. The graph still has an "open" look, although all the lines have moved upward on the vertical axis.

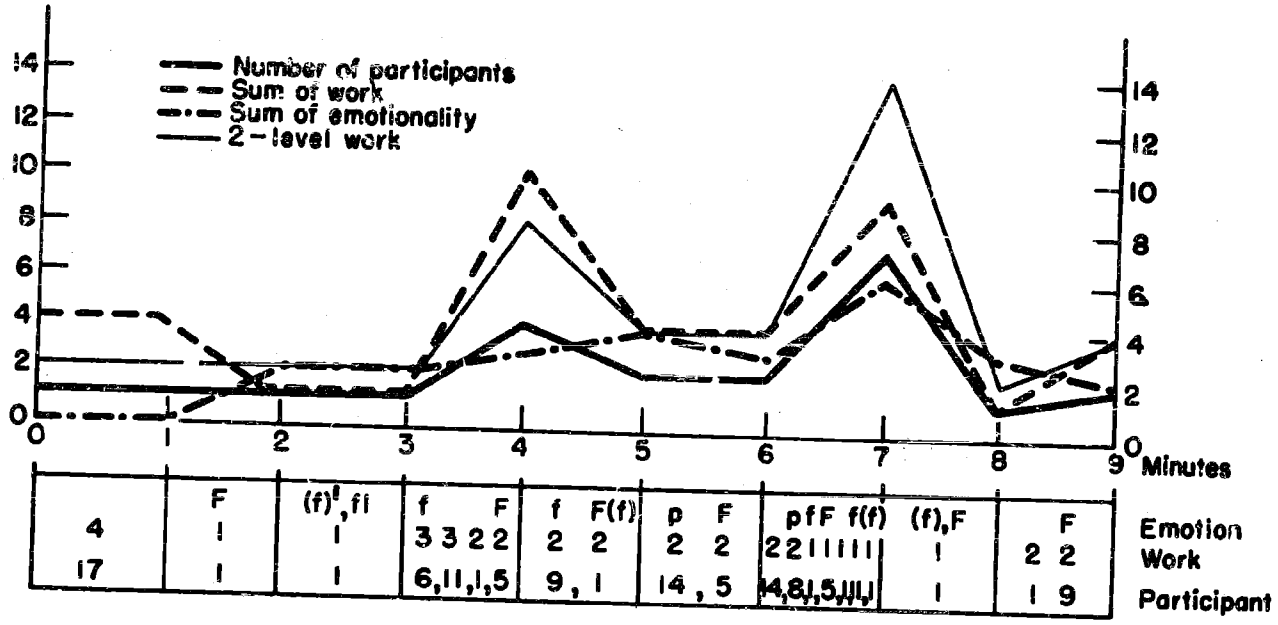
3. Loss of the work task (minutes 10-14 of Figure 3).--In this sequence the graph has a "constricted" look. The lines seem to twist about each other. Almost all statements are

1-level and almost all statements contain some affect. Affect is predominantly fight and flight.

Work in predicting from the graph alone has only begun, and our success has been variable. Predicting the nature of specific contributions has been less successful than predicting the general character of phases. We are not yet in a position to state definitely just how feasible blind prediction can be. But in order to indicate the possibilities along such lines we will include here an illustration of a blind analysis. We will present the graph, then a general, over-all analysis, and then a phase analysis. Following this we will present the content and discuss the relationship of the predictions to the content.

FIGURE 4

BLIND INTERPRETATION OF THE MINUTE BY MINUTE GRAPH



F	(f)[1],fl	f F	f F(f)	p F	pfF f(f)	(f),F	F	
4	1	1	3 3 2 2	2 2	2 2	2 2 1 1 1 1 1	1	2 2	Emotion
17	1	1	6,11,1,5	9, 1	14, 5	14,8,1,5,1,1,1	1	1 9	Work / Participant

[1]The notation (f) is a special category employed in this group and indicates defensiveness.

Figure 4 presents a nine-minute sample of group interaction. From the graph, we have some indication of the relation between work, emotionality and interaction rate. From the information listed below the graph we know the speakers, in order, and we have some indication of the duration of their contributions. We also know the work level of each contribution and the emotionality expressed in each, if any. We have no information concerning content.

General analysis.--This period appears to represent a shift from high-level consideration of some group problem to a period in which the group is struggling to maintain its problem-orientation in the face of highly charged expressions of

period goes on, the group shows more and more loss of its problem orientation.

Let us now break this statement down and indicate the evidence for each point that is made:

1. 'This period appears to represent a shift. . . ." The fact that a shift occurs is indicated by the fact that the work level drops almost continually. In general it moves from 4 level work to a mixture of 3 and 2 level work, to a mixture of 2 and 1 level work.

2. . . . from high level consideration of some group problem . . ." This is indicated by the 4-level work present in the first minute of interaction. By definition, 4-level work indicates a highly insightful, integrative interpretation of some aspect of the group's life.

3. ". . . to a period in which the group is struggling to maintain its problem orientation. . . ." This is indicated by three points, which reinforce each other: the work level shows alternation--there is always someone still able to insert a 3-level statement, or, later, to insert a 2-level statement, in some attempt to retrieve problem orientation for the group. A group which had abandoned the struggle would show a more consistent movement into 1-level work (as the group did in Figure 3). A second bit of evidence that this is a real struggle is the intensity of the affect expressed--members are expressing their positions with considerable feeling and involvement. The moderate interaction rate suggests that people are still listening to each other (a high rate would suggest that they probably are not).

4. ". . . in the face of highly charged expressions of individual need." This is indicated by the many hostile-F--and defensive--(F)--1-level statements. The fact that this type of statement is introduced in minutes 2 and 3 by member 1, that he is continually involved in the ensuing discussion, and that a similar outburst by this same member occurs in minute 8, suggests that the struggle revolved around the personal needs of this member.

5. "As the period goes on, the group shows more and more loss of its problem orientation." This is indicated by the gradual but consistent movement in the direction of more and more 1-level statements and also by more members becoming involved in the expression of 1-level statements.

Phase analysis.--Having made this general statement as to the nature of the interaction during this sequence, let us see if more specifically defined phases can be identified:

> Phase A: (minute 1): During this period a single member is presenting some very insightful interpretation to the group.
>
> Phase B: (minutes 2 and 3): During this two-minute period another member bursts out with some very hostile and somewhat defensive statements which are off the point as far as the group is concerned but which express some personal need on the part of this member. We can guess that this outburst is in response to some aspect of the interpretation contained in the preceding statements. This long statement ends on a note of flight.

Phase C: (minutes 4, 5 and 6): During this three minute period the group becomes involved in dealing with the problem (i.e., the egocentric, emotional reaction to the interpretation). The discussion is mature and group-oriented (work-level is 2 or 3) and loaded with considerable affect. The affect is largely fight, although there is some pairing. This suggests energy, vigor, possibly some anxiety, possibly some building up of tension.

Phase D: (minutes 7, 8 and 9): Individuals begin to introduce personal reactions to the situation. The group loses sight of the problem as a problem for the group (work-level is 1). The same member who reacted with hostility and defensiveness in Phase B comes in a number of times, again with personally oriented, aggressive statements. Other members respond in kind. Affect is high, work is down, tension is probably high, fight pervades the group.

Statement by statement analysis.--The next logical step is prediction of the character of each individual statement. An attempt was made to do this, with considerable success. However, this was not considered a fair test of prediction since the predictors were familiar with the members of the group and had some expectation of the kind of contribution they were likely to make. We hope to test this kind of prediction in the future using information about the individual gained from the Reactions to Group Situations Test (described in Chapter VII).

Validation of the predictions.--Having made all predictions from information contained in the graph only, we can now inspect the actual content of the sequence in order to check the accuracy of the predictions. The content is summarized below:

Phase	Minute	Speaker	Content (briefly abstracted)
A	1	17	Permissiveness can be a trap. When you have something to fight you may get a lot more involvement. And then there are hazards along with that. Things may get destructive. The question is how to get involvement along with permissiveness.
B	2,3	1	What is permissiveness? Allowing people to get away with anything isn't permissiveness. (Long analogy about playing checkers.)
	4	6	The way I feel, #1, you're not permissive with us. There are more to groups than formulae. There is a fragility about groups. That's what's kept us from--
		11	Are you dissatisfied with us?
		1	(Denies it, but his dissatisfaction is obvious)
		5	One!
	5	9	One, your dissatisfaction is showing!
		1	You're saying I'm insensitive. I'm used to dealing with people who express feelings more directly.
	6	14	You were feeling an undercurrent we weren't willing to face.
		5	One has been dictatorially pushing us into democracy.

Phase	Minute	Speaker	Content
D	7	14	I'm not sure.
		8	I agree with 5.
		1	(not noted)
		5	No more lectures about checker boards.
		1	O.K.
		11	(not noted)
		1	I will volunteer to be the scapegoat. . . .
	8	1	. . . My personal anxieties are that the things I want to express are premature for this group and this looks heavy-handed to you.
		(9 gets up)	
	9	1	What happened, 9?
		9	I just wanted to see how permissive you'd be. I've been concerned about how concerned One is

The rather close relation between prediction and content encourages us to see that knowledge of Work-Emotionality characteristics is, in effect, knowledge of the "group situation." Each individual contributes to and responds to the situation in his own way. Knowledge of individual personality may make it possible to predict the members who will participate and the manner of their participation. Work in this direction so far confirms the belief that the relationship between work and emotionality <u>within the group as a whole</u> is a basic dimension of group life.

CHAPTER V

IDENTIFYING "NATURAL UNITS" OF INTERACTION: THE UNITIZING PROCEDURE[1]

The concept of the "natural unit" is based on the general observation that within each meeting there are periods and phases that differ from each other in the subject matter under discussion, in the "atmosphere" within which the group acts, or in the patterning of emotionality and work during the group's operation.

The subjective definition of units has tended to be based on one or more of these qualities or criteria. One period may involve making a major decision, another may be a protracted effort for cathartic release of feeling, a third may be distinguishable as a period of conversation between two people. The major problem has been to find a simple theoretically sound criterion which can be applied systematically and objectively for the purpose of defining units. Such a method is the subject of this chapter.

The natural unit is essential for the study of group events because it serves as the coherent context within which the discrete events of group life--e.g., individual participations--may be studied and interpreted. This is analogous to the method of the historian who collects sequences of discrete historical events into historical periods which serve as contexts within which interpretation of the individual event becomes possible.

In terms of our general theoretical approach (reported in Chapter II) the concept of valency states that each individual exhibits certain predispositions to behave in some ways and not in others in a group. That is, he exhibits differential preferences for fighting, pairing, etc. Moreover, these variations in individual valency pattern account for the fact that some members in the group appear to support each other in expressing or maintaining certain kinds of group interaction. Several individuals within the total group who have, for example, strong positive valencies toward pairing are likely to be the active ones when the group as a whole is concerned with Pairing. One would expect, then, certain individuals to "carry" certain kinds of situations. When a small sub-group of members is participating, one would expect group interaction to have a certain character. When this sub-group subsides and another becomes active, one would expect the character of group interaction to shift.

These theoretical considerations led to the adoption of participation pattern as the basic criterion for identifying natural units. The assumption is that the points at which

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[1]This procedure was developed and is presented here by Saul Ben-Zeev.

shifts in the participating sub-group occur can be identified, and that these points mark off a series of time periods of varying duration which can be considered natural units.

To summarize, a method of unitization based upon changes in participation fulfills two general requirements: it is objective and it is expected to reflect actual changes in the behavior of the group.

The major assumption underlying the method of unitization presented here is that in each Natural Unit different participants express different behavior and maintain the particular work-emotionality pattern in which the group seems to operate during each unit.

This chapter describes the unitizing procedure. We begin with a discussion of the criteria which define the natural unit.

Criteria Defining Natural Units with Respect to Participation

There are three criteria which apply to the definition of Natural Units of participation. They are homogeneity, difference and comparability.

The Defining Criteria

Homogeneity.--Theoretically, during a unit of interaction the same mood or pattern of needs prevails. The participants during the unit are the people who operate most easily within the prevailing atmosphere or those who make efforts to change the direction of the group. The others withdraw or participate internally only. In the method developed here, the ideal unit is homogeneous in that it contains a stable pattern of participation, which is distributed among the same part of the group.

Difference.--The point of change between two consecutive units is the Turning Point. There is a difference between those participants who appear before the turning point and those who appear after the turning point. The subgroup acting in one unit is different from the subgroups acting in the adjacent units. A turning point indicates that a change has presumably occurred in the character of the group activity.

Comparability.--The interaction within sequences has been assumed to be continuous. Division of essentially continuous processes into segments requires that there be some aspects which shift gradually and others that change abruptly; and that the ones that change abruptly index the pattern of gradually accumulating shifts within the total flux. Since all aspects are related, it is required to set up conventions which maximize changes in the indexing characteristic (so it will be most "sensitive") and which minimize changes in other characteristics.

Three changes occur when participation changes. The first is a change in the identity

of the participants; the second is a change in the number of participants; and the third is a change in the duration of participation. Each of these changes can be exaggerated by arbitrary variation in the other changes. For example, changes in identity of speakers can be made very large by choosing periods in which there are, alternately, very large and very small number of participants; since between a period in which sixteen members participate and a period in which one member participates there must have been a change of the identity of at least fifteen of the speakers. Similarly, changes in the duration of periods can produce changes in the number of participants and, in turn, changes in the identity of the participants.

It has been assumed that change in participation is valid ground for unitization because different participants would represent different needs and interests and a tendency to act in different types of group atmosphere. This implies that the change in the identity of the speakers should be given primary consideration, as in the discussion of the criterion of difference. The procedure needed, while based on identification of abrupt differences, must eliminate those exaggerations of abruptness of differences that can be caused simply by accidental or arbitrary change in the number of participants in, and duration of, succeeding units. And so, in the unitizing procedure, conventions will be adopted such that from unit to unit changes in identity of participants will be abrupt changes, and changes in number of participants and duration of units will be gradual changes.

A condition of gradual change implies that a large change between two extremes will occur through transitional units, where the change between any two adjacent units is relatively small and where all the changes occur in the same direction. This means that although any two adjacent units may not be exactly equal with respect to number of participans and duration, they should, nevertheless, be comparable with respect to these two measures. This is the purpose and meaning of the concept of comparability in the contert of unitization. Comparability should therefore be operationally defined and accounted for in the unitizing procedure.

In summation.--Continuous sequences are to be subdivided into natural behavioral units, each of which is to exhibit internally homogeneous participation which is clearly different from participation in the preceding and following units and which represents a participation which is comparable to the preceding and following units with respect to number and duration.

If a series of several minutes were to be found during which one part of the group participates, followed immediately by an equal number of minutes during which another subgroup

of equal size participates it would be assumed that a turning point between two units exists at the point of this change. The units that are cut off by this turning point would be homogeneous because within each unit all the participants would belong to one subgroup. The units would be clearly different from each other in that each unit would represent a subgroup composed of different participants. And they would be comparable because both units would be equal with respect to duration and number of participants.

However, upon glancing at the different speakers appearing in any succession of minutes it is seen that only rarely can turning points be discerned immediately. It can be done only when the participation of one subgroup is followed by the participation of a totally different subgroup without transition and without interference from members of the larger group who do not happen to belong to either of the two subgroups. But the subgroup structures and participation patterns of groups are usually much more complex than that.

It is possible that the turning points might be assigned by a process of trial and error, but this method should be the last resort. It was decided to develop a procedures with well-defined operations which would minimize the number of hunches, judgments and trials which a unitizer would be required to make.

Conventions as to Applying the Criteria

The three criteria--homogeneity, difference, and comparability--must be defined operationally in order to be applied in complex situations. They are here described as they are to be applied to the unitizing procedure.

Homogeneity.--It has been stated that the ideal unit is homogeneous in that it contains a stable pattern of participation: the same people do all the talking. Such a unit has certain properties.

a. Only a limited number of people can talk during any given minute. In the groups dealt with here, it is unusual to find more than six different people talking during any particular minute. Thus, in a sixteen member group, if each person spoke just once, it would take three minutes for all to get into the discussion.

b. In practice, people do not take turns, like a class of nursery school children waiting to use the jumping board. People tend to "hold the floor," yield to others, and then come in again. This means that for everyone to have a chance to participate in the kind of groups dealt with here more than three minutes must be allowed.

   Convention 1: Three minutes is taken as the shortest duration a unit can have.

c. If each person speaks only once, one is not justified in assuming that a stable pattern of participation has been achieved. A new modality of operation is a new quality of interaction, a new "basic assumption," a new state of the group culture. It is maintained by its proponents, through their reinforcement of each other's efforts and through their suppression of participation by others.

The minimum evidence logically for the establishment of a participation pattern is that everyone involved talks at least twice. Such a situation is not often met with in actuality. The method to be developed here will therefore deal with periods that are relatively homogeneous. Relatively homogeneous periods differ from relatively non-homogeneous periods in that in the former case more of the same participants act at different points during the unit than in the latter case. How these relatively homogeneous periods are picked out of a sequence is discussed and demonstrated in the second and third sections of the "Procedure for Unitizing."

Difference.--Any two adjacent periods are very likely to be somewhat different from each other with respect to identity of the group members who participate in them. This difference is the Turnover between the periods. The Turnover is the sum of the members who have joined and those who have dropped out of the discussion.

Taking the total number of different speakers in both units and dividing that total by the Turnover yields a ratio that is called here the Turnover Ratio. When the Turnover Ratio is one then each unit contains speakers that are totally different from the speakers in the adjacent unit. When the Turnover Ratio is two then the total number of different speakers in both units is twice the Turnover; half the total number of speakers are common to both units. When the Turnover Ratio is three then two-thirds of the total number of different speakers in both units are common to both units, and so on. As the Turnover Ratio increases, more of the speakers are common to both units. The problem arises as to what Turnover Ratio will be required to justify considering the two units as different. This problem is discussed in "Empirical Checks on the Unitizing Method." Let it suffice to state the result here:

> Convention 2: The maximum Turnover Ratio between units which are considered different is two.

Comparability.--Suppose that during a certain ten minute period fifteen members of the group participate, and that during one minute following this period a sixteenth member of the group is participating. Would it be justified to call the first ten minute period a Natural Unit which is distinct from the following one minute unit, and to consider the first unit a subgroup of fifteen and the second a subgroup of one? This division is difficult to justify since it may as well be a result of the unitizer's arbitrary variation of duration and number of speakers. However, suppose the same individual had continued to act alone for three or four more minutes. It would be more reasonable to say that this individual's activity was an event comparable in its representation and effect to the events that took place

in the subgroup's activity during the first period. Also, if instead of one new speaker joining the discussion at the eleventh minute there were for example, three new speakers, then the assurance that the two units represent comparable events would increase.

Generally, the more equal in duration and number of speakers adjacent periods are, the more comparable they tend to be. It is clear that it is necessary to establish limiting Duration Ratios and Speaker Ratios within which adjacent units would be considered comparable. These are discussed and derived theoretically in a later section. Let it suffice to state here the results of these derivations:

Convention 3: The maximum Speaker Ratio for which units are still considered comparable is four. (For example, when there are eight speakers in one unit and two speakers in the adjacent unit, the Speaker Ratio is four. In calculating this ratio the unit containing the most speakers is taken first.)

Convention 4: The maximum Duration Ratio for which units are still considered comparable is three. (For example, when one unit is nine minutes long and an adjacent unit is three minutes long the Duration Ratio between the two units is three. In calculating this ratio the longest unit is taken first.

At any turning point designated by the procedure all three criteria cannot be expected to apply with equal force simultaneously. The procedure, however, is directed to an optimal application of the criteria.

A detailed description of the general procedure for unitizing now follows. In it will be shown how the several criteria mentioned above are integrated into the single procedure. Following the discussion of the general procedure, a section will deal with the objectivity and validity of the method. This will be followed with the formulation, in general terms, of the rules for determining appropriate conventions for groups different in size or nature from the ones described here. The succeeding section presents and outlines some possible applications of the Natural Unit in the investigation of group behavior. The appendix for this chapter will discuss application of the method to atypical cases, and will present a number of further refinements in the application of the method.

The Procedure for Unitizing

The Accumulation

The first step in the procedure is to set up the data in such a way that one can determine at a glance how many different speakers participate during any period of time within any given sequence, no matter how long the period or where it is located in the sequence. This is intended to make the data easily available for trials and manipulations.

In order to do this the number of different speakers who participate during each minute is counted. That number is noted down, and then new participants as they appear in succeeding minutes are added to the original number. For example, if speakers 8, 3, and 12 participate during the first minute; 8, 1, and 6 in the second minute; 1, 6, and 3 in the third and 12 and 13 in the fourth the Chart would appear as follows:

Figure 5

Accumulations Chart

Minute	Identity of Speakers (by code No's)	Accumulations			
		Minutes			
		1	2	3	4
1	8, 3, 12	3			
2	8, 1, 6	5	3		
3	1, 3, 6	5	4*	3	
4	12, 13	6	6	5	2

Three speakers have participated during the first minute. In the second minute speakers 1 and 6 are new, raising the total in the vertical column starting at minute number one to five. In the third minute no new speakers are added to those who participated in the first and second minutes, and the total number remains 5. In the fourth minute speaker 13 is new and the total rises to 6. The accumulations for minute number two begin at the second minute, neglecting speakers of the first minute. And so on in the succeeding minutes.

If it is required, for any reason, to know how many different speakers have participated between minutes one and three inclusive, the information would be given in the Accumulations Column for minute number one in the box which corresponds to minute three, where it is seen that five different speakers have participated. Similarly, four speakers have participated between minutes two and three, and six between minutes two and four.

Each box can be located in the Chart by means of the Vertical Accumulations Column and Horizontal Accumulations Row. Thus the box identified by an asterisk (*) in Figure 5 is located at the intersection of the Vertical Accumulations Column for minute number 2 and the Horizontal Accumulations Row for minute number 3. The numeral in each box, then, indicates the number of different speakers participating in a period beginning with the minute which identifies its Vertical Column, and ending at the end of the minute which identifies its Horizontal Row. Thus the numeral 4 in this box indicates that there are four different

speakers in the period of minute number 2 and minute number 3 inclusive. The unitizer can see from the Accumulations Chart, how many different speakers there are in any portion or portions of the sequence.

The Accumulations Chart also yields information concerning the way any two possible adjacent periods of time are related to each other with respect to the identity of their participants. Figure 6 demonstrates this.

Figure 6

Accumulations Chart Demonstrating the Relation of Participant in Two Adjacent Periods

Horizontal Accumulations Rows: Min	Speakers	Vertical Accumulations Columns: Min 1	2	3	4	5	6	7	8	9	10	
1	5,8,13,17	4										Period A
2	5,13,17	4	3									
3	5,10,11,12	7	6	4								
4	6,17	8	7	6	2							
5	11	u 8	7	6	3	1						Point P
6	6,7,17	9	8	7	4	4	3					Period B
7	9	10	9	8	5	5	4	1				
8	5,7	10	9	8	6	6	5	3	2			
9	1,5,7,9,10	11	10	9	8	8	7	5	5	5		
10	1	v 11	10	9	8	8	w 7	5	5	5	1	

Suppose a dividing line were put in this sequence at Point P between minutes five and six, and the two periods thus divided off are compared: period A during minutes one through five, and period B, during minutes six through ten. The following information is, then, available concerning the periods.

In Period A there are 8 different speakers, as indicated in the box marked by the letter u.
In Period B there are 7 different speakers, as indicated in the box marked by the letter w.
In both periods together, there are 11 different speakers, as indicated in the box marked by the letter v.
In Period B there are, therefore, 3 speakers (11 minus 8) who did not appear in Period A. In other words, 3 new speakers were added between Periods A and B.
In Period A there are, therefore, 4 speakers (11 minus 7) who did not appear in Period B. In other words, 4 speakers dropped out between Periods A and B.
The Turnover is defined as the sum of new speakers joining and old speakers dropping out between periods. It is therefore seven in this case (3 plus 4).

Expressed generally, the situation is as follows:

Let u = the number of speakers in the first period;

v = the number of speakers in both periods; and

w = the number of speakers in the second period.

Then,

v - u = the number of new speakers added between the first and second period,

v - w = the number of speakers dropped out between the first and second period,

and (v - u) + (v - w) = The Turnover between the two periods, or

The Turnover = 2v - u - w.

In the Accumulations Chart the accumulations numbers in the boxes of the Vertical Column show, for each minute, how new speakers are added to the period starting with that minute. The number in each box of the Horizontal Row shows how that minute adds new speakers to the preceding minute.

The Repetitions

The numbers in the boxes of any Vertical Column are bound to reach a limit. The theoretical limit, of course, is the total membership of the group. Upon reaching this limit the numbers must repeat themselves. However, in almost all sequences which have been unitized the series of repeating numbers occur in the Vertical Accumulations Columns at much less than the theoretical limit. Each such series may be called a Vertical Repetition. The Vertical Repetition indicates that instead of the group as a whole making use of its total membership there is a subgroup acting and reaching the limit of its "membership."

There are also Horizontal Repetitions where the numbers in the boxes of a Horizontal Row repeat at some length. The Horizontal Repetition indicates that there are several similar possible periods whose participants are the same, with all of these periods ending at the same minute.

The Turning Points

Homogeneity.--Figure 7 is a sample Accumulations Chart of a twenty-minute sequence. In the Vertical Accumulations Column for minute two a Vertical Repetition is illustrated. Thus between the eleventh and fourteenth minute the number 8 repeats four times.

This means that from minute two through minute eleven new participants join the group's activity and that from minute eleven through minute fourteen no new participants are added. This state of affairs indicates that the entire period from minute two through minute fourteen

Figure 7

A Sample Accumulations Chart of a Twenty-Minute Sequence

Min.	Speakers	Vertical Accumulations Columns: Min	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1,3		2																			
2	8,17		4	2																		
3	17		4	2	1																	
4	17		4	2	1	1																
5	17		4	2	1	1	1															
6	8,9,17		5	3	3	3	3	3														
7	5,9		6	4	4	4	4	4	2													
8	5,8,9,16		7	5	5	5	5	5	4	4												
9	9,16		7	5	5	5	5	5	4	4	2											
10	2,11		9	7	7	7	7	7	6	6	4	2										
11	9,17,14		10	8	8	8	8	8	8	8	6	5	3									
12	17		10	8	8	8	8	8	8	8	6	5	3	1								
13	17,14		10	8	8	8	8	8	8	8	6	5	3	2	2							
14	9		10	8	8	8	8	8	8	8	6	5	3	3	3	1						
15	1,8,15		11	10	10	10	10	10	10	10	9	8	6	6	6	4	3					
16	3,7		12	12	12	12	12	12	12	12	11	10	8	8	8	6	5	2				
17	7,12		13	13	13	13	13	13	13	13	12	11	9	9	9	7	6	3	2			
18	12		13	13	13	13	13	13	13	13	12	11	9	9	9	7	6	3	2	1		
19	6		14	14	14	14	14	14	14	14	13	12	10	10	10	8	7	4	3	2	1	
20	6,12,17		14	14	14	14	14	14	14	14	13	12	10	10	10	9	8	5	4	3	3	3

Horizontal Accumulations Rows

← A Back Secondary Point

← The Primary Point

← A Forward Secondary Point

The shaded area is a Block of Repetitions.

is generally more homogeneous than periods where no such repetitions occur since each person who speaks <u>after</u> minute eleven, up to and including minute fourteen, has already spoken also <u>before</u> minute eleven. Minute eleven is of interest because it is the beginning of Vertical Repetition. Its properties shall therefore be further examined.

At minute eleven there is a Horizontal Repetition. In this row the number 8 is repeated seven times. This means that the period from minute two through minute eleven is also homogeneous (just as the Vertical Repetition showed the period from minute two through minute

fourteen to be homogeneous), since it indicates that the speakers during minutes two through eleven are the same as the speakers during minutes eight through eleven. To check this, note that the left end box of the Horizontal Repetition in question represents the accumulations during minutes two through eleven and that the right end box of the same repetition represents the accumulations during minutes eight through eleven. This fact implies that there must have been some speakers who had participated in both periods, the period during minutes six through eleven and the period during minutes two through eleven. It follows that there were some speakers who participated both before and after minute eight. The period of time during which this occurs is during minutes two through eleven, and that fact establishes the homogeneity of the period.

The period from minute eleven through minute fourteen is also homogeneous because there is a Vertical Repetition in that period.

Thus far homogeneity has been established for three periods; the period during minutes two through fourteen and two period within that period, one during two through eleven and another during eleven through fourteen

Difference.--The participation pattern in the period during minutes eleven through fourteen is different from that of the period during minutes two through eleven. There are three speakers during the second period and seven speakers during the first. One speaker (eight minus seven) who participates in the second period has not participated in the first period. Two of the three speakers in the second period have therefore also participated among the seven speakers of the first period. Five speakers (eight minus three) have dropped out between the periods and had not re-entered during four minutes. The information above would indicate that a common subgroup of two speakers acts in both periods. In the first period these two speakers are supplemented by another subgroup, or several subgroups, totaling five speakers; and in the second period they are supplemented by one more speaker.

There is a total of eight speakers during both units and the Turnover between the units is six (five plus one). The Turnover Ratio is therefore eight to six, or less than two to one. This is in line with Convention 2 (page 53) and these two adjacent units therefore satisfy the criterion of differences.

Comparability.--The first unit is 2.3 times the second with respect to participants (seven speakers to three speakers) and 2.2 times the second with respect to time (nine minutes to four minutes). These ratios satisfy Conventions 3 and 4 (page 54), and the two adjacent units are considered comparable.

Another consideration in this example as well as in others like it tends to establish further the comparability of the units. The Horizontal and Vertical Repetitions accumulated during the second period began during the first period. In other words, the second period was determined by events of the first period. The two units are not then two separate unrelated events. This relationship is pointed out more strongly by the fact that the two units together form a larger unit which is also homogeneous.

The minute interval at which the block of Vertical and Horizontal Repetitions occurs is the Primary Turning Point (in the example it is between minutes ten and eleven). The minute in whose Vertical Accumulations Column the leftmost Vertical Repetition of the block begins is the Back Secondary Turning Point (in the example this occurs in the Vertical Accumulations Column for minute two, and the turning point is therefore between minutes one and two). And the minute at which the Vertical Repetitions of the block cease is at the Forward Secondary Point (in the example this occurs at minute fourteen and the turning point is therefore between minutes fourteen and fifteen).

Between these three points there are two units which satisfy the requirements of homogeneity, difference and comparability.

If Turning Points were to be chosen at points which are not related to a block of Vertical and Horizontal Repetitions then one or several of the above requirements would not be satisfied.

If unitization were started at a point where only a Horizontal Repetition occurs then there would be an indication of the homogeneity of the first period, but there would be no indication of the extent or homogeneity or comparability of the second period.

If unitization were started at a point where only a Vertical Repetition occurs, then there would be an indication of the comparability of the two units, the extent of each and probably some evidence of the homogeneity of the second period; but there would be no indication of the homogeneity of the first period. As a matter of fact the first period cannot be as homogeneous as it would have been were the unitization started at a Block of Repetitions because a lack of a Horizontal Repetition means that there were not enough speakers who repeated activity to indicate a stable participation pattern.

If unitization were started at a point where no repetitions occur at all then there would be little evidence for the comparability and none for homogeneity of the units. The units are bound to be less homogeneous than where repetitions occur because repetitions imply the same speakers acting at different times and the units might be comparable only with respect

to participants and time and not with respect to homogeneity of the total period or an interrelation of events.

Summary of the General Procedure

Thus far the procedure reduces to three routine steps which may be complicated in their derivation but which are simple in their application. They are:

1. Notation of the accumulations--drawing up the Accumulations Chart for the given sequence.
2. Location of the blocks of Veritcal and Horizontal Repetitions (henceforth to be called "Blocks of Repetitions").
3. Automatic assignment of the Turning Points:
   a. the Primary point at the beginning of the block;
   b. the Forward Secondary Point at the end of the block;
   c. the Back Secondary Point at the minute whose Accumulations Column is leftmost in the block.

These operations are typical and comprise the basis of the entire procedure; but it remains to discuss and demonstrate the handling of atypical cases, the bases for judgment in less clear cut cases, what happens in dealing with long sequences of data, and conventions for comparability, difference, minimal block sizes, and other points to which these discussions lead.

Derivations, Conventions, and Refinements

The false primary point.--In some Blocks of Repetitions it may happen that the total number of speakers in what would normally become the second unit (the period during which the Block of Repetitions occurs) is too high because it approaches the numeral indicated in the Block of Repetitions. A relatively high number of speakers in the second unit would indicate that approximately the same subgroup or combination of subgroups is acting on both sides of the Primary Point. There therefore is no reason to separate the two units. The Turnover Ratio will be above the allowed maximum in such cases. The Primary Point in such a situation is a False Primary Point because it does not truly distinguish between two different events. However, the larger period between the two Secondary Points (the period that would normally have been the sum of the two units) is unusually homogeneous since its first part is homogeneous, its second part is homogeneous, and its second part is a repetition of its first part. The entire period can therefore be considered one single highly homogeneous Natural Unit.

Figure 8 (on following page) illustrates a False Primary Point.

Limits for comparability ratios.--The comparability ratios are the ratios of number of speakers and of durations of adjacent units. Each of the ratios requires separate treatment

Figure 8

A Sample Sequence Illustrating a False Primary Point

	Min.	Speakers	Min	Vertical Accumulations Columns 1	2	3	4	5	6	7	8
Horizontal Accumu. Row	1	14		1							
	2	14		1	1						
	3	4,10,14,18		4	4	4					
	4	10,18,12		5	5	5	3				
	5	10,12,16		6	6	6	4	3			
	6	4,10,16,18		6	6	6	5	5	4		
	7	4		6	6	6	5	5	4	1	
	8	4,8,17,18		8	8	8	7	7	6	4	4

A False Primary Point

Here the Block of Repetitions begins at the fifth minute. But the Accumulations Column for minute five shows that at the end of the block, or during the possible second period, there are five speakers. During the possible first period there are five speakers. The number of new speakers added between periods would be one (6-5), yielding a Turnover of two (1+1). The Turnover Ratio is therefore three to one (6/2), which is greater than the allowed maximum of two to one. The larger composite homogeneous unit is between minutes one and seven inclusive.

to determine the limits within which units are comparable. However, there is a general consideration that applies to both--that changes should not be too abrupt; that if there does exist a transitional period between big changes the procedure should provide for the emergence of such a period.

The speaker ratio.--The groups studied have had, on the average, sixteen members. A sudden shift from sixteen speakers to a unit of one speaker is a shift that is not sufficiently gradual. If there should be at least one transitional period between the total group and the individual, two changes would be shown between the periods and both changes would be in the same direction. Such shifts, occurring through transitional periods should be expected to occur in a consistent direction. There would therefore be greater confidence in a shift from the group to the individual or vice versa if a transition period could be assigned to bridge the shift; since at least one transition period would provide for at least two changes in the same direction.

A ratio between units not exceeding four to one provides that between total participation and a single individual's participation there should be at least one transitional period --the first period would include all sixteen members, the next period would include not less than four members, and the third period would consist of one participating member. There would be three consecutive periods with two changes in the direction of lesser participation between them.

Four to one is the highest Speaker Ratio that would be assigned to the most extreme change

in participation, and it is reasonable to consider this ratio the maximum that will be allowed.

The duration ratio.--Determination of a limiting ratio of durations of adjacent units raises another question. In determining the Speaker Ratio the fact that there is a given theoretical limit of participation (i.e., the total given membership of the group) was utilized, but there is no such given upper theoretical limit of the duration of any limit.

There is, however, an empirical limit. Most of the meetings that were rated in this experiment were rated for a period of forty minutes each meeting. Now, clearly, a unit of forty minutes' duration would not be desirable because it would mean that each meeting is a single Natural Unit. Dividing the forty minute period into two units is also not desirable because, in the extreme situation, if one unit is very small and the other very large there would be no transition to justify the change. There should therefore be at least three units in each forty minute period if the requirement for a transitional period is to be fulfilled, even in the extreme situation.

It should be recalled also that by Convention 1 (page 52) three minutes is taken as the shortest duration a unit can have.

Supposing that a forty minute sequence begins with a three minute minimum unit. A Duration Ratio of three to one makes sure that the next unit would be no more than nine minutes long and that the third unit would be no more than twenty-seven minutes long for a total of thirty-nine minutes (three plus nine plus twenty-seven).

This ratio takes care that with a maximum of change of unit length there will be a transitional period within a forty minute period and this limit should perforce be applicable to less extreme situations.

The limits of the comparability ratios are therefore four to one with respect to number of speakers and three to one with respect to duration. Ratios between any two adjacent units that are within these limits indicate that the units are comparable, and the closer the ratios approach one the more comparable are the units.

The limit of the turnover ratio.--The Turnover Ratio is an index of the difference of identity of participants between any two adjacent units. It is the ratio of the total number of speakers in both units to the Turnover, which is the sum of new speakers that were added plus old speakers that dropped out. Since in the calculation of the Turnover Ratio the Turnover is in the denominator the higher the Turnover, the lower is the Turnover Ratio.

When the ratio is one to one the speakers in one unit are completely different from

those in the other. When the ratio is two, half the total number of speakers are different and the other half are common participants for both units. When it is three, one-third of the total number of speakers are different and the remaining two-thirds of the total number of speakers are common participants for both units. And so on. The lower the Turnover Ratio is, the greater is the difference between adjacent units with respect to the identity of the speakers participating in them.

Now, there is no theoretical foundation upon which to base a decision as to what difference of participants would indicate a qualitative difference in the activities of adjacent units. It is even possible to suppose that a minimum difference, a difference of one participant among the other sixteen members, would result in a different expression of needs, concerns or interests. Consider this possible minimum difference. Here one participant had either joined in or dropped out from a unit where the other sixteen members are also participating. Suppose now that he had just joined the activity and that his contribution makes for the whole qualitative difference. It would be reasonable to suppose, if his contribution is of such importance, that the way would eventually be cleared for him, and that in the following unit he would play a more visibly dominant role. That is to say, in the following unit he might be an actor among fewer members or, possibly, an only actor. If his dropping out, on the other hand, is of importance, then it is reasonable to assume that he had been playing a more dominant role in a previous unit. It would be difficult to imagine that the contribution of one individual in one and only one unit, where many other participants are contributing and where there does not seem to be any follow up to, or introduction of, the contribution, should make a great deal of difference. It is rather among those members of the group who are common to adjacent units that the important individual or group of individuals is to be found.

The procedure should allow for those periods, where the activity of such individual or group of individuals occurs more visibly, to emerge as Natural Units. In terms of the Turnover Ratio, the problem is to discover the maximum Turnover Ratio which will permit such units to emerge.

For every twenty-minute sequence there is, found empirically and on the average, one valid Block of Repetitions. For each twenty-minute sequence there would therefore usually be at least two units, and for each forty-minute sequence there would be two sets of two units, each defined by the Blocks of Repetitions, and one unit bridging the two sets of units, or a usual minimum total of five Natural Units for each forty-minute sequence.

The question is concerned with the Turnover Ratio which would allow for the extreme case of one individual emerging into visibility out of a total of sixteen within five units under the

most favorable conditions. The most favorable condition is the one where from unit to unit old participants drop out and no new participants are added, and where the units are consistently diminishing in size. A maximum Turnover Ratio of three to one would require seven units for this change (the speakers in succeeding units would be as follows: sixteen, ten, six, four, three, two, one). But a Turnover Ratio of two to one seems to fit the requirement (the speakers in succeeding units would be as follows: sixteen, eight, four, two, one, for a total of five units). It must be kept in mind that this result holds true under the most favorable conditions. This might raise the question whether two to one is a low enough ratio but it certainly demonstrates that any ratio above two to one is too high and that two to one should be the highest allowable ratio.

Block dimensions.--An operating regulation is necessary concerning the minimum of repetitions, horizontal and vertically, that are to be required to define an operationally valid Block of Repetitions.

A repetition of the accumulation number three times horizontally and three times vertically would guarantee that the units preceding and succeeding the Primary Point should be at least three minutes long each. It has been shown empirically that any unit of shorter duration than three minutes is insufficient because it does not allow everyone an opportunity to participate. With a three by three minimum set for the size of a Block of Repetition there would also be at least three points evidencing the homogeneity of each unit.

Block distance.--The duration of the unit preceding the Primary Point is dependent upon the distance of the leftmost box in the first Horizontal Repetition of the block from the right extremity of that Horizontal Row. So, the greater the distance of the Block of Repetitions from the boxes at the right of the Accumulations Table the larger is the first unit, that unit which precedes the Primary point. Since the minimum block size is three boxes by three boxes, most of the units that occur beyond the Primary Point, the second units, range between three to six minutes in duration. In order to maintain the comparability duration ratio the first unit should not be more than three times the size of the second. There should be, therefore, a working maximum distance from the right edge of the accumulations within which it is valid to locate blocks of repetitions. If the upper right box of the block is at most the seventh box from the right extreme of the Horizontal Row then the duration of the first unit would have a maximum length of from nine to eleven minutes since the Horizontal Repetitions of most blocks are from three to five squares long. If this distance (the upper right corner box being the seventh box from the right edge) is established as a maximum for

all valid Blocks of Repetition, it would make reasonably certain that the first unit would be of no more than three times the duration of the second.

A Summary of the Procedure

The procedure still reduces to the basic routine steps enumerated at the end of the last section. These operations, including the refinements, special cases and conventions described in this section plus the appendix are as follows:

1. Notation of the accumulations--drawing up the Accumulations Charts for a given meeting, with the meeting sectioned into twenty-minute sequences and overlapping charts between the sections.

2. Location of the Blocks of Repetitions. The blocks should be of at least the minimum dimensions (three minutes by three minutes) and within the maximum distance from the right edge of the accumulations (its upper right box should be, at most, the seventh box from the right).

3. Assignment of the Turning Points.

   a. In sequences where there are defined Blocks of Repetitions. (This applies to about 85 per cent of all twenty-minute sequences.)

      (1) Location of the Primary Point at the beginning of the block, and shifting it a minute for the sake of comparability and/or avoiding False Primary Points.

      (2) Location of the Forward Secondary Point at the end of the block, and shifting it one or two minutes forward if an abrupt change of participation occurs one or two minutes forward, or if the shift would improve the comparability ratios substantially.

      (3) Location of the Back Secondary Point at the minute whose Accumulations Column is the leftmost column in the Block of Repetitions.

      (4) Location of the Additional Back Secondary Point whenever there are parallel Horizontal Repetitions and proof of the homogeneity of the second sub-unit.

      (The minimum block size and maximum block distance tend to make most units of proper Duration Ratios. In most cases, then, shifts of turning points are made to avoid improper Speaker Ratios and Turnover Ratios.)

   b. Where there are no defined Blocks of Repetitions. (This applies in about 15 per cent of all twenty-minute sequences.)

      (1) Where there are too many repetitions. Here turning points are assigned where there occur abrupt changes in rates of accumulation.

      (2) Where there are insufficient repetitions. Here turning points are assigned where there occur the most abrupt changes in speakers.

4. Defining the Natural Units.

   a. Crossing out False Primary Points.

   b. Where zones of influence overlap, combining turning points that are less than three minutes apart; and combining small units into larger ones when necessary for the sake of comparability.

   c. When zones of influence leave a gap between them, subdividing the gap period into smaller periods in the manner of 3b(2) above when necessary for the sake of comparability.

d. The Natural Units lie between all succeeding turning points that have been defined after the shifts, additions, and eliminations.

Empirical Checks on the Unitizing Method

Objectivity

In order to test the reproducibility of the procedure, two unitizers unitized independently the same six meetings, and their results were compared. (One of the unitizers was initially completely unacquainted with the procedure. His instruction consisted of reading an early draft of this manual, a practice unitization, and about a half-hour's verbal demonstration.) The results of the comparison are shown in Table I.

TABLE I

A COMPARISON OF TWO UNITIZERS' RESULTS IN UNITIZING THE SAME SIX MEETINGS

		Unitizer A	Unitizer B	Both Unitizers
a.	The total number of minutes considered	287	287	
b.	The number of turning points defined	49	49	
c.	The number of agreements possible[a].			47
d.	The number of obtained perfect agreements			31
e.	The number of obtained agreements one minute apart			13
f.	The total number of agreements (d + e)[b]			44
g.	The per cent agreement between the two unitizers--100(f/c)			93.6

[a]For each meeting the total number of agreements possible is equal to the number of turning points that were defined by the unitizer who defined the least number of points. When unitizer A defines five points in a meeting and unitizer B defines six points in the same meeting, the number possible agreements is five. The total number of possible agreements for all meetings is the sum of every meeting's possible agreements.

[b]Since the unitizer is often given lee way of one or more minutes within which to choose the turning point, the turning points that correspond within one minute are considered agreements.

The agreement between the two unitizers is 93.6% indicating a very high degree of producibility.

Validity

The validity of this procedure was studied by comparing its results with a more subjective and interpretive method of unitizing.

The observers of one group unitized all thirteen meetings themselves on the basis of their interpretations of the events of the group. To do this, they took account of the graph of the sequence, changes of subject matter discussed, diagnosis of hidden agenda periods and the like. They confirmed their impressions of phases of the meetings by discussion with the trainer of the group. A year later, the meetings were studied intensively and re-diagnosed. At this time about one-fifth of the unitizing decisions were changed on the basis of more adequate theorizing and interpretation. The units so defined were regarded by them as representing as wise a set of decisions as is currently possible by that method.

The same thirteen meetings were unitized according to the procedure described in this chapter and the corresponding sequences of both methods were compared with respect to their turning points. Table II shows the results of this comparison.

TABLE II

A COMPARISON OF THE RESULTS OF UNITIZING THE SAME THIRTEEN MEETINGS BY TWO METHODS OF UNITIZATION

		Interpretive Method	Objective Method	Both Methods
a.	The total number of minutes considered	774	774	
b.	The number of turning points defined	95	110	
c.	The number of agreements possible[a].			84
d.	The number of obtained agreements one minute apart . . .			48
e.	The number of obtained agreements two minutes apart[b] . .			14
f.	The total number of agreements (d + e)			62
g.	The per cent agreement between the two methods--100(f/c). .			73.8

[a]See the footnote for c. in Table 1.

[b]When the units under consideration were long, of more than nine minute's duration, it was considered reasonable to allow greater leeway in what would be considered agreement between corresponding turning points, because the larger the unit the more general is the interpretation of the event and the less clear are the exact turning points by the interpretive method. e. includes only these cases.

The results show that both methods agreed on about 74 per cent of the possible agreements in turning points.

In view of the uncertainties of the theoretical "interpretative" bases, in which selecting turning points to the nearest minute (or to the nearest two minutes in long units) is often sheer luxury, it is felt that this quicker, objective, blind method, based only on who talked when, should be adopted.

It is also believed that the major theoretical assumption can be taken as proved: with each change of quality of group experience, there is a new pattern of participation.

Generalization of Relationships among Variables

The limits and limiting ratios calculated in this manual are derived for the specific conditions of observations, ratings, and group sizes dealt with in this investigation. To generalize the applicability of the procedure, general equations, derived in the same manner as the specific constants in text of this manual, are given here.

Predetermined Constants

There are two constants that are "given" in any investigation. They are the total number of members in the group (henceforth symbolized by the letter T) and the normal duration of the rated period (symbolized by the letter D). In this investigation T was sixteen members and D was forty minutes. The experimenter may, of course, be able to set the total membership of the group and the length of each meeting[1] for his own purposes. Once they are set they apply to the entire investigation.

Empirically Determined Constants

There are two other constants that depend primarily upon how the specific group under investigation responds to the many internal and external stimuli to which it is subjected. These are beyond the experimenter's control and must be determined empirically. And since they must be known at the start of the investigation they must be determined by means of a preliminary pilot experiment, from which they are to be approximated empirically.

The first of these is the elementary time unit (symbolized by e). e is a certain duration of time. It is the time interval which the observer rating the meetings will note down. In this investigation e was one minute and the observer therefore noted the time every minute.

---

[1] D is related to the length of group meetings but is not necessarily equal to it. D, the actually rated period, is that section of the meeting which the observer considers to be typical of the meeting as a whole. In this investigation D was about one-third of the actual total meeting time, since the groups met for two hours daily. A forty minutes sample each day was considered an adequate sample of the total course of growth.

The elementary time unit is defined as that length of time during which it is rare for more than a third of the group to participate. In this investigation rarely did more than six different members participate in any given minute. Six members were roughly a third of the group. In the pilot investigation it would be best to note the time at very short intervals, every fifteen seconds, for example, and to determine from the results whether larger combinations of these small intervals would meet the requirements of the definition of e.

The second empirically determined constant is the normal sequence length during which it is typical for Blocks of Repetitions to occur (this is symbolized by s). If the Blocks of Repetitions appear in more than 80 per cent of such sequence lengths then it may be assumed that the occurrence is typical for such sequences. In this investigation s was twenty minutes, or 20e. There was at least one Block of Repetitions in 85 per cent of all twenty minute periods. In the pilot investigation it would be best to draw up Accumulations Charts for rather long sequences, sequences of 40e for example, and to determine by the results whether shorter periods would meet the requirements of the definition of s.

Derived Constants

The remaining limits and limiting ratios are functions of the predetermined and empirically determined constants.

a. The Minimal Unit Size (m).--m is usually 3e, since this is the minimum length of time during which the group as a whole can participate. This duration, 3e, is the shortest unit which is theoretically allowable. It does not follow that any units found will be this short.

b. The Normal Minimum Number of Units Expected for the Normal Duration of a Rated Period (symbolized by n).--This is a function of D, the normal duration of the rated period, and s, the length of time during which Blocks of Repetitions occur typically. n is twice the number of s in D (twice, because there is a minimum of two Natural Units wherever there is a Block of Repetitions) plus one less than the numbers of s in D (this to allow for gap periods between the zones of influence). Expressed symbolically, n is the nearest integer which satisfies the equation,

$$n = \frac{2D}{s} + \frac{D}{s} - 1$$

or,

$$n = \frac{3D}{s} - 1 .$$

In this investigation n was five since D was 40e and s was 20e.

c. The Maximum Speaker Ratio.--As derived previously this ratio is purely a function of

T, the total number of members in the group. Let x to one be the maximum Speaker Ratio. Then: $x = \sqrt{T}$ generalizes the derivation in the second section of this chapter.

d. The Maximum Duration Ratio.--As derived previously this ratio is a function of D, the normal duration of the rated period, and m, the minimal unit size. If y to one is the maximum Duration Ratio, then:

$$m + my + my^2 = D$$

or,

$$y^2 + y + 1 = \frac{D}{m}$$

generalizes the derivation of the maximum duration ratio. (Remember that all time lengths, D, m, and s are expressed throughout in multiples of e.)

e. The Maximum Turnover Ratio.--As derived earlier, this ratio is a function of n, the normal minimum number of units expected for the normal duration of a rated period, and of T, the total membership of the group. On page 65 a progression of participants in succeeding units was presented. (The progression was 1, 2, 4, 8, 16). This progression is geometric, and the last term is the total membership of the group (T), while the number of terms in the progression is the normal minimal number of units expected (n). Then $T = r^{(n-1)}$, which is the equation for the last term of a geometric progression of this sort, where r is the constant multiplier (r is two in this example), Now, if z to one is the maximum Turnover Ratio then: $r = \frac{z}{z-1}$ *

and therefore, $T = \left(\frac{z}{z-1}\right)^{(n-1)}$

f. The Minimum Block Size (b).--The minimum block size is m Horizontal Repetitions by m Vertical Repetitions. (This explains why the elementary time unit was picked as that period of time when more than a third of the group rarely participates. It provides that m would be equal to at least 3e, which provides that there should be at least three points of evidence of repetition for a block to be considered valid.)

g. The Maximum Block Distance (the B^{th} box).--The maximum block distance is a function of the minimal unit size, m, and the duration ratio, y. It should provide that the first unit in the block's zone of influence should not be more than ym in length. If the upper right box of the Block of Repetitions is the B^{th} box from the right edge of the accumulations, then: $B = ym - m + 1$.

---

*This is derived as follows: Let a and b be two successive terms in the progression. Then, $r = \frac{b}{a}$ or $b = ar$, and $z = \frac{b}{b-a}$. By substitution, $z = \frac{ar}{ar-a}$ or $z = \frac{r}{r-1}$. By algebraic manipulations, the result is derived of $r = \frac{z}{z-1}$.

Summary.--Table III summarizes the constants and the manner of their derivation.

TABLE III

Name of the Constant	Its Symbol	Sources of Its Derivation	Manner of Its Derivation
Total number of members in the group	T	experimenter's choice	
Normal duration of the rated period	D	experimenter's choice	
Elementary time unit	e	pilot investigation	empirical
Normal sequence length during which blocks are typical	s	pilot investigation	empirical
Minimal unit size	m	function of e	usually 3e
Normal minimum number of units expected for D	n	function of D and s	$n = \frac{2D}{s} - 1$
Maximum Speaker Ratio	x to one	function of T	$x = \sqrt{T}$
Maximum Duration Ratio	y to one	function of D and m	$y^2 + y + 1 = \frac{D}{m}$
Maximum Turnover Ratio	z to one	function of T and n	$T = \left(\frac{z}{z-1}\right)^{(n-1)}$
Minimum block size	b	function of m	m horizontal by m vertical repetitions
Maximum block distance	upper right of the block is B^{th} from the right edge	function of m and y	$B = ym - m + 1$

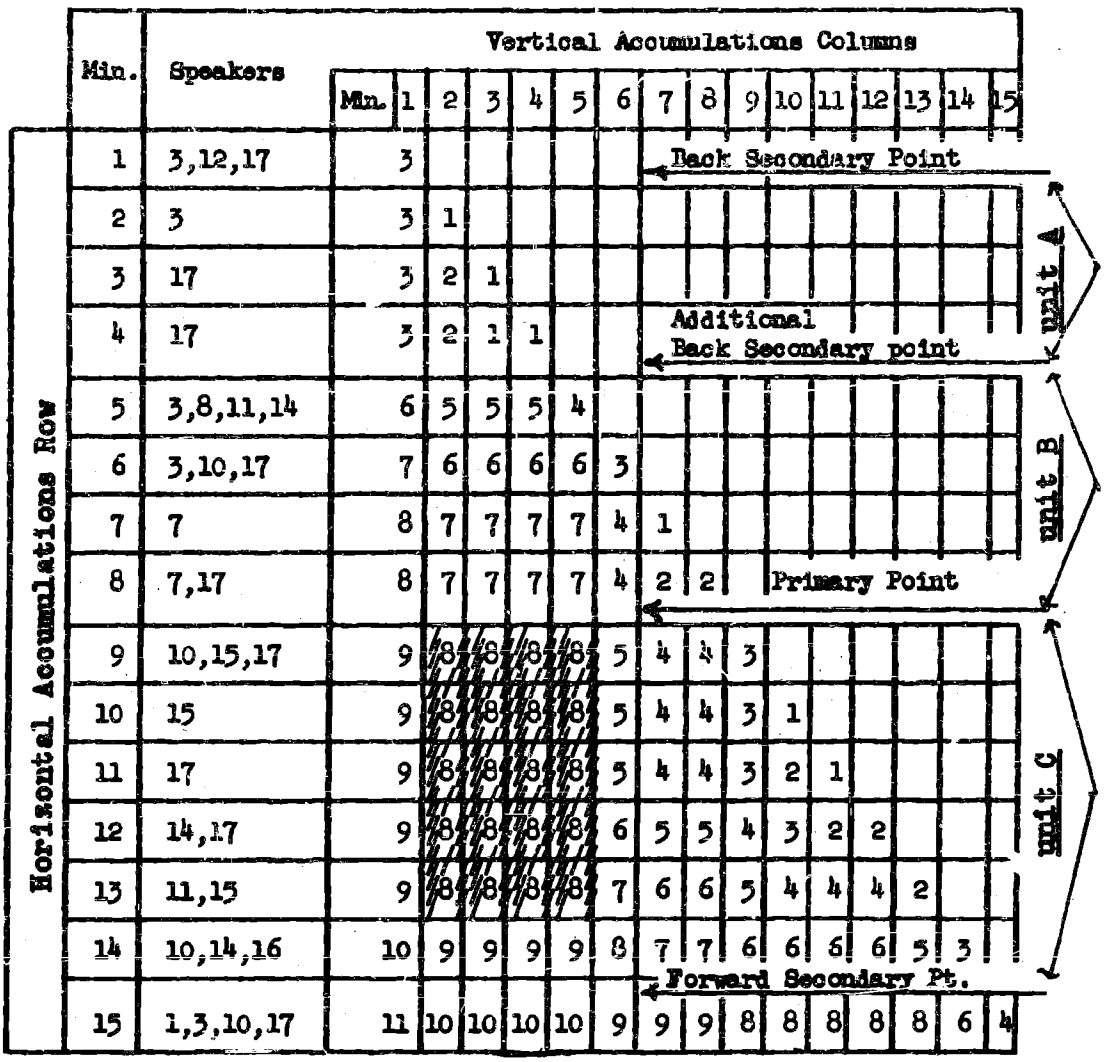
In order to review all these constants and limits, they are shown in relation to the Accumulations Chart in Figure 9 (see following page). From this figure it is apparent that the constants and limits are interrelated. Some of the constants, such as D and e, can be varied by manipulation of the group under study. The limits and other constants can therefore be varied by the experimenter to suit the procedure to the specific conditions and purposes of his experiment.

Uses of the Natural Unit

The product of the unitizing procedure, the Natural Unit, now provides a context for the study of group behavior and development from all points of view. It is applicable to the three

Figure 9

An Accumulations Chart, and Demonstrations of the Constants and Limits



T (for this group) = 16 (always 16 irrespective of how many in this particular sequence).

D (for this group) = 40 min. (always 40 min., as in T).

e (for this group) = 1 min.; s = (always 20 min., as in T.)

m = 3 min. (by m = 3e). Therefore no unit in the sequence is less than 3 min. long.

n = 5 (see equation for n). This has no direct bearing on the units in the sequence; it is a constant used to derive z.

x = 4 (see equation for x). The maximum Speaker Ratio is, then, four to one. Between units A and B it is 7 to 2, and between units B and C it is 7 to 6. Both are below the maximum and therefore valid.

y = 3 (see equation for y). The maximum Duration Ratio is, then, three to one. Between A and B it is 4 min. to 3 min., between B and C it is 6 min. to 4 min. Both are below the maximum and therefore are valid.

z = 2 (see equation for z). The maximum Turnover Ratio is, then, two to one. Between A and B there are 5 new speakers (7 - 2), and 0 speakers dropping out (7 - 7), for a total Turnover of 5, and the Turnover Ratio is 7 to 5; between B and C there are 2 new speakers (9 - 7), and 3 speakers dropping out (9 - 6), for a total Turnover of 5, and the Turnover Ratio is 9 to 5. Both are below the maximum and are therefore valid.

b = 3 Horizontal by 3 Vertical Repetitions (see equation for b). The Block of Repetitions in this sequence is 4 horizontal by 5 Vertical Repetitions. It exceeds the minimum and is therefore valid.

B = 7th box from the right (see equation for B). The upper right box of the Block of Repetitions is the 5th box from the right. It is under the maximum and the block is therefore valid.

main foci of study: the individual's role, the subgroup, and the behavior of the group as a whole. Examples of such possible applications follow.

1. The Individual's Role.

   a. A study of the type of units (in terms of work, emotionality, or any other quality) in which particular individual members participate.

   b. A study of which part of the Natural Unit the individual member participates in typically. For example, whether he tends to appear at the beginning or middle or end of Natural Units. (This is intended to document the individual's tendency to initiate activity, follow other's lead, or serve in a summarizing role.)

2. The Subgroup.

   a. Estimation of behavioral subgroups by calculating and comparing the co-appearance of members of the group in Natural Units.

   b. Estimation of the role of these behavioral subgroups by study of the type of units in which they are represented.

3. The behavior of the total group.

   a. A meeting by meeting study of the manner in which the group moves from unit to unit with respect to qualitative variables (emotionality, work, or any other quality) within the unit. (The Field Charts in the following chapter.)

   b. A comparison of different groups with respect to these movements, and characterization of groups in terms of these movements.

CHAPTER VI

INTERPRETING PHASES OF MEETINGS AND OF GROUP GROWTH: THE WORK-EMOTIONALITY FIELD GRAPH[1]

The unitizing procedure described in the preceding chapter permits us to identify successive units which are internally homogeneous with respect to the participating sub-group, and theoretically presumed to be internally homogeneous with respect to the kind of process going on in the group. Such units, once defined, can become the basis for the analysis of group interaction.

Analyzing group interaction on the level of the natural unit has several advantages. One is that it provides a broader unit of analysis. Natural units identified by this method are three to twenty minutes long; the average duration of a natural unit is six to seven minutes. In a two-hour meeting for which continuous ratings are available, one might expect to find eight to twelve natural units. An entire meeting can thus be described in terms of a limited number of periods. A second major advantage is that units so defined can be assumed theoretically to be closely related to the character of the group process. This means that such units are likely to be more meaningful than units which are equally broad but defined arbitrarily in terms of chronological time.

Having accepted the validity of the natural unit as a basis for analysis there remains the question of the manner in which the natural unit can best be described and represented. The form, as finally developed, involves summarizing the work and emotionality characteristics of each unit and representing them on a graph. In making this decision several theoretical points were considered. We assume in terms of basic theory that the ongoing process of a group can be described in terms of successive periods which are homogeneous within themselves but which differ from each other with respect to (1) work-emotionality relationships and (2) the dominant work-emotionality culture.

1. Variations in work-emotionality relationships.--We assume that work and emotionality always occur in some combination. But at times work may be dominant over emotionality and at other times emotionality may be dominant over work. That is, at times the emotionality expressed may be contained within the work task--integrated with and supportive of work. At other times emotionality may be more dominant, compelling and pervasive. During such periods

[1]This procedure was developed by Herbert A. Thelen. This chapter was prepared by Dorothy Stock.

work is in the service of emotionality.

2. Variations in the dominant work-emotionality culture.--Although work is always present in a group and always combined with some emotionality, the specific emotionality with which it is combined varies from period to period. That is, at a given time a group might be described as operating in work and pairing, this might persist for a time and then be replaced by work-dependency, and so on. Some periods are mixed or transitional in character.

In terms of this theoretical formulation, a group meeting might be described as a series of periods varying in their work-emotionality characteristics. One would expect different members, or groups of members, to dominate these various periods, depending on their valency characteristics.

Since the natural units are identified on the basis of shifting participation patterns, one can theoretically expect such units to show differing work-emotionality characteristics in the two ways described above. An adequate method for representing natural units ought, then, to involve defining the work and emotionality characteristics of each unit.

The "work-emotionality field graph" described in this section permits us to represent the work-emotionality characteristics of successive natural units graphically.

In this chapter we shall present (1) a general description of the field graph, (2) a description of the specific procedure, (3) an illustration of its use in interpreting a single meeting, and (4) a discussion of other possible applications.

General Description of the Field Graph

A sample field graph is presented on page 78 (Fig. 10). The horizontal axis of the graph represents average work per statement; the vertical axis represents average emotionality per statement. These two averages can be computed for each natural unit and represented as a single point on the work-emotionality field-graph. As many units as occur in a single meeting can be plotted on the same graph, numbered in chronological order, and connected with arrows. This makes it possible to follow an entire meeting, unit by unit, in terms of changes in over-all work-emotionality relationships.

Procedure for Preparing Field Graphs

The graphing procedure makes use of two kinds of information: (1) work and emotionality ratings for each individual contribution, and (2) identified natural units.

The graphing procedure itself involves the following steps: (As an illustration of these steps see the work sheet on page 77, and the sample graph on page 78 which was drawn from the work-sheet.)

WORK SHEET SUMMARIZING THE WORK, EMOTIONALITY AND CONTRIBUTIONS CHARACTERISTICS OF A SERIES OF NATURAL UNITS

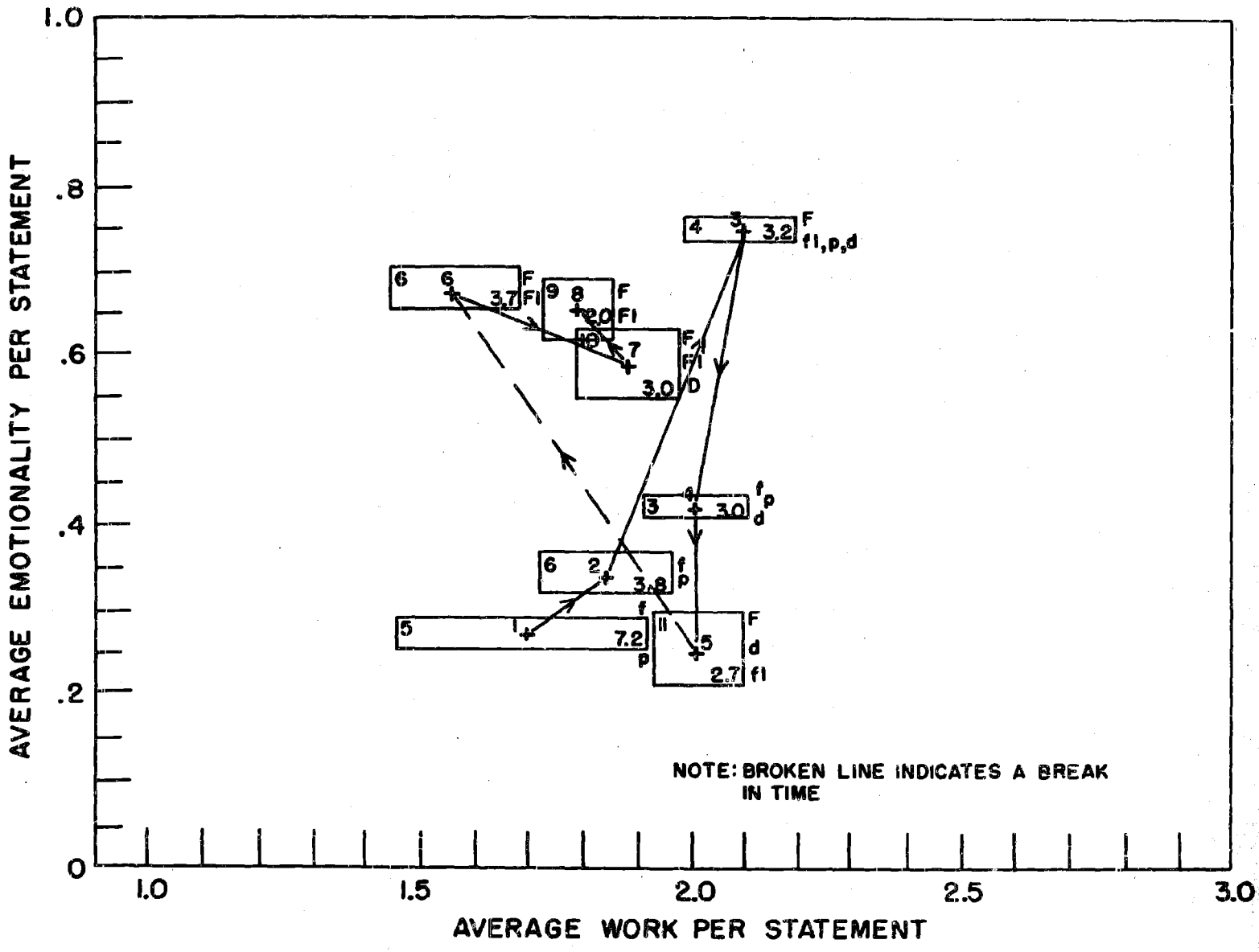
Unit #	Time		Work		Emotionality			Contributions	
	Time	Duration	Wt'd Sum of Work	Av. Work per Statement	Emotionality	Wt'd Sum of e.	Av. e. per Statement	Total # Contrib.	Av. # Cont. per Minute
1	9:22-9:26	5 min.	61	1.69	fffppflFff	10[a]	.28	36	7.2
2	9:27-9:32	6 "	42	1.83	fpffpfpp	8	.35	23	3.8
3	9:33-9:36	4 "	27	2.08	flFfffpd	10	.77	13	3.2
4	9:37-9:39	3 "	18	2.00	fdfp	4	.44	9	3.0
5	9:40-9:50	11 "	60	2.00	fffffffffff (dp)fflfDf	17[b]	.57	30	2.7
6	10:07-10:12	6 "	34	1.55	Fffffdflff FlFl	15	.68	22	3.7
7	10:13-10:22	10 "	56	1.87	pFlfpffffd ddflfFlpd	18	.60	30	3.0
8	10:23-10:31	9 "	32	1.78	fffFlflflff Fd	12	.67	18	2.0

[a] Small expressions of emotionality (f, d, p, fl) are given a weigthing of 1; Large expressions of emotionality (F, D, P, Fl) are given a weigthing of 2.

[b] Two emotionalities with a circle around them ((dp)) indicate that both feelings were expressed in a single statement. A total weighting of 1 is given.

FIGURE 10

ILLUSTRATION OF A WORK-EMOTIONALITY FIELD GRAPH: AN EARLY MEETING



The work-sheet

1. The unit number and the time included in the unit is recorded on the work sheet (columns 1 and 2).

2. The duration in minutes for each unit is computed and entered in column 3.

3. The weighted sum of work is computed for each unit and recorded in column 4. (This can most conveniently be computed from the minute-by-minute graphing form, or, if this has been omitted, from the original rating sheets.)

4. The individual emotionalities expressed are recorded in column 6. (See note under 3, above.)

5. The weighted sum of emotionality is computed for each unit and recorded in column 7.

6. The total number of contributions for each unit is counted and entered in column 9. (See note under 3, above.)

7. The average work-level per statement for each unit is computed (weighted sum of work divided by number of contributions) and entered in column 5. (The possible range is 1-4.)

8. The average emotionality per statement for each unit is computed (weighted sum of emotionality divided by number of contributions) and entered in column 8. (The possible range is 0-2.)

9. The average rate of contributions is computed (total number of contributions divided by number of minutes in the unit) and entered in column 10.

The graph

10. A single point, representing average work per statement and average emotionality per statement is located on the graph for each unit. These points are numbered in order (chronologically).

11. The natural units are connected with arrows, indicating time sequence (1 $\longrightarrow$ 2 $\longrightarrow$ 3, etc.)

12. Duration of the unit in minutes and average number of contributions per minute for the unit are represented in the following way: Each unit is represented not by a point but by a rectangle, in which the width of the rectangle is proportional to the average number of contributions and the height is proportional to the proportional duration in minutes of the unit. (The scale does not matter, except that overlapping is confusing. We have found it convenient to use 1/4" = one contribution on the horizontal dimension and 1/4" = 5 minutes on the vertical dimension.)

    The average number of contributions is recorded in the lower right hand corner of the rectangle. The duration in minutes is recorded in the upper left hand corner of the rectangle.

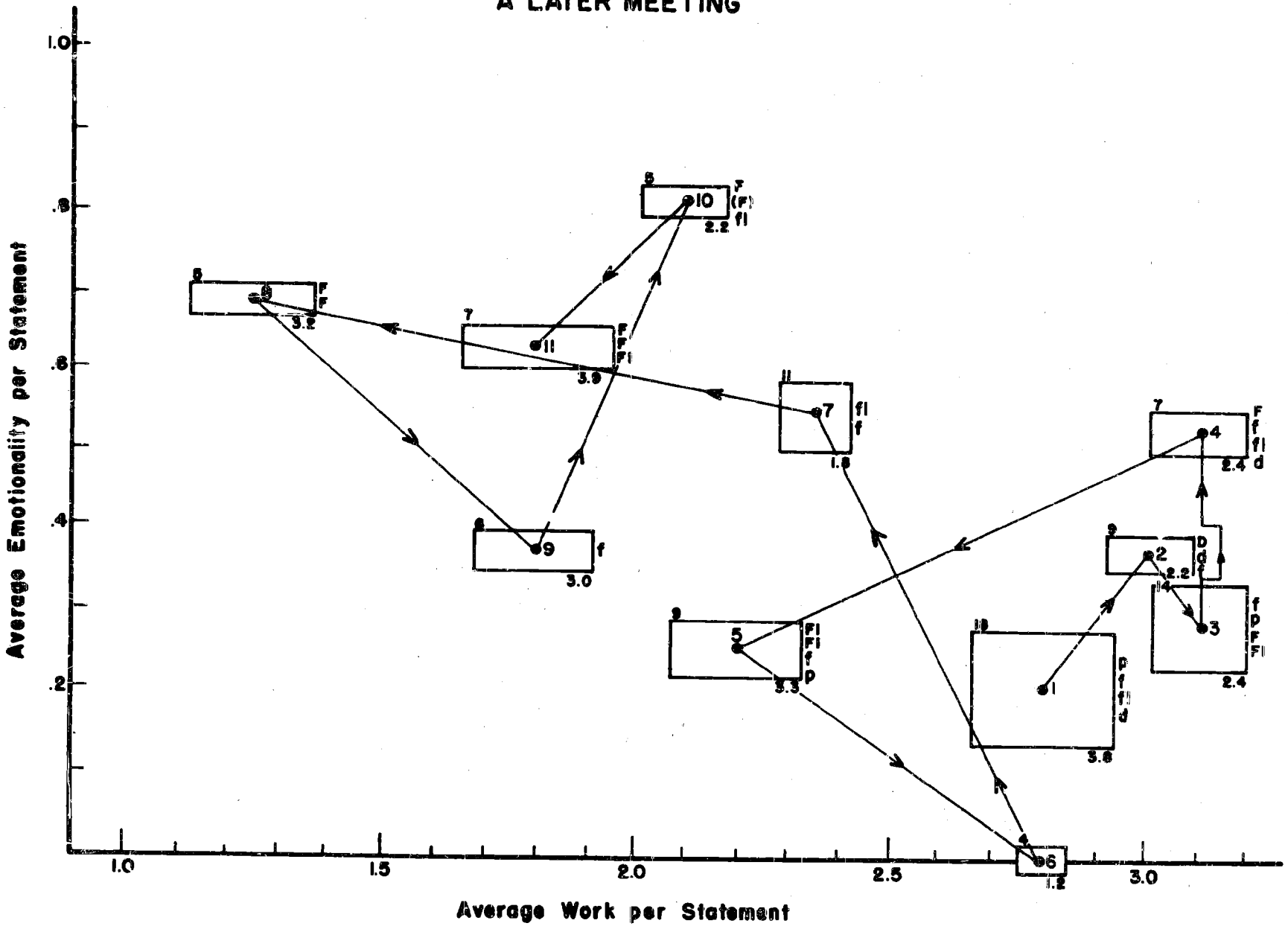
13. The specific emotional modalities expressed in the unit are recorded on the graph just to the right of the rectangle representing the unit. (These have previously been recorded in column 6 of the work-sheet.)

Interpretation of a Single Meeting through the Use of the Field Graph

The graph on the following page represents the ninth meeting of a training group and is presented here as an illustration of the manner in which natural units may be represented graphically and used as the basis for interpreting group process on a macroscopic level. Ninety-two consecutive minutes were rated during the day. Application of Ben-Zeev's unitizing

FIGURE 11

ILLUSTRATION OF A WORK–EMOTIONALITY FIELD GRAPH:
A LATER MEETING



method yielded 11 natural units. The interpretation which follows is based on information contained in the graph only.

A general inspection of the graph suggests that the meeting can be thought of as consisting of an opening phase (units 1-6), a brief transition (unit 7), and a second phase (units 8-11). The first phase is characterized by relatively high work and low emotionality, while the second phase is characterized by lower work and higher emotionality. The transitional unit--7--is crucial to this meeting. We can assume that during unit 7 the group was faced with some problem which it could not handle and which precipitated a movement into low work and high emotionality from which the group could not recover.

To discuss these units in more detail:

Units 1-3 represent a consistently high work level with emotionality relatively low and interaction rate moderate. These units represent high level, steadily maintained work which (probably) involves integrated and supportive emotionality. During these first three units there is a slight but steady increase in work together with some evidence of a heightened expression of emotionality and a reduced interaction rate. This suggests that the group is building commitment to the problem with which it is concerned --that this is an emotionally real problem for the group.

Unit 4 maintains the same high level of work and shows a further increase in emotionality. During this period the group can tolerate (and assimilate) greater expression of emotionality without losing its work orientation. Work and emotionality are well integrated and mutually supportive.

Unit 5 represents a breakdown from this highly integrated level: both work and emotionality sharply decrease and the interaction rate goes up. This may be a period during which individuals attempt to assimilate in their own framework ideas presented in units 1-4.

Unit 6 represents the attempt of a few persons to recover a work orientation which does not require the integration or expression of emotionality. This is an attempt to check the direction in which the group is going. That is, it represents an attempt to move the group away from either the highly integrated work and emotionality represented in unit 4, or the reduced W and E represented in unit 5, in the direction of a more abstract, less emotional, but work oriented manner of handling the problem.

Unit 7 represents a movement back to a greater expression of emotionality and lower work. The attempt to change the direction of the group (unit 6) has failed. Moreover, something happens during this unit to precipitate the group into

Unit 8, which represents a period of highly individually oriented expressions of emotionality (fight). This is a period of intermember attack and counter-attack. The moderate interaction rate does suggest, however, that the group is not out of control. Members are still listening to each other but have lost their group orientation and are expressing individual hostilities.

Unit 9 shows an attempt to recover by reorganizing the problem as a group rather than an individual concern. The decrease in emotionality suggests an attempt to deal with the problem on a more abstract or intellectual level.

Unit 10 indicates that this attempt fails. However, unit 9 has had some effect--it opens the way for the group to deal with the problem in a more group oriented way, while at the same time expressing emotionality freely.

Unit 11, the final period, again shows the group reacting in the direction of lowered work and greater emotionality. The group has not yet been able to recover its equilibrium after the impact of unit 7, nor has it been able to find a way of handling the

situation presented in unit 7. The high interaction rate in unit 11 suggests that members are piling in with affect-laden statements quite freely.

In the following section we shall present, very briefly, a summary of the content of this meeting, so that the reader can see how content is related to the interpretations presented above and to the position of each unit on the group.

Unit 1: General discussion in which most group members participate: we each need to be understood; we need to be able to recognize and handle our own feelings; are we as a group afraid to handle emotional problems?; can we handle emotional problems?

Unit 2: Member 16 introduces a personal problem: "I used to be concerned about my status in the group. Now my contributions are conditioned by the needs of the group." The group reassures 16 that this is certainly movement in the direction of maturity.

Unit 3: The group as a whole accepts the need to "behave maturely" as a problem for the total group. "We ought to be able to handle our emotional problems in mature ways." They ask themselves if they can rely on the leader to handle emotional problems for them, and agree that such problems must be handled by the total group.

Unit 4: This seems to be a reaction to the seriousness and intensity of the preceding unit. The theme here is "Why do we get so involved? Do we really want to get so involved, and place ourselves in a position in which we have to handle emotional problems?"

Unit 5: The group answers its own question, not by saying "yes" but by accepting such a problem as a legitimate one for the group. Member 12 introduces a personal concern: "My problem is that I haven't felt involved enough." The group begins to deal with 12's problem.

Unit 6: The leader suggests that the group might want to role play. He is in effect offering the group a way of dealing with such emotional problems on a more abstract, less real (and consequently safer) level.

Unit 7: The group does not respond to this suggestion but returns to a direct discussion of 12's problem. Before the group is well started on this, however, Member 1 comes in with a long (two-minute), intellectual, and unrelated comment to the effect that "permissiveness and creativity are very close together. . . ." (Some background is required here: 1 is the associate leader; in past meetings he has frequently made long, intellectual, hostile interpretations which have irritated the group but with which the group has been unable to deal.)

Unit 8: This is a period of attack, defense, and counter-attack between Member 1 and several other members of the group.

Unit 9: Member 9 introduces the problem of the way in which various roles become stereotyped. He offers himself (a preacher) as a case in point. This appears to be an attempt to handle the problem of Member 1 in an off-target, abstract way.

Unit 10: Member 1 again introduces a hostile interpretation: "You people are satisfied with this group yet some people feel withdrawn. I question the effectiveness of a group in which individuals don't feel involved." This time, in the face of attack, the group rallies and expresses its own strength: "We're involved in a way which is satisfying to us."

Unit 11: With this expression of strength, group members each express their own feelings about Member 1: "You feel things differently"; "You're reducing our feelings to formulae." etc. After this rush of expression there is a long, tense silence and the period ends in a mass flight out of the room.

Applications of the Field Graph

The illustration presented in the preceding section shows how the process of a single meeting can be interpreted from the information contained in the field graph. In addition

this, its most basic application, the field graph is a useful device for exploring a variety of problems. For example:

Group development.--Early and late meetings of the same group can be compared for range of emotionality expressed, range of work expressed, percentage of units in various areas of the graph, and sequence of units. To illustrate, the two field graphs shown in this chapter are taken from the same group--meetings two and nine. In the later meeting the group expresses a wider range of emotionality and also a wider range of work. Another difference is that in the later meeting, 7 of the 11 units show a higher average work level than any of the units of meeting #2.

Critical units.--In many group meetings it is possible to identify periods which seem to lead to a major shift in the direction or atmosphere of the group. In the field graph for meeting #9, unit 7 was identified as being critical in this sense. The field graph permits one to clearly identify such units, which can then be studied for general work-emotionality characteristics, relation to preceding and succeeding units, and (by examining the minute-by-minute graph for that unit) specific work, emotionality and interaction rate relationships.

Individual participation.--We know that individual members vary in their participation in the group. The field graph permits us to examine individual participation patterns in specific situational terms. We would expect, from theory, that some persons would participate more readily under conditions of cognitive control and the inhibition of affect (e.g., unit 6, meeting 9); others under conditions which permit the free expression of aggression and of individual concerns (e.g., unit 8, meeting 9); and so on. The field graph permits us to identify the conditions under which an individual can participate. The behavioral ratings permit us to identify the character of his participation under a variety of group conditions.

PART III

PREDICTING BEHAVIOR IN THE GROUP FROM INDIVIDUAL PERSONALITY

Another way of looking at groups is from the viewpoint of the individual group member and in terms of his own personality and behavior. If we could assess all of the individual members' and the leader's predispositions and potentialities for action, then it should be theoretically possible to predict, at least in broad outline, the general course and development of the group. The Reactions to Group Situations Test is an instrument designed to tap personality at a level easily translatable to behavior in the group. The case study presented in Chapter VIII and the validity study reported in Chapter IX illustrate the kinds of prediction for which the Reactions to Group Situations Test is useful.

CHAPTER VII

ASSESSMENT OF GROUP-RELEVANT PERSONALITY: THE REACTIONS TO GROUP SITUATIONS TEST[1]

The Reactions to Group Situations Test (RGST) is a sentence completion test[2] which is designed to reveal individual predispositions for behavior in a group. The test presents to the subject a variety of group situations in the form of a series of incomplete sentences. The individual, in completing these sentences, gives his immediate response to these "on-paper" situations. These responses, when taken together, provide a picture of the individual's most likely behavior in an actual group situation.

The present chapter is a manual for the use of the RGST. It includes a description of the test, directions for administering it, a quantitative scoring procedure, and some comments on the qualitative interpretation of test protocols.

Description of the Test

The RGST is constructed in terms of the following five categories: Fight (F), Flight (Fl), Dependency (D), Pairing (P) and Work (W).[3] In the RGST these categories can be thought of as "modes of behavior" (modalities). The test is constructed so that the stimulus items present one or another of these five modalities or a more general group situation. A scoring procedure has been developed in which responses are scored in terms of these same five categories.

The test is made up of 44 incomplete sentences.[4] Most of these present a well-defined group situation and require the S (Subject) to project by reacting to this situation. A few items do not present situations but ask for attitudes about the self, leader, other members or the group as a whole.

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[1]The Reactions to Group Situations Test was devised by the following personnel: Saul Ben-Zeev, William F. Hill, Paul Hare, Ida Heintz Gradolph, Joe McPherson, Robert R. Rodgers, Dorothy Stock, and Herbert A. Thelen. This chapter was written by Ida Gradolph and Dorothy Stock.

[2]A sample copy of the RGST, with scoring sheet, is presented in Appendix C, Part I.

[3]These categories, which include four emotional modalities and one cognitive modality (W) are defined generally in Chapter II, page 9, and in the specific terms of this test in the pages which follow.

[4]These were selected from a population of 100 items devised and tested on a preliminary group of 80 adult subjects. Those items were eliminated which showed stereotyped responses or which for some other reason did not differentiate among subjects.

With three exceptions, the sentences were constructed so that it was left to the subject to respond with action or non-action verbs. That is, the S can respond actively by writing "said", "got up", etc.; he can respond non-actively by writing "felt", "thought", etc. Items 1, 3 and 6 ("When the group first started, Ned felt. . . .". "Bert felt that the leader was. . . ." and "When the group was bogged down, Ray said. . . .") were designed to show the S that either action or non-action responses were acceptable. Twenty-eight of the items were constructed so as to fall into the five categories or modalities mentioned above. Each category is comprised of five or six items representing a sample of stimulus situations for that modality. The items within a given category vary in character and intensity of emotional stimulation. Each incomplete sentence includes two parts: a stimulus situation and a "person" to identify with. The stimulus situation may vary in attributing the action or attitudes to the self, another person, or the total group. Similarly, the sentence may require the S to respond to the situation as the self, another person or the total group. Although there are nine theoretically possible variations, our sample within each modality consisted of five to six variations. A random sample technique was not used; rather the items were selected to meet two requirements: (1) to represent meaningful group situations, and (2) to facilitate the individual's free reaction to the response. In the remaining sixteen items, the stimulus modality is less clearly defined. The stimulus situation is either ambiguous or includes more than one identifiable modality. ("The leader usually. . . .", "Dick felt that his role. . . .", "When Ben contradicted the leader, I. . . .", etc.)

The Stimulus Items

Pairing (P): Definition and Illustrations

1. Individuals or the group may express P through expressions of friendship, support or partiality for another member or his ideas.
2. Pairing is often non-verbal: nodding, smiling, patting on the back, etc.
3. Such behavior represents the need of the individual to establish positive, personal relationships with specific individuals within the group or with the total group.

The five items which present situations in which the stimulus modality is Pairing are:

8. Since Jack liked some members more than others, he . . . .
11. When Tom and Mary arrived twenty minutes late, the group . . . .
18. Together John and Fred . . . .
25. When Len turned to me, I . . . .
33. When the group was particularly friendly toward one of its members, Ken . . . .

Fight (F): Definition and Illustrations

1. Fight may be expressed either directly through verbal attack or any kind of hostile action; or more subtly by resistance to an idea, or manipulating the group in such a way that one individual's will is imposed on the group.

2. Fight behavior represents the need of the individual to resist any of the other modalities, another member or the total group.

The six items that present situations in which the stimulus modality is Fight are:

9. When he realized he was agry at Phil, Charles . . . .

12. When the group disparaged his idea, Frank . . . .

19. When Jim realized quite a few people were taking digs at each other, he . . . .

26. During the argument, Henry's vehemence caused Earl . . . .

34. When Al felt hostile to the group, he . . . .

41. When George attacked the group, Bob . . . .

Dependency (D): Definition and Illustrations

1. Dependency may be expressed as an appeal for support from the leader, from the group, or even from an outside agency; by expressing individual or group weakness or inadequacy; by expressing inability to cope with the problem(s) before the group; by excessive demands for external structure or control.

2. Dependency can be indicated by a reliance on such structured procedures as needing to put all group business on the blackboard; or by wanting to follow the same procedure for every meeting.

3. Dependency behavior represents the need of the individual to achieve security through reliance on external factors.

The six items which present situations in which the stimulus modality is Dependency are:

3. Bert felt the leader was . . . .

13. When the leader offered to help him, Pete . . . .

20. When the group just couldn't seem to get ahead, I . . . .

27. When the leader changed the subject, Al . . . .

35. When Harry said we needed help, Martin . . . .

42. When the leader offered to help Carl, Joe . . . .

Flight (Fl): Definition and Illustrations

1. Flight may be expressed directly by physical withdrawal, disinterest or daydreaming, or indirectly by diverting the group from its real interest, introducing irrelevant material, or making light of the objectives of the group through excessive laughter or joking.

2. Flight behavior represents the need of the individual to avoid any of the other modalities, and usually has the character of retreat.

The six items which present situations in which the stimulus modality is Flight are:

4. When Jerry was joking, the group . . . .

14. When several members dropped out of the discussion, Hank . . . .

21. When Ed seemed to be daydreaming, Bill . . . .

28. When my attention wandered from the discussion, Jim . . . .

36. When Jim left the meeting early, we . . . .

44. When the group seemed to be breaking up, Nick . . . .

Work (W): Definition and Illustrations

1. Work is activity which is effectively directed toward some goal.

2. Work is group-oriented and directed toward a group-goal, whether the goal is explicit or implicit.

3. Work can be of two kinds: the solution of a common work task or the resolution of process problems, i.e., problems of personal relations among members.

4. Work behavior represents the need of the individual to engage in and master problem-solving activity.

The five items which present situations in which the stimulus modality is Work are:

7. When Sam said, "Let's get to the problem," I . . . .

15. When Marvin suggested that the group assess its own resources, we . . . .

22. Since the group wanted to test the suggested procedure, Milt . . . .

29. When Morris said we needed more information about how we felt, I . . . .

37. When Ray recommended that the group consider the theoretical aspects of the problem, we . . . .

General Items

Sixteen of the items in the HGRT are less well defined with regard to the modality presented in the stimulus. These items include some which present more than one modality, some in which the modality presented can be variously interpreted, and still others which do not present a specific modality but call for attitudes about the self, leader, other members or the group as a whole.

These more general items are:

1. When the group first started, Ned felt . . . .

2. It's more important for the group to . . . .

5. When Abe asked the group's permission to present his idea, Paul . . . .

6. When the group was bogged down, Ray said . . . .

10. Sid praised the leader, and Roger . . . .

16. The leader usually . . . .

17. Chuck's detached manner . . . .

23. The leader got mad at the group, and Bob . . . .

24. Dick felt that his role . . . .

30. When there was a pause in the group, Stan . . . .

31. When Ben contradicted the leader, I . . . .

The RGST Scoring System[5]

A scoring system was developed in order to facilitate interpreting the test protocol. All the twenty-eight items which present "pure" modality stimuli are given a score on each of three dimensions:

(a) Acceptance or non-acceptance of the stimulus.

(b) Additional modalities introduced into the response, on either an overt or a covert level.

(c) The manner of the response (feeling, action, etc.).

The remaining sixteen items are scored for (b) and (c) only. Scores are entered on a special scoring form. (See sample in Appendix C, Part I.)

Description of the Scoring Categories

Accept-non-accept.--This dimension is concerned with an overt, surface response to the stimulus. It is not concerned with the underlying or unconscious bases for behavior.

When an individual accepts a given modality we mean he continues to operate within the modality presented in the stimulus, or that he maintains the modality:

(In the following illustrations, the number refers to the number of the item on the test; the letter in parenthesis refers to the stimulus modality of the item. For example, in item (25) the stimulus modality is Pairing (P). The first portion of the sentence is the stimulus as presented to the Subject; the underlined portion of the sentence is his response.)

25. (P) When Len turned to me, I smiled.

12. (F) When the group disparaged his idea, Frank shouted at them.

35. (D) When Harry said we needed help, Martin said, "We sure do."

4. (Fl) When Jerry was joking, the group laughed.

7. (W) When Sam said, "Let's get to the problem," I suggested a procedure.

In all the above examples, the modality presented in the stimulus is maintained in the response. For each of these items a check is placed in Column 1 (Accept) on the check sheet.

Non-acceptance of an item means that the individual rejects the stimulus modality, blocks or prefers to operate in another modality. Note that non-acceptance does not mean

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[5]Two scored sample test protocols are presented in Appendix C, Part II.

rejection only.

25. (P) When Len turned to me, I thought some people just never grow up.

12. (F) When the group disparaged his idea, Frank became silent.

35. (D) When Harry said we needed help, Martin said, "We can work this out ourselves."

4. (F1) When Jerry was joking, the group was annoyed.

7. (W) When Sam said, "Let's get to the problem," I didn't think this was the time for it.

For each of the above items a check is placed in Column 2 on the scoring sheet.

Overt-covert.--The Overt Column on the scoring sheet is reserved for the modality(ies) directly expressed by the individual.

2. (G)[6] It's more important for the group to feel secure. (Not scored for acceptance or non-acceptance, since it is a general stimulus; D is expressed overtly in the response; D is inserted in Column 4, Overt).

25. (P) When Len turned to me, I was glad that we were to be a team against the others. (Acceptance of P, with F, the additional modality; a check mark is placed in Column 1 on the scoring sheet for acceptance of P; P and F are inserted in Column 4, Overt.)

36. (F1) When Jim left the meeting early, we were sorry, as we liked him a lot. (Non-acceptance of F1, with P expressed; a check mark is placed in Column 2, non-accept, and P is inserted in Column 4, Overt.)

24. (G) Dick felt that his role was one of harmonizer. (Not scored for acceptance or non-acceptance, since it is a general stimulus; P is expressed overtly in the response; P is inserted in Column 4, Overt.)

Note that in some instances (25, above, and also 15, below) the modality inserted in Column 4 is the same modality presented in the stimulus. In other cases (2, 25, 36 and 24, above) the modality inserted in Column 4 is different from the stimulus modality and can be thought of as an "introduced" modality. In interpreting the score pattern it is often useful to distinguish between these two kinds of overt expression, since we can assume that more energy is required to introduce a modality than merely to go along with the modality presented in the stimulus.

The Covert column on the scoring sheet is reserved for that modality(ies) indirectly expressed or communicated by the individual. The scorer infers that the S is not aware of this modality in himself and is not aware that he is communicating it. Reliability for this Column is difficult to establish because the expression is so indirect and the judgment involves such a high level of inference.

35. (D) When Harry said we needed help, Martin offered to help Harry. (Non-acceptance of D, with Overt P and Covert F; on the scoring sheet a check mark is placed in Column 2 for non-accept; P is inserted in Column 4 and F in Column 3.)

15. (W) When Marvin suggested the group assess its own resources, we discussed who could best do the job. (Acceptance of W, with Covert D; on the scoring

[6] "(G)" refers to items in the General Category.

sheet a check mark is placed in Column 1 for Accept, W is inserted in Column 4 and D in Column 3.)

36. (F1) When Jim left the meeting early, we felt the group contributions lost much of their zest. (Non-acceptance of F1, with Overt W and Covert P; on the scoring sheet a check mark is placed in Column 2 for non-acceptance, W is inserted in Column 4 and P in Column 3.)

35. (D) When Harry said we needed hlep, Martin felt we should discuss the theoretical implications of group dynamics first. (Non-acceptance of D, with Overt W and Covert F1; on the scoring sheet a check mark is placed in Column 2 for non-acceptance, W is inserted in Column 4 and F1 in Column 3.)

Manner of response.--This dimension is concerned with the individual's mode of responding. A (S) may respond with feeling, action, inhibited action, ideation, or ambiguity.

Feeling is the non-overt expression of an emotion:

13. (D) When the leader offered to help him, Pete was glad. (Acceptance of D; "feeling" is the manner of response; on the scoring sheet a check mark is placed in Column 1 for Accept, D is inserted in Column 4 and a check mark is placed in Column 5.)

27. (D) When the leader changed the subject, Al felt the group had been imposed on. (Non-acceptance of D, covert F, "feeling"; on the scoring sheet a check is placed in Column 2 for non-acceptance; F is placed in Column 3 and a check mark placed in Column 5.)

Action plus (a+) is a voluntary overt response. The following illustrate action plus (a+) responses:

4. (F1) When Jerry was joking, the group laughed. (Acceptance of F1, a+; on the scoring sheet a check mark is placed in Column 1 for Accept, F1 is inserted in Column 4 and a check mark is placed in Column 6 for a+).

22. (W) Since the group wanted to test the suggested procedure, Milt volunteered to write on the blackboard. (Acceptance of W, a+; on the scoring sheet a check mark is placed in Column 1 for accept; W is inserted in Column 4 and a check mark is placed in Column 6 for a+.)

12. (F) When the group disparaged his idea, Frank said he was angry. (Acceptance of F; a+; on the scoring sheet a check mark is placed in Column 1 for accept., F is inserted in Column 4 and a check mark is placed in Column 6 for a+.)

Action minus (a-) is the inhibition or diminution of an ongoing action. The following illustrate (a-) responses:

34. (F) When Hal felt hostile to the group he tried to say nothing. (Non-acceptance of F, Overt F1, a-; on the scoring sheet a check is placed in Column 2 for non-accept, F1 is inserted in Column 4 and a check mark placed in Column 7.)

39. (G) Mark criticized Fred's idea, and I became silent. (Overt Flight, a-; on the scoring sheet there is no score for acceptance - non-acceptance; F1 is inserted in Column 4, and a check mark is placed in Column 7.)

33. (F) When the group was particularly friendly toward one of its members, Ken withdrew from the discussion. (Non-acceptance of F, Overt F1., a-; on the scoring sheet a check mark is placed in Column 2 for non-accept, F1 is inserted in Column 4 and a check mark placed in Column 7.)

Ideation (I) is a non-overt cognitive type of response: wishes, wants, intellectualizations, and thoughts. The following illustrate ideational (I) responses:

12. (F) When the group disparaged his idea, Frank silently re-evaluated it. (Non-acceptance of F. Overt W, possible Covert Fi; on the scoring sheet a check mark is placed in Column 2 for non-accept; W is inserted in Column 4, Fi in Column 3, and a check mark in Column 8.)

29. (W) When Morris said we needed more information about how we felt, I thought that was an excellent suggestion. (Acceptance of W, Covert P, I; on the scoring sheet a check mark is placed in Column 1, W is inserted in Column 4, P in Column 3, and a check mark in Column 8.)

2. (G) It's more important for the group to want to work closely together. Overt P and W; Ideation. There is no score for acceptance or non-acceptance; P and W are inserted in Column 4, and a check mark is placed in Column 8.)

Question mark (?) responses are those which do not give sufficient evidence for the other types of response. The following illustrate ambiguous (?) responses:

7. (W) When Sam said, "Let's get to the problem," I agreed. (Acceptance of W, (?); on the scoring sheet a check mark is placed in Column 1 for accept, W and P are inserted in Column 4 and a check mark is placed in Column 9.)

8. (P) Since Jack liked some members more than others, he played favorites. (Acceptance of P, covert F; on the scoring sheet a check mark is placed in Column 1, P is inserted in Column 4, F is inserted in Column 3, and a check mark is placed in Column 9.)

Special Scoring Problems and Conventions

In the previous section, clear-cut sample responses were presented in order to facilitate defining the scoring categories. However, in scoring a large number of tests one may expect to encounter occasional special scoring problems. This section is an attempt to present these special problems and the conventions that were developed to handle them.

Accept-Non-Accept

Level of interpretation.--In the accept-non-accept category we have found that the most important thing to keep in mind is the level of interpretation on which the judgment is based. The judgment which the scorer makes is of the more overt, surface kind of acceptance or non-acceptance. This means that the judgment of accept or non-accept may in some cases be in opposition to a more dynamic, deeper level of interpretation.

For example, the completion: "Bert felt the leader was too permissive"; would be scored non-acceptance of D because of the criticism of the leader implied by the word "too." However, on a deeper level there is a need for dependency expressed in the wish for more structure. This is taken care of in the scoring system by calling this response D on a covert level.

Responses involving both acceptance and non-acceptance.--Occasionally one may find a response in which the S expresses both acceptance and non-acceptance of the stimulus. In such rare cases both the accept and non-accept columns are checked:

(W) "When Ray recommended that the group consider the theoretical aspects of the problem, there was a quick acceptance on the part of some; others were silent."

Insufficient evidence for making a judgment.--A response which does not provide enough

evidence to be scored as acceptance is scored non-acceptance:

28. (Fl) "When my attention wandered from the discussion, Jim walked into the room."

3. (D) "Bert felt the leader was non-directive."

Deviate perceptions of the item.--Occasionally one finds a response which indicates that S has perceived the stimulus as presenting a modality other than the one built into the item (e.g., has perceived a W stimulus as Fl). Such a response is scored non-accept:

36. (Fl) "When Jim left the meeting early, we wondered why he was mad." (Fl stimulus responded to as if it were F; scored non-accept.)

Misreading the item.--A response which indicates that the S has misread the item is marked non-accept:

7. (W) "When Sam said, 'Let's get to the problem,' I'm in a hurry."

Blocks.--A skipped item is considered a block and is marked non-accept. The other scoring columns are left blank.

Evasive responses.--Evasive responses, where the S is unwilling to commit himself, are scored non-accept:

7. (W) "When Sam said, 'Let's get to the problem,' I felt his approval."

Overt-Covert

Blends.--It is possible to place more than one score in either the overt or covert columns when more than one modality is expressed:

20. (Fl) "When the group just couldn't seem to get ahead, I felt it was time for a break so that the group could re-orient itself." (Both W and Fl expressed on the Overt level.)

36. (Fl) "When Jim left the meeting early, we felt we couldn't do any good work without him." (Acceptance of Fl; W on an overt level; F and P on a covert level.)

Immobilization responses.--Occasionally one finds responses such as the following:

13. (D) "When the leader offered to help him, Pete blushed."

12. (F) "When the group disparaged his idea, Frank felt tense."

36. (Fl) "When Jim left the meeting early, we felt guilty."

These responses all express a momentary immobilization or incapacity for dealing with the situation. In terms of our theoretical framework, this is a special kind of Flight. However, it seemed useful to differentiate it from the more usual expressions of Flight because of its very different quality. Such responses are scored E (to stand for undefined emotionality) in the Overt Column.

Convention for Scoring "Agreed".--"Agreed" is scored overt P and ?. This response usually indicates a weak and sterotypic expression of P.

Manner of Response

Grammatical form.--In judging action-non-action, it is important not to be misled by the grammatical form in which the response is cast. For example, a response beginning with "felt" may actually be Ideation:

13. (D) "When the leader offered to help him, Pete felt that this was the proper function of the leader."

Similarly, a response beginning with "thought" may actually be close to feeling:

27. (D) "When the leader changed the subject, Al thought it was a dirty trick."

Withdrawal responses.--Responses that express various kinds of withdrawal have presented a special problem:

Responses that mean withdrawal dynamically but are expressed in terms of action are scored a+:

7. (W) "When Sam said, 'Let's get to the Problem,' I walked over to the window."

36. (F1) "When Jim left the meeting early, we all left too."

Withdrawal responses that are expressed in terms of the assumed inhibition of action are scored a-:

7. (W) "When Sam said, 'Let's get to the problem,' I dropped out of the discussion."

36. (F1) "When Jim left the meeting early, we were silent."

When the response includes the idea of withdrawal with no evidence of the manner of withdrawal it is scored a-:

7. (W) "When Sam said, 'Let's get to the problem,' I withdrew."

Emotionality expressed in action.--Responses which are emotional but which are expressed overtly are scored a+:

13. (D) "When the leader offered to help him, Frank blushed."

12. (F) "When the group disparaged his idea, Pete showed his anger."

Stereotyped responses.--Responses which are somewhat sterectypic and do not provide sufficient evidence for judgment are scored (?):

29. (W) "When Morris said we needed more information about how we felt, I agreed." (Responses which include the idea of agreement but are somewhat elaborated often give evidence for scoring in one of the other categories.

Rationale and Usefulness of the Scoring System

First, the quantitative scoring system may provide frequencies that can be related to behavioral frequencies; it may be used to predict behavior.

The action-non-action columns may be used to predict generally whether the S is likely to be a participant or non-participant in the group. It may also predict the modality areas in which the S is likely to show greatest or least participation.

The pattern of responses on all the scoring columns for the items of a given modality may enable one to predict how the S operates with respect to that modality. For example, one might tell (a) whether S is comfortable or uncomfortable with that modality; (b) whether the S is conflicted with respect to the modality (e.g., rejects D but expresses D on a covert level); (c) the modality with which the S is likely to respond in various situations (e.g., a S may characteristically respond to P with F); (d) the total range of modalities in which the S can operate comfortably; and (e) the range of emotional responses available to S for any given modality.

Second, the quantitative scoring system is a schematic representation of the person, with respect to his probable behavior in a given situation.

It is a short method of scoring and is useful when large numbers of tests are being evaluated.

The scoring system provides a means of objectively ranking large numbers of S's with regard to the points listed in the second paragraph above.

(Note: The scoring sheet, used by itself, does not provide an integrated picture of the person; and its usefulness is limited for this reason.)

Third, the quantitative scoring system is a sensitizer. It provides an intermediate analysis leading to a deeper level of interpretation. It also provides a continuing check on any qualitative analysis that is made. That is, the qualitative analysis has to be consistent with the objective scoring, and this sets some limits on extravagant interpretation

Validity

An investigation of the validity of this instrument[1] was made utilizing a Q-sort whose items were keyed to the same basic categories. Observers, who had seen five Subjects in an hour-long meeting described the behavior of each Subject in the group by throwing Q-cards along a continuum ranging from "most-like-the-member" to "least-like-the-member." (These sorts constituted the validity criteria for the study.) Various groups of Clinicians, whose only information about the subjects were their RGSF protocols, predicted the behavior of the same Subjects by throwing the Q-cards along the same continuum. The Q-sorts of the Observers and the Clinicians were correlated. The results indicated that Clinicians who had had extensive experience with the RGSF were able to predict accurately, at least 80 per cent of the

[1] This study was conducted by Ida Heintz Gradolph and Philip C. Gradolph, and is reported in Chapter IX of this monograph.

time, the types of behavior the subjects would exhibit.

Reliability of the Scoring System

The scoring system described above was subjected to a test of reliability between scorers.[2] After the research team had scored a few tests and spent roughly twenty hours of group discussion in intensive consideration of the scoring system, each of six scorers was paired with each of the others to score a total of 132 tests. There were 15 cells of tests, each cell having two scorers and an average of 8.8 tests per cell. Each scorer scored five cells or a total of 44 tests per scorer. The total number of tests was evenly divided between those administered at the start of the training period under study at the National Training Laboratory in Group Development, and those administered to the same Subjects seventeen days later at the end of the training. Tests from each of the two administrations and from each of the four groups studied were divided equally in each cell.

For each test in each cell the percentage agreement in scoring Accept-Non-accept, the Overt, the Covert, and the Feeling-Action-Ideation-Ambiguous categories of scoring was determined, and the average percentage agreement for each cell, that is between each pair of scores, was found. The range of percentage for the Overt and Covert categories was roughly from 30 to 50 per cent. This range is difficult to evaluate due to the complexity of scoring these categories, however, change agreement based on six possible ratings (P, F, D, Fl, W and E) and excluding agreement on no rating at all would be 16.6 per cent.

Table IV and V give the percentage agreements for the other categories.

TABLE IV

PERCENTAGE AGREEMENT IN SCORING THE ACCEPT-NON-ACCEPT SCORING CATEGORY

Scorers	A	B	C	D	E	F
A						
B	87.5					
C	82.3	87.9				
D	88.5	85.3	87.0			
E	83.2	87.0	85.7	84.2		
F	88.4	88.9	84.8	88.4	84.0	

Average per cent agreement = 86.2%

TABLE V

PERCENTAGE AGREEMENT IN SCORING THE FEELING-ACTION-IDEATION-AMBIGUOUS SCORING CATEGORY

A	B	C	D	E	F
78.1					
79.5	79.1				
81.0	81.7	77.7			
83.1	72.0	79.0	73.3		
79.1	79.8	75.3	76.5	79.4	

Average per cent agreement = 78.8%

[2] This study was conducted by Robert R. Rodgers.

Item Analysis of the Reactions to Group Situations Test

A pilot study[1] was made for the purpose of determining what percentage of the RGST items the testees accepted or rejected. Table 6 provides this data from two population samples: Bethel delegates in 1951 and 1952--N = 68 and 75 respectively.

This analysis should provide some insight into the structure of the test and the function of the items. It should also be of some diagnostic value in indicating the degree of acceptability the item has for the normative population. Thus, for example, the rejection of an item that 90 per cent have accepted may be diagnostically more significant than the acceptance of an item that 90 per cent have accepted. It should be pointed out that these results were based on tests that were administered before the training period began and thus reflect the population sample and not the Bethel training.

TABLE VI

PERCENTAGE OF THE POPULATION ACCEPTING THE TEST ITEMS: THE SAMPLE IS SIXTY-EIGHT DELEGATES AT BETHEL, 1951

Items									
Pairing		Flight		Fight		Work		Dependency	
No.	% Accepting	No.	% Accepting	No.	% Accepting	No.	% Accepting	No.	% Accepting
8	76	4	62	9	10	7	62	3*	35
11	31	14	4	12	35	15*	66	13*	54
18	87	21	12	19	13	22	90	20	19
25*	50	28	7	26	44	29	74	27	12
33	41	36	26	34	34	37	47	35	49
		44	21	41	57			42	44

*The 1952 data is not reported. For all items but four, the percentages were comparable for the two populations (within 12%). The four remaining items (indicated by an asterisk) showed differences of 17% to 26%.

This kind of study gives us information as to which items are most commonly accepted and those which are most commonly rejected. Thus items 22, 18, 8 are accepted at least 75% of the time; whereas items 14, 21, 28, 44, 9, 19, 20, and 27 are accepted less than 25% of the time by this population (N=68).

Qualitative Analysis[2]

The purpose of a qualitative analysis is to present a general integrated picture of the personality, especially with regard to behavior in a group situation.

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[1]By William F. Hill.

[2]A detailed case study illustrating the quantitative and qualitative analysis of a single RGST protocol appears as Chapter 8.

A qualitative analysis can furnish certain vital kinds of information which cannot be provided by a quantitative system alone:

1. Subtle but meaningful differentiations can be preserved in a qualitative analysis. For example, the following three completions, though scored in exactly the same way, show some differences in quality:

   "When Len turned to me, I was pleased."
   "When Len turned to me, I was so glad he likes me."
   "When Len turned to me, I felt we could discuss it."

   All of these would be scored acceptance of P, feeling. But the first completion gives the feeling of a real acceptance of and desire for pairing. The second suggests that while the S accepts P, he also experiences some feelings of inadequacy, of needing support, and of not being as able to give support as to receive it. This flavor of D is so subtle that a scorer might hesitate marking D in the covert column without further evidence. The third completion has an intellectual quality which suggests a suppressed wish to avoid intimacy. Similarly, subtle differences in vigor, quality, etc., can be detected in the other dimensions.

2. The quantitative scoring system yields discrete measures which need to be organized and integrated.

   The mere adding up of modalities can obscure the fact that a specific kind of response may be concentrated around a specific kind of stimulus. For example,

   > Two people may have identical total scores for F, but one may express some F in response to all the modalities, while the other may concentrate all his F responses in one or a few of the modalities.

   The quantitative score for each modality has to be related to the quantitative score for each other modality, and the total pattern interpreted.

   For example, suppose a S shows high quantitative scores for P and D, and low quantitative scores for F and Fl. This suggests that while the S cannot readily respond with F or Fl, P and D are somehow related. D might be one expression of P for this person or P might be used to satisfy dependency needs. Such hypotheses might be set up and then checked by the specific content of the items.

3. It is possible, through a qualitative analysis, to get an idea of the major conflicts of the individual as they are related to his modality operation. For example, it is possible to tell whether a person is basically dependent, whether he is conflicted over his dependency needs, and how he handles his dependency needs in a group situation. Because the test is group oriented and behaviorally oriented, one cannot get at the more basic dynamics underlying the conflict. For example, one cannot tell whether the individual is basically dependent because of deprivation of love from parents, over-protection which never allowed the individual to master situations himself, etc.

4. A qualitative analysis can also reveal personality factors which fall outside the theoretical framework of the modalities, but which consistently find expression throughout the test. For example, an individual may appear to be flexible in his acceptance of most of the modalities, yet be able to do so only by maintaining control of each situation. This might be indicated by responses showing identification with the leader rather than members, always placing the self in a dominant position, etc. Feelings of inadequacy, intellectual rationalizations, and flexibility-rigidity are other factors which are important in understanding the personality and which cut across modality lines.

The following are some specific sources of evidence which we found useful to look at when doing a qualitative analysis:

1. Reactions to stimuli of varying strength and character within the same modality.

In describing the pattern of an individual's responses to a given modality, it is important to note the specific situations which he can accept and the specific situations which he rejects. For example, he may accept the modality only in himself and not when others express it; or he may accept the modality as long as it doesn't get too close, but become disturbed when he is more directly involved.

2. The manner in which the S handles his acceptances. Is the S really easy with the modality or does he have to justify and rationalize his acceptances?

3. Breaks in the individual's control system. Some manifestations of lack of control are confusions in syntax and sentence construction, blocking, slips of the pen, sudden and violent eruptions of feeling, not being able to see the stimulus for what it is, perseveration in responses, etc.

4. The kinds of resources the S has at his command. Can the S fight if necessary, flight if necessary, etc.? One might say that the S is flexible if he can vary his response in accordance with the demands of the situation. Some manifestations of rigidity are the persistent, possibly perseverative character of the responses, e.g., responding always with the same modality or with the same few stereotyped phrases.

CHAPTER VIII

COMPLETE INDIVIDUAL INTERPRETATION: A CASE STUDY[1]

The nature of the categories and concepts underlying the Reaction to Group Situation Test are perhaps most clearly revealed in their application to predicting individual behavior in the group. The following step-by-step analysis reveals the sorts of hypotheses the test makes possible, shows how hypotheses can be reinforced or rejected as analysis proceeds, and demonstrates the kind of picture of the individual that can be constructed within the underlying theoretical framework.

The data from which interpretation is made are: the protocol of the test, the quantitative scores, (Fig. 18), and a qualitative analysis of the responses themselves. The interpretative process involves looking carefully at the relevant data, establishing hypotheses, and then checking, revising, and rechecking hypotheses as additional data are examined.

First steps will be to present and discuss the Subject's (S's) responses to the stimulus items for each of the 5 stimulus modalities. Next steps involve examinations of all the items in which the S introduced a particular modality in her response. Interpretation of the subject's probable performance in each modality will then be presented.

Finally, we shall attempt to integrate these aspects of performance into a coherent picture of the Subject's total operation in a group situation.

The Test Protocol

The test protocol of S is presented below. S is a 23 year old female who participated in a group-choice experiment. The protocol was analyzed and S's modality performance predicted before she appeared in the group experiment.

Directions: Imagine that you are a member participating in a group session. Complete each statement by indicating your reaction to the situation. Write the first thing that comes to your mind. Do not erase. If you want to change something, cross through and go on. If you can't think of a completion to an item, put a check beside the number of the item and come back to it after you have finished the rest of the test. You have twenty minutes. Work as rapidly as you can.

1. When the group first started, Ned felt <u>comfortable</u>.

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[1] This case study was prepared by Ida Gradolph.

2. It's more important for the group to want to be together and to accomplish something than to come because they are forced into it. (looked like, "faced with it")

3. Bert felt the leader was doing a good job.

4. When Jerry was joking, the group felt less tense.

5. When Abe asked the group's permission to present his idea, Paul said for him to go ahead.

6. When the group was bogged down, Ray said that they should take a break and come back together in a few minutes.

7. When Sam said, "Let's get to the problem," I would usually agree with him unless I see that another member of the group needs support.

8. Since Jack liked some members more than others, he ignored the others.

9. When he realized he was angry at Phil, Charles controlled himself.

10. Sid praised the leader, and Roger also praised him.

11. When Tom and Mary arrived twenty minutes late, the group had been going on for ten minutes.

12. When the group disparaged his idea, Frank felt uncomfortable.

13. When the leader offered to help him, Pete accepted the offer.

14. When several members dropped out of the discussion, Hank noticed it and wanted to change the situation.

15. When Marvin suggested that the group assess its own resources, we agreed.

16. The leader usually has a big job on his hands.

17. Chuck's detached manner annoyed some of the members of the group. (Marked over word "annoyed")

18. Together John and Fred had good ideas.

19. When Jim realized quite a few people were taking digs at each other, he tried to stop them.

20. When the group just couldn't seem to get ahead, I suggested a break.

21. When Ed seemed to be day-dreaming, Bill asked him a question.

22. Since the group wanted to test the suggested procedure, Milt suggested a way to do it.

23. The leader got mad at the group, and Rob tried to calm him down.

24. Dick felt that his role was important.

25. When Len turned to me, I was ready to listen to him. ("was" marked over)

26. During the argument, Henry's vehemence caused Earl to get vehement too. (leaves out "e" in vehement)

27. When the leader changed the subject, Al tried to get his back on it. ("his" instead of "him".)

28. When my attention wandered from the discussion, Jim brought it back.

29. When Morris said we needed more information about how we felt, I was glad to give it to him.

30. When there was a pause in the group, Stan did not feel annoyed.

31. When Ben contradicted the leader, I listened to ascertain why.

32. When Walt and the leader made side remarks to each other, James wished that they would stop.

33. When the group was particularly friendly toward one of its members, Ken was glad.

34. When Hal felt hostile to the group, he controlled himself.

35. When Harry said that we needed help, Martin gave it to him.

36. When Jim left the meeting early, we accepted it.

37. When Ray recommended that the group consider the theoretical aspects of the problem I agreed with him at times and did not support hi at other times. (word agreed marked over, the "m" omitted in him)

38. Occasionally the group needed reassurance and good leadership.

39. Mark criticized Fred's idea, and I listened to see if it was a reasonable criticism.

40. When it was suggested that the group stick to the job, Glen agreed.

41. When George attacked the group, Bob tactfully stopped him.

42. When the leader offered to help Carl, Joe was glad to see this.

43. When the group pointedly ignored Steve's idea, John felt ignored.

44. When the group seemed to be breaking up, Nick suggested that they break up.

Quantitative Scoring Sheet

S's test protocol was scored according to a scoring system devised for the RGS. (See Chapter VII .)

Figure 18

RGST QUANTITATIVE SCORING SHEET

Pairing	1 Accept	2 Non-Accept	3 Covert	4 Overt	5 Feeling	6 Action plus	7 Action minus	8 Ideation	9 ?	10
8		x	f*	F1*					x	
11		x							x	
18	x			W					x	
25	x			W				x		
33	x			p	x					

(continued)

Figure 18 (continued)

	1	2	3	4	5	6	7	8	9	10
Fight	Accept	Non-Accept	Covert	Overt	Feeling	Action plus	Action minus	Ideation	?	
9		x		—?			x			controlled
12		x		e	x					uncomf.
19		x				x				may look like W in group
26	x			f					x	
34		x		—?			x			controlled
41		x	F	p		x				tactful - P
Dependency										
3		x		W, P	—					
13	x					x				P qual.
20		x		FlW		x				W qual.
27		x	F			x				W qual.
35		x	F	W		x				
42	x			p	x					
Flight										
4	x				x					tension underneath
14		x	f	p				x		
21		x				x				
28		x				x				W qual.
36	x			p					x	
44	x			FLW		x				
Work										
7	x	x		p		x	x			
15	x			p*					x*	
22	x			W		x				
29	x		f	p,W	x	x				
37	x	x		p,W		x	x			

(continued)

Figure 18 (continued)

General	1 Accept	2 Non-Accept	3 Covert	4 Overt	5 Feeling	6 Action plus	7 Action minus	8 Ideation	9 ?	10
1										
2			d	W,P		x		x		
5			f	P,W		x				
6				FLW		x				W quality
10				P		x				
16				P,W						
17				F	x					W quality
23			fl			x				
24										W quality
30			F	—	x					
31			•	W				x		
32								x		d
38				P,W or D						
39			f	W				x		
40				P					x	
43				•	x					felt ignored

*Scored by "convention"

Quantitative Summary and Interpretation

Below is a tabulation of the scores for all the modalities obtained from the RGS scoring sheet.

TABLE VII

A SUMMARY BY MODALITIES OF SCORES ON THE RGST

Modality	Acceptance	Overt Modality Initiated	Covert	Total
P	3	16	-	19
W	3	15	-	18
F	1	2	8	10
Fl	3	4	1	7
D	2	1	1	4
E		1	2	3

Interpreting the Test

From the above totals, (P), (W) and (F)[2] appear to be the Overt modalities most frequently utilized by S for participating in the group situation represented by the test. However, only Work and Pairing can be expected to appear in her Overt behavior since most of the Fight appears to be contributed by the Covert Column. This means that the Fight is less perceptible, and would probably be more indirectly expressed in behavior in a group. (However, this might be perceived by an experienced observer of the group.) P and W are further reinforced as her characteristic expressed modalities by the fact that the greater part of their total score comes from the Modality Initiated Column. It would appear that it takes more energy for an individual to initiate a modality than to accept the modality which is "set-up" for him.

Of the other modalities, it would appear that Flight, Dependency, "E" and Overt Fight appear to be initiated relatively infrequently. However, there is another modification to be made. With such a large quantity of F in the Covert Column some of this Fight could be expected to appear covertly, and build up so that it might become overt when the S is under externally stressful conditions. Generally, however, the data seem to indicate that these indirect expressions of F are likely to be obscured by some other more overtly expressed modality.

"Qualitative" Analysis in the Five Modalities

Now we can proceed to the test items in each category to attempt to refine our prediction of this individual's operation in the group; to attempt to test and modify where necessary, the interpretations we have made so far.

---

[2]The five major scoring categories are Pairing or (P), Work or (W), Fight or (F), Flight or (Fl), and Dependency or (D). To summarize briefly:

> Pairing is Supportive, friendly behavior.
> Work is Goal directed, purposeful behavior, task-oriented.
> Fight is Aggressive, hostile, egocentric (self-centered imposition on the group of one individual's will on the group).
> Flight is Withdrawing, diverting, irrelevant or tangential behavior.
> Dependency is Succorant, non-independent behavior.
>
> "E" is another construct devised for scoring purposes. It refers to states of tension in the individual. Words which are commonly scored "e" are "tense," "uncomfortable," "uneasy."

Pairing Items:

The Pairing Stimulus Items and Their Interpretation

8. Since Jack liked some members more than others, he ignored the others.

11. When Tom and Mary arrived twenty minutes late, the group had been going on for ten minutes.

18. Together John and Fred had good ideas.

25. When Len turned to me, I was ready to listen to him.

33. When the group was particularly friendly toward one of its members, Ken was glad.

Three of the five Pairing stimulus items (18, 25, 33) seem to be accepted by the S. In the items with the exception of 33, there appears to be a lack of warmth. In item 8 the major possibility offered, i.e., to explain the way Jack treats those he likes, seems to be resisted. (Most of our test population have difficulty rejecting the demand-stimulus of the word "since" in item 8). The S, however, does the opposite -- she apparently tells us how she treats those she dislikes. In item 25, it would appear that she cannot permit herself to respond to Len spontaneously. Instead, there appears to be some element of threat in Len's initiation of action: she has to "ready" herself. That this is somewhat of a threatening situation is further emphasized by the marking over in this sentence on the test. This item conveys a feeling of putting distance between herself and Len -- of holding off a close, perhaps intimate interaction. Item 11 also indicates that S might not like to see others pair. (Most of our test responses to this item involve some sort of interaction between the group and Tom and Mary, although it might be either a positive or negative interaction.) Here, too, S seems to put distance between the self and contact with them. Item 33's response appears to be in contradiction to the other four item responses as it appears to be a warm acceptance of Pairing. Item 33 suggests that there is warmth under certain conditions. However, because S uses feeling rather than action in item 33, the possibility of her exhibiting this kind of Pairing behavior is lessened. Item 25 lends itself to an additional hypothesis: the need to maintain some distance in an interpersonal situation. S's response might be paraphrased like this: Len has to meet her on her own terms, i.e., when she is ready.

Items in Which S Responds with Pairing Modality, and their Interpretation

3. (D) Bert felt the leader was doing a good job.

5. (G) When Abe asked the group's permission to present his idea, Paul said for him to go ahead.

7. (W) When Sam said, "Let's get to the problem, I would usually agree with him unless I see that another member of the group needs support.

10. (G) Sid praised the leader, and Roger also praised him.

19. (F) When Jim realized quite a few people were taking digs at each other, he tried to stop them.

36. (Fl) When Jim left the meeting early, we accepted it.

14. (Fl) When several members dropped out of the discussion, Hank noticed it and wanted to change the situation.

15. (W) When Marvin suggested that the group assess its own resources, we agreed.

35. (D) When Harry said that we needed help, Martin gave it to him.

37. (W) When Ray recommended that the group consider the theoretical aspects of the problem I agreed with him at times and did not support him at other times.

40. (G) When it was suggested that the group stick to the job, Glen agreed.

41. (F) When George attacked the group, Bob tactfully stopped him.

It appears from the items given above that S might initiate P in response to all of the different modality situations: W, F, Fl, D, and mixed or ambiguous modality situations G. Most of these responses (eight out of thirteen) are scored in the a column; hence, we can assume a greater tendency for this kind of response to actually appear in overt behavior. It will be noted that S responds with W and P in combination in six of the items.

To item 2 both P and W are expressed together with some concern about external control. In item 3 there is a positive expression toward the authorized leader, an intellectual appraisal of his performance as a leader. This may indicate that she feels on a par with the leader. Item 7 elicits P which may appear at a first glance to be Pairing solely because of a need to be supportive. However, most of the people in our test population seem to accept a concrete problem as being before the group. In this case the reaction of Pairing seems to be more important than the consideration of the problem. It seems more important to be, supportive overtly than to evaluate the situation and support the plan that S likes.

Her self-concept in a group is suggested by items 3, 19, 35, 41. Item 41 indicates that S perceives herself as a harmonizer in the group. She appears to consider herself an important member of the group and one capable of handling some of the group's difficulties: being able to handle others' aggression (41); being able to give the group what it needs (35). There is further support for the self-importance hypothesis in item 5. In item 19, it seems to be desirable that members do not fight, and S sees herself as playing a mediating role.

While item 35 superficially connotes nurturant behavior, it indicates even more clearly on the not-too covert level an exaggerated sense of self-importance, and we might infer a sense

of distance between herself and the other members of the group. She probably feels that she is a leader of the group as suggested above.

Item 14 may indicate some wish on the part of S to bring others back into the discussion, yet there is apparently some Counter-Pairing feeling as she makes a writing "slip" using a "Fight" word ("charge") instead of the one consciously intended ("change").

Item 15 is scored overt P and Question-Mark (Manner of responding) according to a convention stated in the RGS Manual covering responses which use some form of the verb "to agree."

Item 10 raises further hypothesis: Is the leader seen as an important person because of a need to lean on him? Or, because of identification with the leader? or etc.?

Summary on Pairing

Thus far we have a picture of S and her operation in a group situation that may be corroborated, expanded or negated with the interpretations on the other modalities (categories of response). Her self-concept is one of self-importance; probably sees herself as the group member-leader; as a harmonizer among the other members. She feels she is generally supportive, and overtly in behavior is probably so. (The high incidence of Overt P scores on the scoring sheet supports this; as does the large incidence of P combined with W and a /.) On another level, if the pairing is initiated by someone else, particularly if it appears to be of a more personal nature, this seems to call forth some form of defensive action -- she attempts to put distance between herself and a more intense Pairing relationship.

Work Items:

The Work Stimulus Items and their Interpretation

7. When Sam said, "Let's get to the problem," I would usually agree with him, unless I see that another member needs support.

15. When Marvin suggested that the group assess its own resources, we agreed.

22. Since the group wanted to test the suggested procedure, Milt suggested a way to do it.

29. When Morris said we needed more information about how we felt, I was glad to give it to him.

37. When Ray recommended that the group consider the theoretical aspects of the problem, I agreed with him at times and did not support hi at other times. ("Agreed" is marked over; the "m" is left out of 'him'.)

Three of the five W items are accepted, but two (7, 37) appear to be both accepted and non-accepted.

Items 15, 22, 29 suggest the support of Work in general. Items 7 and 37 appear to be somewhat similar in character. Item 7 was mentioned under Pairing above and it was noted that this item along with others indicated the possibility of the use of Pairing as a technique. It is possible that some emotional difficulty is involved in item 37 due to the marking over in the writing. In both of the latter items she does not appear to be willing to continue to support the plan suggested, and sees her support going to the individual who puts forth the plan rather than to the plan itself. This would tend to make her Work contributions fluctuate. It appears that she may not continue to be work-oriented if some other member besides herself asserts leadership ability.

The W items appear to be action-oriented (a /) -- which reinforces the interpretation of a rather active, work-oriented person.

Items in Which S Responds with Work Modality or Work Quality and their Interpretation

1. (G) When the group first started, Ned felt comfortable. (not scored W)
2. (G) It's more important for the group to want to be together a to accomplish something than to come because they are forced into it.
5. (G) When Abe asked the group's permission to present his idea, Paul said for him to go ahead.
6. (G) When the group was bogged down, Ray said that they should take a break and come back together in a few minutes.
18. (P) Together Jim and Fred had good ideas.
19. (P) When Jim realized quite a few people were taking digs at one another, he tried to stop them. (not scored W)
20. (D) When the group just couldnt seem to get ahead, I suggested a break.
21. (F1) When Ed seemed to be day-dreaming, Bill asked him a question. (not scored W)
24 (G) Dick felt that his role was important. (not scored W)
27. (D) When the leader changed the subject, Al tried to get his back on it. ("his" instead of "him") (not scored W)
28. (F1) When my attention wandered from the discussion, Jim brought it back. (not scored W)
39. (G) Mark criticized Fred's idea, and I listened to see if it was a reasonable criticism.
44. (F1) When the group seemed to be breaking up, Nick suggested that they break up.

In the above items the response with P to the W Stimulus Items reinforces the previous notion that P and W may be related for S. And again, P and W are largely associated with the a / column indicating actual overt operation in these modalities.

Although some of these items (20, 44, 6) are scored W and suggest leadership initiative, it is worth noting that these items are not of a particularly high Work quality, since the leadership consists of suggesting Flight when the group is already flighting. Item 6 has more of a group-oriented focus than 20 and 44. All of the items however, would look like an attempt to lead the group were we to see them in operation, and they indicate that S is capable of fairly high-level work. The language is vigorous and direct throughout, thus implementing our notion of an active W person.

In item 2 there is expressed a purposefulness of action and in item 5, an unself-conscious assertion of action. In item 6 there is a specificity of goal and the attempt to use the Flight in a work-oriented way. In item 38 she sums up her view of her major modes of operating in a group, "reassurance" (P) and good "leadership" (W) although technically this is also scored D. Item 1 (which is not scored W) supports the image of a member who can work in a group situation because she feels at ease with such a situation. She is also able to state directly that she feels herself an important person in the group. (24)

To item 39, there is a deliberative quality attached to "listened to see" which puts some distance between herself and her own "fighty" feelings; the feeling is gained that perhaps she would like to criticize Fred too, but perhaps has to convince herself that the fight is intellectually justified. Once more this is not a person who apparently can permit herself to openly criticize -- she must in some way obscure it from herself and others. She again puts distance between herself and feelings of fight.

The possible need to avoid intimate relationships we noted previously for item 25 is again illustrated by the impersonality of item 28: (Jim brings "it" rather than herself back into the group.)

Item 27 suggests difficulty in opposing the leader ("his" instead of "him"). Yet apparently, there may be some wish to do so or she would not have perceived the situation as she did.

The information we have gathered so far, suggests that S probably uses much energy in manipulating others in order to be in a leadership position.

Evidence:

1. Large number of P on overt level.
2. Large number of egocentric f. (Why bother covering up the "f" with so much P?)
3. P and W perceived as similar and there is much unself-conscious asserting of W-P leadership.
4. Specific responses are egocentric and manipulative (35, 5, 7, 37, etc.)

It is interesting that the Pairing behavior is tempered by Work and vice-versa. The Work and the egocentric f would tend to cut down open emotional expressions of Pairing. The ability to use Work in conjunction with the emotional modalities is often a very useful asset in a group. However, in this case, the W quality may also indicate some of the same tendencies we have noted about S in other connections: her tendency to put distance between herself and the open expression of emotionality. It is assumed that the objective, impartial attitudes required for "Work" may have the effect of holding others at a distance.

Summary on Work

S appears to be a fairly work-oriented individual, probably a somewhat sophisticated group member. She appears capable of high level work, although her work level probably tends to fluctuate depending upon certain emotional factors -- i.e., the way she feels toward others asserting leadership. She probably exhibits in great frequency W and P in her overt operation in the group. Direct, open emotional contact with others in a group situation appears to be difficult for her -- she maintains emotional distance by means of an intellectual work-orientation and/or superficial Pairing behavior.

Fight Items:

The Fight Stimulus Items and their Interpretation

9. When he realized he was angry at Phil, Charles controlled himself.
12. When the group disparaged his idea, Frank felt uncomfortable.
19. When Jim realized quite a few people were taking digs at each other, he tried to stop them.
26. During the argument, Henry's vehemence caused Earl to get vehement too. (left last "e" out of vehement)
34. When Hal felt hostile to the group, he controlled himself.
41. When George attacked the group, Bob tactfully stopped him.

S permits herself to respond with Fight to a Fight stimulus only once, in item 26. There is typically a marked rejection of overt F in the other items. The characteristic mode of reacting to the F situations is to keep herself from reacting. The work "control" appears to be significant for S as she uses it twice above. She may have feelings of discomfort (12) in F situations. Occasionally it would appear that the control is not strong enough to hold back the anger (26). When others are in a F situation it seems that S is able to be work-oriented (19) and (41). She acts, then, as the mediator and protector of the group. We note the differences in the responses to 19 and 41; in 19 she merely "tries to"; whereas in 41 her effective mediation is a past event.

The idea of needing to be "in control" becomes prominent. There were indications previously which seemed to suggest this need but which were not sufficient clues by themselves alone. The use of the word "control" in response to the F modality seems to explain and unite many of the partially supported hypotheses mentioned earlier as:

1. The attempt to maintain distance between herself and intense emotionality (either P or F) (a fear of loss of control).
2. The need to be in a leadership position (To be a leader sets up one mode of controlling the group.)
3. The concern with external control expressed in item 2 (the converse of (1) above -- fear of someone or something controlling her).
4. The expenditure of much energy in superficial Pairing; which we interpreted to be manipulative. (Not to let her own machinations be apparent to others.)
5. Friendly behavior to the authorized leader yet some real concern over her relationship to such a figure. (Effort to control him also through fraternizing.)

   Note: Actually the interpretation of overt friendly behavior toward the authorized leader is based on too few sources of evidence. But it is reinforced by the general Pairing behavior and lack of overt Dependency.
6. Erratic support for those who make Work (leadership) contributions. (Competitive for the leadership or power position?)

Items in Which S Responds with Fight Modality, and Interpretation

17. Chuck's detached manner annoyed some of the members of the group.
26. During the argument, Henry's vehemence caused Earl to get vehement too. (left last "e" out of vehement)

On one level, item 17 may indicate S's work-orientation -- she does not like to see people who aren't working, -- who are "detached." It is interesting that S initiates Fight which is only on a feeling rather than an action level. Also she ascribes the annoyance to the other members, thus putting more distance between herself and the Fight. Once again the difficulty in initiating overt Fight is indicated.

To the Fight stimulus of 26 she responded with a diffuse vague Fight. It seems to be a bursting through of the Fight as a result of too much provocation. It appears to be very unchannelized as she does not conjure up a new word, having to use the same Fight word as in the stimulus -- "vehement."

Items in Which S Responds with Covert Fight Modality, and Interpretation

8. Since Jack liked some members more than others, he ignored the others.

14. When several members dropped out of the discussion, Hank noticed it and wanted to charge the situation. ("Charge" rather than "change")

21. When Ed seemed to be day-dreaming, Bill asked him a question. (Not scored F)

25. When Len turned to me, I was ready to listen to him. ("was" marked over)

27. When the leader changed the subject, Al tried to get his back on it. ("his" instead of "him")

30. When there was a pause in the group, Stan did not feel annoyed.

37. When Ray recommended that the group consider the theoretical aspects of the problem, I agreed with him at times and did not support hi at other times. ("Agreed" is marked over; the "m" is left out of 'him') (Not scored F)

39. Mark criticized Fred's idea, and I listened to see if it was a reasonable criticism.

41. When George attacked the group, Bob tactfully stopped him.

Three additional Covert Fight Responses are an egocentric type of covert Fight:

5. When Abe asked the group's permission to present his idea, Paul said for him to go ahead.

29. When Morris said we needed more information about how we felt, I was glad to give it to him.

35. When Harry said that we needed help, Martin gave it to him.

All of these items have been discussed previously. Apparently there is a need to disguise F but many times her particular kind of F is conveyed anyhow, albeit indirectly. The need to Pair without felt warmth has been interpreted from two of the above items (8, 25) in the section on Pairing items.

In item 25 there appears an attempt to avoid showing responsiveness. There also appears to be an element of self-centeredness in this response, as there also is in item 35 and item 29. On item 35 most people in our test population responded by either asking for help from the leader or a resource person or by stating that the sources for help are within the group. For item 29 the most usual response brings forth agreement or disagreement or a plan for getting the information. Instead she sees herself as the source of help in the group.

Item 39 conveys a feeling of wanting to criticize but not being able to unless it is justified.

The above items 5, 29, 35 and 41 represent an indirect Fight. They convey a feeling of S's egocentricity which may cause her to impose her will on the group. 30 suggests that S probably does feel annoyance which she denies.

Summary on Fight

S does not appear to be able to use F in her overt behavior in the group, only occasionally does she lose control and show anger. But covertly she seems to be egocentric and controlling. In contrast to this, her self-concept is that of a harmonizer. Her role in the group is an active one which presents much leadership. She is usually actively work-oriented, and this includes much superficial Pairing behavior.

Flight Items:

Flight Stimulus Items, and Interpretation

4. When Jerry was joking, the group felt less tense.

14. When several members dropped out of the discussion, Hank noticed it and wanted to charge the situation. ("charge" instead of "change")

21. When Ed seemed to be day-dreaming, Bill asked him a question.

28. When my attention wandered from the discussion, Jim brought it back.

36. When Jim left the meeting early, we accepted it.

44. When the group seemed to be breaking up, Nick suggested that they break up.

Of the six Flight Items above, four are accepted and two rejected. Both the rejected items deal with a relationship between two people; there is an impersonal quality in both of these responses.

It appears that S can accept certain kinds of Flight (4, 36, 44), but may like to lead it (44).

Item 14 as stated previously appears to be an attempt to maintain the role of the nurturant group member. However, the slip of the pen suggests that S may have some difficulty in maintaining this nurturant role.

Items to Which S Responded with Flight, and Interpretation

8. Since Jack likes some members more than others, he ignored the others.

9. When he realized he was angry at Phil, Charles controlled himself.

12. When the group disparaged his idea, Frank felt uncomfortable.

34. When Hal felt hostile to the group, he controlled himself.

43. When the group pointedly ignored Steve's idea, John felt ignored.

The Flight responses above seem to be largely concerned with S's inhibition of response to Fight stimuli. As discussed under the Fight Modality Section, S appears usually unable to express hostility openly, although partly as a result of such suppression she probably expresses hostility indirectly in some group situations.

Item 12 indicates that S suffers somewhat when her leadership is rejected. The last item (43) suggests that S can sympathize with someone whose leadership has been rejected. The significance of the need to be in control of her own feelings, etc., has been discussed previously (19, 34). An interpretation of item 8 has been made under the Pairing section.

Summary on Flight

Flight as a way of operating in the group should not appear in great frequency for S except in Fight situations. She can operate in an occasional Flight situation, particularly if it is one in which she can assert leadership. There is some suggestion that her need to assume a central, controlling role is so strong that she exhibits leadership behavior even when it is irrevelant to the group situation. She appears to be intolerant of individual Flight during a group discussion.

Dependency Items:

Dependency Stimulus Items and Interpretation

3. Bert felt the leader was doing a good job.

13. When the leader offered to help him, Pete accepted the offer.

20. When the group just couldn't seem to get ahead, I suggested a break.

27. When the leader changed the subject Al tried to get his back on it. ("his" instead of "him")

35. When Harry said that we needed help, Martin gave it to him.

42. When the leader offered to ehlp Carl, Joe was glad to see this.

Most of these items have been discussed previously. Item 3 indicates some ability to evaluate the leader -- to see herself as a leader and on a peer level with the authorized leader. Items 13 and 27 appear somewhat contradictory as in one she accepts help from the leader and in the other she attempts to counteract something that the leader is doing. The slip in item 27 also suggests possible conflict in regard to

the leader. We do not know the nature of the conflict; we simply feel that a possible underlying conflict is indicated. Item 42 indicates that she likes to see others get help. From other hypothesizing, it appears that it may be reassuring to her to have others get help instead of herself. (On an even more covert level it may be just reassuring to know that help is available.) The S perceives herself as helping others (item 35) and most probably does not see herself as being in need of help. In item 13 "Pete" accepts the help in a manner that appears controlled and "polite" rather than simply accepting.

Item to Which S Responded with Dependency, and Interpretation

2. Occasionally the group needed leadership and reassurance.

This item was technically scored D, but the writer felt after going over the rest of the protocol that S might have written this from the vantage point of perceiving herself as the leader. The lack of any overt D except as expressed in the intellectual manner above may indicate the possibility of a defense against D.

Items to Which S Responded with Covert D Flavor

23. The leader got mad at the group, and Rob tried to calm him down. (not scored D)

31. When Ben contradicted the leader, I listened to ascertain why. (not scored D)

32. When Walt and the leader made side remarks to each other, James wished that they would stop.

Previous interpretation as to the items above, has suggested that the leader is an important person, partly because of S's need "to be in control." Items 23, 31 and 32 indicates not only that S perceives the leader as an important person, but also there is some underlying conflict that appears to mildly immobilize her (item 31). The wish for contact with/or competition for the leader is expressed in item 32.

Other Comments about Dependency

Although for the purpose of predicting behavior in a group situation we do not need the type of information that an analyst obtains from the "couch," yet in a projective instrument such as this we may find ourselves dealing with various levels of behavior. For example, although D as a behavioral variable in a group situation appears to be unimportant for S, yet certain clues lend themselves to the interpretation that the area of Dependency is an exceedingly conflictual and important one for S. The need to be in control, the need overtly to see the leader as a peer, the pervasiveness of the need to be at the helm -- suggest that

there is need to deny certain deep-lying Dependency feelings. To amplify this interpretation we would have to use other projectives which are designed to tap this deeper level.

General Summary

S reveals herself to be a work-oriented, Pairing individual in the group. However, her high level of work may be easily disturbed when she feels threatened. The Pairing appears to be more overt than covert; egocentricity and covert Fight flavors much of her Pairing action.

She appears to think of herself as invaluable to the group and as having leadership ability. Yet on a much deeper level, it is apparent that her opinion of herself as being so important is a defense -- why else does she need to jump into a leadership position when the trend of the group is already obvious (Cf., item 44)? It appears that S has to convince herself that she really is important.

The need to be in control appears to be a central one. S is competitive with other members for the Leader's approval and for the "natural" leadership of the group. It appears that S is fearful of losing control and that this "staying in good" with the Leader and/or being the group member-leader gives her the feeling of being in control. Why the need to be in control is so compelling we shall have to leave to projectives designed to reveal such dynamics. The lack of felt warmth (P) and of overt Fight may be related to the need to be in control of her own emotionality. It appears that S is fearful of becoming too intimate or involved with others either in P or F interactions. It's as though S is frightened of losing control in her relations with others. Thus her use of Pairing in this controlled way seems, paradoxically, to be a defense against intimacy. It is also possible that her continual supporting of others' behavior may be a defense against her own unconscious feelings of Dependency. It might be paraphrased thusly, "You need help; I don't."

It appears, then, that S will most frequently exhibit W and P behavior. Her work contributions can be of a moderately high level, but if there is anyone else who competes for leadership the quality of work may become quite poor. Generally, her work behavior will consist of large numbers of contributions which may be mainly a simple supporting of a plan of action, but she may abruptly withdraw such support.

She will seldom exhibit overt Dependency and Fight. Under Fight conditions she may exhibit much Flight.

Many of her supportive statements, however, will be seen by a trained observer to

contain an egocentricity and occasionally a barely disguised hostility. This S has some sophistication about groups and probably some real leadership ability, but she is easily diverted from worthwhile contributions by competition with other members. The most pervasive feeling the writer has about her work contributions is that most of her energy goes into elaborating (controlling) another's ideas rather than creating a plan of action herself. This can be a worthwhile contribution in a group situation, but it has a different quality from the kind of Work involved in originating an idea.

The Total Scores in Modality Terms of S's Rated Behavior in the Group

Now that we have made predictions as to S's behavior, it is informative to check these hypotheses against S's actual behavior in a group situation.

Each statement of S in an hour-long meeting was rated by observers who used the same categories as those used in the test. A summation of S's operation with these categories during the meeting together with the RGST score totals are presented in Table 8, below.

The summary of scores yielded by the ratings follow the same pattern as that predicted by the RGS. W and P appear to be S's most characteristic manner of response and/or behavior. The trained observer perceived the Fight responses and as there is no covert category in the rating system used, the Fight score was larger than expected from the RGST. The performance on the RGS appears to be directly related to S's actual performance in the group.

TABLE VIII

SCORES FROM THE RGST COMPARED WITH BEHAVIORAL RATINGS FOR A SINGLE SUBJECT

Modality	RGST Score Totals	Behavioral Ratings
P	19	39
W	18	38
F	10	28
M	7	10
D	4	3
M	3	0

CHAPTER IX

THE VALIDITY OF INTERPRETATION FROM THE REACTIONS TO GROUP SITUATIONS TEST[1]

The study described here investigates the validity of the Reactions to Group Situations Test (RGST) described in Chapter VII. The RGST, a sentence completion test, was designed primarily to assess the predispositions of individuals for various types of behavior in a group setting. Therefore, an appropriate definition of validity for this test is the extent of direct relationship between behavioral tendencies sampled on the RGST and actual behavior in a group situation. The specific operational definition of validity in this study is the degree of correlation between predictions of behavior from the RGST protocols (by Clinicians) and descriptions of actual performance in a group situation (by Observers). Thus the criterion of test validity is one of prediction: the extent to which clinicians are able to predict accurately, from the RGST, actual behavior in a specific group meeting.

In this chapter we will present a summary of this exploratory study on the validity of the RGST. We have tried to emphasize the experimental methodology used as well as the results of the experiment by first presenting a general overview of the experimental situation before going into the hypotheses and analysis of results. Some tentative conclusions as to the validity of the RGST will then be drawn.

Outline of the Experiment

General Description

In this study psychologists evaluated the RGST protocols of each of five subjects, and predicted the behavior each would exhibit while participating together in a group meeting. The predictions were made on the basis of the RGST protocols, plus the following information: (a) the age and sex of each subject, and (b) a short characterization of the one-hour group situation to which prediction was to be made. Three staff members of the Human Dynamics Laboratory acted as Observers of the group situation in which the Subjects participated. The

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[1]This study was designed and conducted by Ida Gradolph and Philip C. Gradolph. The following persons acted as participant Observers or Clinicians in this experiment: Lucille Dozier and John C. Glidewell (Maxwell Field Air Force Base), Ann Margaret Garner and Robert Harris (Michael Reese Hospital), David Rosenthal (Johns Hopkins Hospital), Robert R. Rodgers (Department of Psychology, University of Chicago), Saul Ben-Zeev, Bettie Belk Sarchet, Dorothy Stock and Herbert A. Thelen (Human Dynamics Laboratory, University of Chicago).

Observers' descriptions were taken as our criterion of the actual behavior which the clinicians were to predict -- our indicant of how the Subjects actually behaved in the meeting. These behavioral descriptions were then compared with the Clinicians descriptions. The amount of correlation between prediction and description can be interpreted as indicating the extent of validity of the RGST for predictions of this type. Both Observers and Clinicians recorded their respective descriptions and predictions by means of a "Descriptive Q-Sort."

Participants

The Clinicians: The clinicians taking part in this experiment fall into five groups:

1. Two clinicians with extensive experience in the following areas:
   a. The RGST and RGST scoring system
   b. Other projectives
   c. Bion's theory of groups

2. Three clinicians who had:
   a. Moderate experience with the RGST (this group had never made any predictions of individual behavior from this test)
   b. Little experience with other projectives
   c. Moderate experience with Bion's theory of groups

3. Two "hospital" clinicians who had:
   a. No experience with the RGST
   b. Very extensive experience with other projectives
   c. No familiarity with Bion's theory of groups

4. One clinician who had:
   a. No experience with the RGST
   b. Moderate experience with other projectives
   c. Considerable familiarity with Bion's theory of groups

5. One Observer-Clinician who had the same qualifications as group 1. This person was one of the original three observers who watched the group situation and then described group behavior. Her predictions from the RGST protocols were made nine months after the observations.

Group 1 was expected to produce higher correlations with the Observers than 2, 3, or 4, since this group not only had had sensitizing experience with other projectives but also enough experience with this particular test to develop a normative frame of reference with which to evaluate the protocols. Only two clinicians could be included in Group 1 since the RGST is a new instrument and there has as yet been little chance for many people to develop the requisite experience with it.

Groups 2, 3, and 4 were included both as control groups and to give possible indications of the relative importance of the three experience variables: (1) with the RGST, (2) with other projective tests, and (3) with Bion's theory. 5 was used as a control on the efficiency of the Q sort as an instrument for comparing the predictions and the descriptions. If the instrument is efficient, then 5's "predictions" should correlate highly with her own

and the other two Observers' descriptions; low correlations would cast suspicion upon the Q sort as a comparing device.

The Observers.--Three staff members of the Human Dynamics Laboratory acted as observers. Each observer described each Subject independently. There were thus three independent descriptions of each of the five Subjects.[2]

The Subjects.--The five subjects taking part in this experiment were graduate students enrolled in a practicum course in group development. They had known each other for at least the two months spent in this course and all five volunteered to act as subjects in the group choice experiment.

The Group Situation

The meeting to which the Clinicians were asked to predict was a group-choice situation devised by A. Newell and carried out with the support of the Rand Corporation. In this one-hour group meeting, the subjects were asked to reach a collective decision as to which of seven objects set before them they would prefer. They were then asked to make some disposition of the object they had chosen. The situation elicited a high level of interaction and was thus quite suitable for our purposes.

The Measuring Instrument

A descriptive Q-sort was used as the means of quantifying our data (predictions and descriptions). This made possible subsequent analysis through correlation and analysis of variance techniques. In describing the Subjects, the Clinicians and Observers sorted the 100 statements which comprised the sort into thirteen categories (or piles). These piles were distributed along a continuum from "Most Like" (the Subject) to "Least Like" according to an enforced quasi-normal frequency distribution.

The descriptive statements were constructed to fit a factorial design utilizing the Bionic modalities. This design is given in Table IX.

The categories of Overt Behavior are the five modalities: Pairing (P), Fight (F), Dependency (D), Flight (Fl) and Work (W). The Covert Effect includes the four emotional categories only, since, according to Bion,[3] "Work" is always conscious. Each of the 100 Q-sort items consists of an Overt modality combined with a Covert modality. Thus, Overt Pairing (P)

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[2]These Observer descriptions were averaged to give a single criterion of the Subjects' behaviors. (Cf. page 123.)

[3]W. R. Bion, "Experiences in Groups: VII," Human Relations, IV, No. 3 (1951), pp. 221-228.

would be combined with each of the Covert modalities to make the following combinations: Pp, Pd, Pf, Pfl.[4] Thus there were 20 (5 x 4) combinations of modalities and hence 20 types of statements. These were replicated 5 times so that the Q-sort consisted of 100 statements, 5 for each of the 20 combinations.

TABLE IX

FACTORIAL DESIGN OF Q-SORT

Effects (Levels of Expression)	Levels (Type of Behavior)	No.	DF
Overt Behavior	(P) Pairing, (F) Fight, (D) Dependency (Fl) Flight, (W) Work	5	4
Covert Behavior	(p) pairing, (d) dependency, (f) fight, (fl) flight	4	3

The "Overt" part of each statement has the following qualities: modality directly expressed, requires very little inference, a more "surface" level of communication, what the Subject appears to be consciously attempting to communicate. The Covert part of the statement can be characterized as: modality indirectly expressed, often a need underlying or accompanying the overt need, diagnosed by inference, the Subject is not usually aware of communicating the modality and the Subject usually does not intend to communicate the modality.

It is assumed that the above twenty combinations of these modalities should give an adequate framework for describing all of the important behavior likely to be exhibited in a group of the type used in this experiment. The 100 statements, together with the modality combinations which they represent, are given in Appendix D, Part 1.

Hypotheses and Analysis of Results

This experiment was designed to provide evidence on several hypotheses concerning the validity of the RGST as a predictive instrument. The principal hypotheses under investigation might be stated as follows:

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[4] Throughout this chapter we have used the following abbreviations for Bion's modalities: p - pairing, d - dependency, f - fight, fl - flight, and w - work. An Overt expression of the modality is symbolized by the use of capitals, while Covert expression is represented by lower case.

H-1. The RGST is a valid (accurate) instrument for predicting individual behavior in a specific group situation.

Evidence: High correlations between the Q-sorts of the Observers and those of the Clinicians will give evidence in support of this hypothesis.

H-2. The most important requirement for accurate prediction is extensive experiment with this test -- which would develop the normative frame of reference necessary for the evaluation of RGST protocols. This implies, as well, an understanding of the theory on which the test is based.

Evidence: Higher correlations with the Observers should be obtained for Group 1 than any other group.

H-3. Experience with this test (mainly for purposes other than the prediction of individual behavior) should allow prediction at a level better than chance, but not as accurate or consistent as that of Group 1.

Evidence: Higher correlations between Group 2 and the Observers than for Groups 3 and 4.

H-4. Neither experience with other projectives alone nor knowledge of Bionic theory alone is sufficient to permit accurate prediction on the basis of the GBC.

Evidence: Correlations of Groups 3 and 4 with O's should be quite low, although better than chance expectancy.

H-5. The Clinicians will be both more accurate and more consistent in their predictions concerning certain subjects than others.

Evidence: A higher proportion of significant r's between the Clinicians and Observers as well as higher r's found for certain subjects than for others.

It will be noted that H-1 is of a much more general character than hypotheses 2 through 5. Any evidence which supports one of the last four hypotheses will also perforce lend support to H-1.

All of these hypotheses relate to correlations between the Observers and the various groups of Clinicians. In order to have a single value for the accuracy of each prediction it was necessary to have a single description of the subject's behavior with which to compare it. This was arrived at by averaging the Observers' Q-sorts (descriptions) on each subject. However, on four of the subjects two of the Observers intercorrelated more highly than either of them with the third.[5] Therefore, we used an average of the two most highly intercorrelated Observers as our criteria of actual behavior for Subjects 1, 2, 4 and 5.[6] The criterion for Subject 3 was an average of all three Observer sorts -- all three Observers agreed highly on

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[5]See intercorrelations between O's, upper left corners of Tables XXVI through XXX, Appendix D, Part 2.

[6]We felt justified in using only the two most highly intercorrelated Observers as our reality criterion for two reasons: (1) it appeared from inspection of the data that each Observer had, as would be expected, some unique personality factors operating which tended to bias his perceptions of all the Subjects to some extent; however, these factors might be expected to be more operant in regard to Subjects of a particular type; (2) averaging all three sorts for these Subjects tended to produce a more "flattened out" or generalized description.

Results

Table X gives the correlation of each Clinician's prediction on each Subject with the Observer average described above.[7]

TABLE X[a,b]

CORRELATIONS OF PREDICTIONS WITH OBSERVER AVERAGE

Subject	Clinician								
	A_1	A_2	B_1	B_2	B_3	C_1	C_2	D	E
1	.78	.82	.22	.71	.62	.58	.33	-.15	.78
2	.74	.78	.05	-.18	.55	.42	.15	-.29	.55
3	.77	.72	.73	-.29	.08	.04	-.24	.40	.84
4	-.74	.64	-.48	-.73	-.20	-.65	-.61	-.37	.92
5	.83	.83	.57	.80	.61	.49	.64	.45	.64

[a]The underlined figures represent correlations significantly different from chance at the .01 level of confidence.

[b]See "Statistical Note," Appendix D, Part 2.

It can be seen from Table X that 17 out of 40, or 42.5 per cent (excluding E, who acted both as Clinician and Observer) of the predictions were significantly better than chance expectancy at the .01 level of confidence ($r \geq +.56$). Purely on the basis of chance we would have expected 00.5 per cent of these r's to be significantly positive.[8,9] This tends to support the general validity of the RMST under these experimental conditions (Hypothesis 1).

Table X also clearly indicates that the proportion of better-than-chance Predictions by Group A is significantly higher (.01 level) than that of all the other groups (Group A = .80, B = .47, C = .30, D = .00). These results are in line with Hypothesis 2.

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[7]The complete tables of correlations between the twelve participants in this experiment (3 Observers and 9 Clinicians, including E) on each Subject are given in Appendix D, Part 2.

[8]The use of a two-tailed test should give 00.5 per cent positive and 00.5 per cent significantly negative values as a result of purely chance factors.

[9]Appendix D, Part 3 gives a breakdown of the proportion of r's significant at the .01 level together with the probabilities of obtaining these results purely on the basis of chance.

It will be seen that Group B, although not as accurate as Group A, is considerably better than Groups C and D. This supports Hypothesis 3.

Groups C and D are quite low, as predicted by Hypothesis 4, but only C's accuracy is significantly better than chance expectancy. Thus Hypothesis 4 is only partially supported.

Our hypothesis that there would be differences in the ease of prediction for the several Subjects is also supported by Table X. Thus, 75 per cent of the Clinicians' predictions were significantly better than chance on Subject 5, while only 25 per cent of the predictions for Subject 2 are significantly better than chance (.01 level).[10] Subject 4 represents a special case and will be discussed later.

Criterion of Prediction of 50 Per Cent of Behavior

For the purposes for which it is intended to utilize the RGST, it is important to be able to predict the actual behavior of the individual in a specific group situation. Therefore, we also used the rather rigorous criterion of defining a "valid" prediction as one predicting at least 50 per cent of the Subject's observed behavior. We operationally defined such a prediction as an r^2 greater than .50 ($r \geq +.71$) between the Clinician's prediction and the Observer average. This is based on the generally accepted interpretation of r^2 as the proportion of common variance (σ_{xy}) accounted for by one of two things being correlated.[11]

Table XI gives the proportion of predictions of greater than 50 per cent of the Subject's behavior, as we have operationally defined it, for each group of Clinicians.

TABLE XI[a]

NUMBER OF CORRELATIONS $\geq +.71$ ($r^2 \geq .50$) WITH OBSERVER AVERAGE

Group	No. r's $\geq +.71$	Group N	Group p
A	8	10	.80
B	3	15	.13
C	0	10	.00
D	0	5	.00
E	0	5	.80

[a] An r of .71 is significant at better than the .001 level of confidence.

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[10] Appendix D, Part 3, gives the proportions of r's significantly positive and negative broken down by Subjects, as well as the average r for each Subject.

[11] This interpretation of the correlation coefficient is discussed in Q. McNemar, Psychological Statistics (1949: Wiley & Sons, New York), 114-117.

The table clearly shows the superiority of Group A's predictions over those of the other groups. A's proportion of 80 per cent "valid" is significantly greater than the 13 per cent obtained for Group B. This lends even stronger support to our hypothesis (H-2) that extensive experience with the RGST is a most important requirement for accurate prediction.

Further Discussion of Hypothesis Five

Hypothesis 5 states that the accuracy of prediction will be higher for some of the Subjects than for others. The most striking example of this is Subject 4, where only one of the predictions is significantly positive while the others are all negative -- four significantly so. This is the only Subject for which any of the correlations between prediction and description were significantly negative[12] so we felt that an investigation of the source of this discrepancy might yield some interesting data on possible weaknesses of the test and how they might be corrected.

The differences between the means of the twenty modality-combinations of the Observer Average and each Clinician's prediction on Subject 4 were computed -- excluding A_2 and E, who correlated highly. Significant differences[13] for all of the seven predictions were obtained only on combinations Fight-dependency (Fd), Work-fight (Wf), and Flight-dependency (Fld).

A glance at the Q-sort statements given in the Appendix (D, Part 1) will show that our operational definitions for these modality-combinations were as follows:

> Wf -- aggressive work with underlying hostility
> Fd -- counter-dependent behavior
> Fld -- withdrawal or non-participation because of underlying insecurity (passive dependency)

Wf and Fd were rated significantly lower by the Clinicians than the Observers while Fld was rated significantly higher by the Clinicians than by the Observers. Both Wf and Fd fit into the pattern of active, aggressive behavior likely to be exhibited by a person who is counter-dependent.

It appears that the most important differences between the Clinicians and Observers on Subject 4 centered around the problem of how the underlying dependency seen by both would be expressed in overt behavior. The Clinicians appear to have succumbed to the general

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[12] Also, the average r of -.41 obtained for Subject 4 is significantly lower than those for the other Subjects at the .001 level of confidence. See Appendix D, Part 3.

[13] Since this analysis involved 20 t-tests for each comparison of a Clinician's sort with the Observer Average, we used the .002 level of confidence for each test. This gives a level of confidence of approximately .04 (20 x .002) for the entire analysis.

stereotype of equating dependency with passivity. Freudian theory indicates that at a "deeper" level dependency is often associated with passive wishes, but on an overt level it may be expressed either passively or actively.

Although the underlying dependency is apparently quite evident from the RGST protocol, there are also several indications that it may be aggressively, rather than passively, expressed, for example:

Item 23: "The leader got mad at the group, and Rob reprimanded him."
Item 31: "When Ben contradicted the leader, I agreed with Ben."
Item 34: "When Hal felt hostile to the group, he expressed it."
Item 13: "When the leader offered to help him, Pete resented his help."
Item 43: "When the group pointedly ignored Steve's idea, John brought it up again."

In addition to these rather direct expressions of aggressiveness and/or counter-dependency, there are many other responses which indicate that Subject 4 perceives herself as an active, powerful figure in the group. Therefore, it seems that the RGST protocol itself does not necessarily force an acceptance of the stereotype of dependency being passively expressed in the case of this Subject. It is interesting to note, in this connection, that Clinician A_1 in a short personality sketch of Subject 4 described her as: "Conflicted over dependency, probably counter-dependent." However, this does not seem to have been translated into her Q-sort -- both Fd and Wf were rated quite low.

Summary of Validity Analysis

The analysis presented above suggests that Clinicians who have had extensive experience with this instrument, used the semi-objective scoring system, and are well-versed in the Bionic theory of groups (Group A) will be able to make reasonably accurate predictions of individual behavior in a group situation a high percentage of the time. The correlations obtained in this study between Clinicians predictions and the reality criterion used (Observers' descriptions) are considerably higher than those usually found in validity investigations of projective tests. We feel that this is as much a result of using the logically appropriate conditions for experimental validation as of the inherent "validity" of the RGST.

Probably the most important reason for this high level of accuracy of prediction is that the RGST was designed to be used for exactly the type of prediction for which we tested it. The responses obtained on this test are directly translatable into behavior exhibited in a group because the test presented the same situations of reacting to verbal (written) stimuli that occurs in a group meeting. The fact that both the RGST and the Behavioral Rating System used by the Observers utilize the Bionic modalities also makes data obtained from them easily

translatable into a Q-sort designed in terms of these same modalities.

Another reason for the high accuracy of prediction obtained here is that the Clinicians were asked to predict the relative frequency and importance of various types of behavior rather than specific actions on the part of the Subject. Then too, we were concerned only with a "surface" level of description -- no predictions as to deep, underlying concerns were asked for (or possible in our Q-sort). This is the same level of personality data given by our test.[14]

Some Observations on the General Usefulness of the Bionic Modalities as a Descriptive Framework

Another interesting result of this experiment, although incidental to the validity of the test itself, was the finding that Clinicians who had no familiarity with Bionic Theory were able to operate with these modalities and appeared to be able to make meaningful distinctions between the categories.

We have mentioned before that the factorially designed Q-sort used in this experiment allowed us to analyze each sort by analysis of variance techniques. Such an analysis allowed us to ascertain whether or not the person throwing the sort treated the modality categories as coherent units of behavior description.

An analysis of variance was performed on each individual Q-sort according to the factorial design given on page 122. A significant F-test for a given "Effect" (Overt, Covert) was interpreted as indicating that the person throwing the sort made significantly greater distinctions between the levels (modalities) comprising that Effect than he made within these modalities.[15] Table XII gives the proportion of Q-sorts for the various groups of Clinicians and Observers (O) in which the person throwing the sort made such distinctions to a significant extent -- that is: the proportion of F-tests significant at the .05 level for each group.

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[14] Perhaps the most uninteresting, but certainly a very practical, reason for the high r's obtained was the fact that the high degree of homogeneity among the replications of each of the 20 combinations comprising our Q-sort allowed us to use the means of these combinations for correlation purposes. The r's obtained in this manner are considered to be much more stable than if we had had to correlate the 100 scores on each sort with those of the other sorts. This also eliminated the "error" ("within cells") variance which would otherwise have obscured the high degree of correlation present. See "Statistical Note," Appendix D, Part 2.

[15] A more detailed description of this analysis and its interpretation is given in Appendix D, Part 4.

TABLE XII[a]

PROPORTION OF F-TESTS SIGNIFICANT AT 5 PER CENT LEVEL OF CONFIDENCE

Effect (E)	Group						Total (N = 60)
	O (N = 15)	A (N = 10)	B (N = 15)	C (N = 10)	D (N = 5)	E (N = 5)	
Overt/WG	1.00	1.00	1.00	.80	1.00	.80	.95
Covert/WG	1.00	.90	1.00	.80	.80	1.00	.93
Interaction/WG	.67	.80	.87	.40	.20	.40	.63
Overt/Interaction	.60	.70	.80	.80	.80	.80	.73
Covert/Interaction	.53	.60	.60	.70	.60	.60	.60

[a]The N's for each Group in the above table refer to the number of Q-sorts thrown by that Group. This is the N on which the proportions presented in that column are based. Thus, the 3 Observers in Group O each threw 5 sorts (one on each Subject) making a total N of 15 for Group O.

The high proportions of significant F-tests for both the Overt and Covert Effects over the within Groups (WG) variance indicate that our Clinicians and Observers had no difficulty in describing the behavior of the five Subjects in terms of the Bionic modalities. Group C (no knowledge of Bionic theory) seems to be able to discriminate between the various modalities about as well as any of the other groups. This would seem to indicate that these modalities can be perceived as coherent and meaningful categories of behavior even by persons unacquainted with their theoretical formulation.[16]

Conclusions

The small sample size of this exploratory investigation precludes the drawing of any general conclusions regarding the "validity" of the RGST. However, our results do indicate that it is possible for a well-trained Clinician to make reasonably accurate predictions of a Subject's individual behavior in a group situation a high percentage of the time.

The fact that Group A's predictions were considerably more accurate than those of the other Clinicians participating in this experiment indicates that the more important factors influencing accuracy of prediction from this instrument are:

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[16]Table XII would also seem to indicate that the major Bionic constructs (Pairing, Dependency, Fight, Flight, and Work) seemed more consistently meaningful units of behavior description than the twenty sub-categories (modality-combinations) into which they were broken down in our Q-sort -- see Appendix D, Part 4.

1. The background of the tester.

   a. He should have had enough experience with this particular test to have developed a normative frame of reference for evaluating RGST protocols and responses.

   b. This implies an understanding of Rion's theoretical constructs.

   c. We also feel that experience with other projectives and general clinical sensitivity are necessary ingredients although this study was not designed to bring out these factors.

2. The personality structure of the subject.

   A dependency - counter-dependency problem caused considerable difficulties in prediction for most of our Clinicians.

The results of both the correlation analysis ("validity") and analysis of variance indicate that the theoretical constructs on which the test is based provide a useful and meaningful framework for describing individual behavior in a group situation.

PART IV

IDENTIFYING SUB-GROUPS AND THEIR FUNCTIONAL INTER-RELATIONS

Preface

The techniques described so far deal with the group from the point of view of total group process or from the point of view of individual predispositions and behaviors. There is a third approach which sees the sub-group as the significant unit within the group. This point of view assumes that groups can be described in terms of a limited number of homogeneous sub-groups, and that group operation can be seen as the working out of relationships among the sub-groups.

Work in this direction in the Human Dynamics Laboratory has involved developing a procedure for identifying the sub-group structure of small groups, and testing the general relation of sub-group patterns to behavior and to sociometric choice.

In the section which follows, Chapter X describes the procedure for identifying sub-group structure, while Chapter XI is a case study of a group analyzed in sub-group terms.

CHAPTER X

IDENTIFYING SUB-GROUPS WITHIN THE TOTAL GROUP: A SELF-PERCEPTUAL Q-SORT[1]

In accepting the sub-group as a significant unit within the total group, we assume that the group can be described in terms of a limited number of sub-groups, and that the character of group operation can be defined in terms of the relationships among the sub-groups.

In social psychology generally, sub-groups have been defined in a number of ways. Perhaps the most familiar is the sociometric sub-group, in which alliances between members are determined by asking each member whom they prefer, and where members of the same sub-group have expressed liking for each other. Another kind of sub-group is the behavioral sub-group. Here, members of the same sub-group behave in similar ways or act together as a unit. The unitizing procedure described in Chapter V defines this kind of sub-group. The type of sub-group we shall describe in this section might be called a psychological sub-group, or more precisely, a phenomenological sub-group. The members of such a sub-group have certain psychological characteristics in common. Specifically, they share certain perceptions about themselves as operating group members.

In the terms of the theoretical framework summarized in Chapter II, we define a sub-group as a cluster of people within a larger group who hold certain valency characteristics in common. That is, the members of a single sub-group share certain predispositions for action in a group situation. These "shared predispositions" are defined in terms of the basic emotional modalities of pairing, dependency, fight and flight. For example, the members of a sub-group might hold in common a need or wish to pair (P), together with a disturbance or confusion over dependency-counterdependency tendencies (D-CD conflict). Another sub-group within the same total group might be described as needing to control the group (counter-dependency) while maintaining rather impersonal relationships among members (counter-pairing). When all sub-groups are defined in this manner a total group can be described, not as a single entity or as a

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[1] The procedure described in this chapter is a specific application of Q technique to a group problem. Q-technique was developed by William S. Stephenson and is described in detail in his book, The Study of Behavior (University of Chicago Press, 1953). The particular population of items used here was devised by David Rosenthal, now of Phipps Clinic, Johns Hopkins Hospital, and by Dorothy Stock. This chapter was written by Dorothy Stock.

collection of unique individuals, but as an assemblage of perhaps four or five sub-groups, each of which represents some unique (with respect to the others) pattern of valencies defined in modality terms. Group structure can then be described in terms of the patterning of sub-groups -- their character and membership.

In order to describe a group in these terms it is necessary first to assess the valency characteristics of each individual, and second to group individuals according to valency type. The statistical procedure known as Q technique exactly meets both these requirements. This procedure requires constructing a large population of descriptive statements which each individual can use to produce a description of himself. He does this by sorting the statements into a specified frequency distribution in which one end of the distribution represents "most like myself" and the other end represents "least like myself." When each individual has produced a self-description in this manner, factor analysis can be applied to these data and relationships among the total group of self-descriptions can be identified.

Q technique is a general statistical procedure which can be applied to many individual and group problems. In describing it here, we shall list the steps which were involved in applying Q technique to the specific problem of identifying the phenomenological sub-group structure of two training groups of sixteen and eighteen members. The rest of this chapter is organized into four main sections:

1. The Population of Descriptive Statements
2. Administration of the Sort
3. Statistical Treatment
4. Interpretation.

The Population of Descriptive Statements

A population of descriptive statements was constructed within the theoretical framework described in Chapter II. Our interest was in identifying each individual's predispositions, as revealed by self-descriptions, for expressing the basic emotional modalities. A 60-item population of statements was constructed,[2] which included ten statements in each of six emotional categories: fight, flight, dependence, counterdependence, pairing, and counterpairing. These are defined and illustrated below.

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[2] A complete list of the sixty statements is included in Appendix E, Part 1.

1. Dependence: A need to rely for support and direction on the leader, the total group, or an established structure.

The following are some of the dependence statements:

Inclined to follow the suggestions of the leader.
Preferred to proceed along established lines.
Comfortable when the leaders were active and directive.

2. Counter-dependence: An emotional resistance against dependence; an insistence on maintaining the feeling of independence or leadership at all times.

The following are some of the counter-dependence statements:

Wanted to assume active leadership himself.
Inclined to assume a directive role in the group.
Felt competitive toward people who attempted to dominate the group.

3. Pairing: A need and desire to establish and maintain close personal relationships with other members, and to conduct group interaction on an intimate, personal level.

The following are some of the pairing statements:

Liked to keep group discussion on a personal level.
Attached to one or two particular members.
Inclined to bring intimate material to the group.

4. Counter-pairing: A need to keep relationships with others formal and impersonal, and to conduct group interaction on a formal, impersonal, intellectual level.

The following are some of the counter-pairing statements:

Disinclined to form special friendships.
Felt that social relationships were too intimate.
Embarrassed when other members made personal comments about him.

5. Fight: A tendency to express negative, aggressive feelings in the group.

The following are some of the fight statements:

Critical of other members.
Eager to respond to attack by counterattack.
Tended to sidetrack the group from its goals.

6. Flight: A tendency to inhibit negative, aggressive feelings in the group; to withdraw generally.

The following are some of the flight statements:

Reluctant to come to meetings.
When attacked felt uncomfortable and remained silent.
Inclined to mediate arguments.

An attempt was made in constructing these statements to make them equivalent with regard to generality and with regard to positive or negative connotation. In a sort which contains both positively loaded statements (e.g., "Actively cooperates in problem-solving") and negatively loaded statements (e.g., "Behaves in a destructive manner") the former are likely

to be sorted as "most like me" while the latter are likely to be sorted as "least like me" by a large proportion of the subjects. Similarly, a sort which contains some items which are very generally stated and others which are much more specific in character is likely to produce descriptions which are more influenced by some quality inherent in the items than some quality inherent in the person throwing the sort. A sort in which equivalence has not been controlled is likely to produce stereotyped descriptions which do not discriminate between subjects. A further basic requirement for a population of items is that each statement accurately represents the category it is intended to represent. In order to establish this for these statements, David Rosenthal conducted a study[3] in which four judges sorted the statements into the six emotional categories. It was found that of the sixty items, the number of "misplaced" items ranged from none to eight, with a mean of 4.7. No single item was consistently misplaced.

Administration of the Sort

In producing a self-description by using a population of Q statements, the subject is asked to place the statements into a specified frequency distribution -- so many cards in one pile, so many in the next, and so on. One end of this distribution contains those statements which the subject considers most characteristic of himself, while the other end contains those statements which he considers least characteristic of himself. The frequency distribution approximates a normal curve: it is symmetrical but platykurtic. The following specification was used in this study:

	Least Characteristic								Most Characteristic		
Frequency (number of cards in pile)	1	2	4	7	10	12	10	7	4	2	1
Interval (pile number)	1	2	3	4	5	6	7	8	9	10	11

When making a sort, the subject was provided with sixty cards, each containing one of the statements of the sort; an instruction sheet; and a scoring sheet on which to record his distribution of the cards. A sample instruction sheet and scoring sheet is presented in Appendix E, Part 2.

[3] Reported in Rosenthal, David, "Perception of some personality characteristics in members of a small group." Unpublished Ph. D. Dissertation, University of Chicago.

Statistical Treatment

In this study our major concern was to identify distinguishable sub-groups within the total group -- that is, we wanted to be able to describe the group structure in terms of the pattern of similarities and differences which existed among the self-descriptions of the members. Once the sorts were obtained, the similarities among them were determined by factor analysis.

This procedure is summarized briefly, below.

1. Setting up a correlational table. The first step in factor analysis is to find the correlation of each sort with each other sort. Correlations are obtained by applying the formula

$$r_{12} = 1 - \frac{\leq d^2}{2N\delta^2}$$

(where $d = x_1 - x_2$, N = the number of items in the sort, and δ = the standard deviation of the distribution). With our data on two training groups this procedure produced a 16 x 16 correlational table for the group of sixteen members and an 18 x 18 table for the group of eighteen members. The table of correlations characteristically shows that the self-descriptions of some pairs of members have a great deal in common -- other pairs may have little or nothing in common and still others may show a negative relationship. In a 16 x 16 correlational table, high intercorrelations may consistently occur within a small group of five or six members. Another small group may have zero or negative correlations with the first group. Still a third group might be independent of the first two but show relationships among themselves along some other dimensions. Inspection alone cannot reveal these threads, since the pattern of intercorrelations can be quite complex.

2. Factor analysis. To identify these complex patterns, factor analysis is applied to the data. Factor analysis permits one to explain as much of the correlation as possible in terms of a limited number of common threads or factors. The procedure consists essentially of abstracting factors successively. One factor at a time is identified and removed; this procedure is continued until the residual coefficients are approximately zero. When this is the case, it means that substantially all of the communality represented originally in the correlations is now represented in the pattern of factors arranged in a factor matrix. The factor matrix is a table which shows factors along one axis and group members along the other. Each group members is represented by a numerical loading on each factor. The size of the loading is a measure of the extent to which the member shares in the factor.

A number of computational procedures are available. The one followed in our study is the complete centroid method, which is described in detail in Thurstone's Multiple Factor Analysis, pages 149 to 175.

3. Rotating. The factor matrix yielded by this procedure is an accurate picture of the group but is often complicated and difficult to interpret.

The rotational procedure permits a clarification of the factor pattern. The object of the rotational procedure is to achieve simplest structure -- i.e., a factor matrix in which as many members as possible have a high loading on one factor and insignificant or zero loadings on the others. Another way of saying this is that we want a factor matrix in which each of the new factors appears in its pure form (not in combination with other factors) for as many members as possible.

The rotational procedure we used in this study is a graphical one advanced by Stephenson.[4]

Interpretation

When these statistical procedures are followed, the original descriptive data (the Q-sorts) can be summarized in the form of a rotated factor matrix. Table XIII shows the rotated factor matrices for two training groups (Loadings under .25, which can be considered non-significant, have been omitted). Listed below each matrix are all the factors and combinations of factors which occur, together with the members belonging to each.

In interpreting these data two approaches (which may also be thought of as two successive steps) may be followed. The first involves predicting the general character of group interaction from the structure as represented in the factor matrix. Here, one pays attention to the distribution of the factors among the membership, the number and size of sub-groups and the relations among them. Nothing is known of the specific content of the factors. A second approach involves adding information about content to one's data about structure. Here, one determines which of the original sixty statements in the sort best represent each of the factors. Each factor can then be described in terms of a limited number of flight, dependency, etc. statements. In analyzing any given group both structure and content would be considered. We make the distinction here to suggest these as two steps in interpretation and to indicate that considerable information can be gained from examining structure independently.

In the rest of this chapter we shall present an interpretive comparison of two groups

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[4] William S. Stephenson, The Study of Behavior, University of Chicago Press, 1953.

from information about structure only, describe the procedure for identifying the content of the factors, and suggest ways in which this content might be summarized.

A Comparison of the Structures of Two Groups

Table XIII represents the sub-group structures of two training groups. From it one can tell how many unique factors or combinations of factors occur in each group and the number of members belonging to each sub-group. From this information alone, it is possible to say certain things about the characteristics of the two groups and the differences between them. For example, in group IV, fourteen of the sixteen members share to some degree in Factor X, while in group I the members are more equally distributed among the three factors. This suggests that in Group IV, the self-perceptions of the members have something in common. This communality, even though it may not be shared explicitly or consciously, can be presumed to provide a common core of expectations and wishes which facilitate communication and common action in the group. Such communality does not exist in group I, instead, the group consists of three four-member sub-groups (A, B, and C), with two smaller (three-member) sub-groups which represent two combinations of the first three factors. The major sub-groups A, B, and C have nothing in common. There is, in fact, some indication that clusters A and B may be opposed to each other. (The combination AB does not occur, suggesting that the characteristics making up these two clusters are incompatible.) What we have in Group I, then, is a structure in which two important sub-groups are apparently opposed, while a third shows independent characteristics. Only six members (Clusters AC and BC), a minority of the group, show bridging potentialities.

While there is a common core in Group IV, differences also exist. Clusters XY, YZ and X-Z accept the "core" in some measure, but each possesses additional characteristics in the form of other factor components. Clusters XZ and X-Z are opposed in some way--they represent opposite poles on factor Z. However, unlike Group I, the shared factor (X) presumably can provide a basis for some common action. Diversity plus a core in Group IV suggests the presence of usable, resolvable variety. Diversity with no communality in Group I, suggests variety which cannot be resolved but which remains in essential isolation or opposition.

One further difference exists between the two groups. In group I no single member stands alone in a cluster--every member in the group shares some communality with someone, even though there is not a common core for the whole group. In Group IV, two members stand alone, and one member (No. 2 in cluster -Y) shows absolutely no communality with any other

TABLE XIII

THE FACTOR PATTERNS OF TWO TRAINING GROUPS

GROUP I Factor Loadings				GROUP IV Factor Loadings			
Member Number	Factor A	Factor B	Factor C	Member Number	Factor X	Factor Y	Factor Z
1	.39		.60	1	.32	.48	
2	.54		.46	2		-.55	
3		.45		3	.59		
4			.34	5	-.24		.53
5			.80	6	.54		.55
6		.72		7	.31		.54
7		.63	.44	8	.42	.59	
8	.64			9	.54		
9			.55	10	.72		
10		.33	.48	11	.58		.42
11	.30		.41	12	.83		-.33
12		.49	.38	13	.34		-.49
13			.58	14	.63	.65	
14		.58		15	.87		
15	.53			16	.69		
16		.44		17	.52		
17	.40						
18	.50						

Factor	Member Cluster	Factor	Member Cluster
A	8, 15, 17, 18	X	3, 9, 10, 15, 16, 17
B	3, 6, 14, 16	XY	1, 8, 14
C	4, 5, 9, 13	XZ	6, 7, 11
AC	1, 2, 11	X -Z	12, 13
BC	7, 10, 12	-Y	2
		-XZ	5

member. This member, then, can be thought of as a psychological isolate -- one who has no basis for sharing in an otherwise cohesive group.

Procedure for Identifying the Content of the Factors

Further interpretation regarding the characteristics of the two groups requires information about the content of each factor. That is, while at this point we know something about the number of factors or factor combinations in the group and the distribution of members among them, we have no information at all about the actual content of the factors -- what they represent in terms of fight, flight, dependency, counter-dependency, pairing and counter-pairing.

Each factor can be described by a unique distribution of the sixty items of the Q sort, from "least characteristic" to "most characteristic." Such a distribution or "array," exists for each factor. The identification of the array for the factor is the first step in interpreting the factor. Once this is known, it is possible to identify the statements most characteristic and least characteristic of the factor. These statements, at the extreme ends of the distribution, are most influential in contributing to the factor its unique meaning.

When a factor occurs in its pure form for several members, the identification of the array for the factor is a straightforward matter. For example, in the eighteen member group described above, Factor A occurs in its pure form for four members -- i.e., members 8, 15, 17 and 18 show a significant loading for Factor A and non-significant loadings for all other factors. An array for Factor A can be identified by combining the individual sorts of these four members. In combining sorts, it is necessary to take into account the fact that the sorts of some members are more representative of the factor than the sorts of others, since some members exhibit a higher loading for the factor than others.

The specific procedure is as follows: A weighting is determined for each individual sort by applying the formula $w = \frac{\text{factor loading}}{1 - \text{factor loading}^2}$. The individual arrays are then combined into a single array which will represent the factor by obtaining an average weighted ranking for each of the sixty items. The factor can then be represented by the items which occur on the "most characteristic" and "least characteristic" ends of the array.

When a factor occurs in its pure form for one or no members, another procedure is required. To illustrate, Factor Y in Group IV occurs (with a negative loading), for member 2 only. This factor is identified by comparing the sort for member 2 (reversed, because the loading is negative) with sorts for members 1, 8 and 14 (who have significant positive loadings on both factors X and Y). Those statements with a ranking of 8 or above (highly characteristic) which were common to sorts 2, 1, 8 and 14, but which were not among the "most

characteristic" statements for Factor X would be identified and considered representative of the "most characteristic" end of the array for Factor Y. Similarly, those statements with a ranking of 4 or below which were common to sorts 2, 1, 8 and 14 but which did not occur among the "least characteristic" statements for Factor X, would be considered representative of the "least characteristic" end of the distribution for Factor Y.

Summarizing or Interpreting the Content of the Factors

In interpreting a factor, we assume that the "significant" items occur at the two ends of the array. That is, ordinarily in characterizing a factor one would pay most attention to the eight or ten items found to be "most characteristic" of the factor and the eight or ten which are "least characteristic."

Summarizing the content quantitatively.--Each statement in the sort represents a specific emotional modality. One way to define a factor is to see how many times each modality occurs among the "most characteristic" or "least characteristic" groups of items. Thus, a factor in which all the "most like" items are either Fight or Counter-dependence can immediately be perceived as being different from one in which all the "most like" items are either Pairing or Fight, and so on.

Interpreting the content.--More detailed or subtle interpretation of the meaning of an individual factor requires examination of the specific content of the items. Pairing and Fight occurring together, for example, might indicate a general tendency to express affect (both positive and negative) freely and directly, but on the other hand this same combination might indicate a tendency to get close to people (P) in order to attack them (F). It is possible to choose between alternative hypotheses such as these only by looking at the specific content of the items in relation to each other.

Chapter XI, which follows, presents a detailed case analysis of Group I. Both structure and content are considered, and the specific steps are presented which are involved in proceeding from the rotated factor matrix to an interpretive summary of the character of the total group.

CHAPTER XI

SUB-GROUP DYNAMICS WITHIN TOTAL GROUP STRUCTURE: A CASE STUDY[1]

The methods developed in the preceding chapter are based on several hypotheses: (1) that the structure of a group can be seen as built from sub-groups; (2) that the basis of association within a sub-group is communality of purpose among its members, and that this can be discovered through factor analysis of self-perceptual data from all members; (3) that members of the sub-group will tend to act together to achieve their common purposes; and (4) that the dynamics of the total group can then be revealed as processes of cooperation and competition among the various sub-groups.

If these hypotheses can be demonstrated, then the way is open to predict the "dynamics" of a group from questionnaire data obtained from each member.

In this chapter, we shall present interpretation of the need, emotional dynamics, behavioral patterns, and conditions for effective participation of each "cluster" or factored sub-group in Group I. (Introduced in the preceding chapter.) These interpretations will be based on the behaviors and emotionalities identified as representing the various factors. We shall then predict the nature of the interactions among sub-groups, and close with some evidence as to the validity of the interpretations.

Specifically, our procedure in developing this case study will be as follows:

1. Present the factor matrix.[2] This presents the basic data with which we begin.
2. Identify the content for each factor cluster. That is, determine, for each sub-group or cluster, the specific items from the original population of descriptive statements which are most and least characteristic of the cluster.
3. Compute the modality score pattern for each factor cluster and identify those modalities which are high, medium and low for the cluster.
4. Analyze each cluster in turn, taking into account the score pattern plus the specific content, and summarizing in terms of need, emotional dynamics, behavioral patterns, and conditions for effective participation.
5. Analyze the total group in terms of the probable relations among the clusters.

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[1]This case study was prepared by William F. Hill.

[2]The procedure for determining the factor matrix is described in the preceding chapter.

The Factor Matrix

The factor matrix for Group I is presented in Table XIII of the preceding chapter. For o our purposes here, the information contained in the factor matrix can be summarized as follows:

TABLE XIV

SUMMARY OF THE SUB-GROUP MEMBERSHIP OF GROUP I

Factor	Member Cluster
A	8, 15, 17, 18
B	3, 6, 14, 16
C	4, 5, 9, 13
AC	1, 2, 11
BC	7, 10, 12

It is apparent from this summary that this eighteen member group consists of three four-member clusters (A, B and C) which represent three unique emotional patterns. In addition, two clusters of three members each (AC and BC) represent emotional patterns which combine certain aspects of the first three. (For example, cluster AC represents certain aspects of Cluster A together with certain aspects of Cluster C.)

Identification of the Content for Each Factor Cluster

Each factor cluster can be identified in terms of a limited number of descriptive statements (out of the total of sixty) which are most characteristic and least characteristic of the cluster as a whole. These statements are considered most significant in defining the cluster and are identified by combining the individual descriptions of all the members belonging to the cluster. The specific procedure is described in Appendix F, Part 1. The most and least like items for the five clusters in Group I are presented in Tables XX, XXI, XXII, XXIII and XXIV.

Computation of the Modality Score Pattern for Each Factor Cluster

This includes identification of those modalities which are high, medium and low for the cluster.

Deriving Score Values

Since each item is keyed to a particular modality, it is possible to estimate the extent to which each modality is represented in each factor. For example, Pairing may appear once

among the "most like" items of a cluster. Flight may appear three times, and so on. Moreover, each item has a score value which represents the rank of the item in the array for the cluster.

If one assumes that the score value of the item is also an index to the potency of the emotionality, then it is possible to add together score values for all the items keyed to F, to P, to D, etc., and represent these sums as the "strength" of the various emotionalities in the Factor. To illustrate, the score value for acceptance of Counterdependence in Cluster A of Group I is 25. This value is the sum of all the individual scores for the counter-dependent items which occur among the "most characteristic" items for Cluster A. These individual score values are listed in the left hand column of Table XX. The acceptance score for Counter-pairing is 17, and so on.

For Group I, score values were found to range from o to 46. This range has been divided into three segments which represent high, medium and low acceptance or rejection of the modality. Conventions for interpreting score values of various magnitudes are presented in Appendix F, Part 2.

Score Values for the Five Clusters of Group I

The score values for the five clusters of Group I are presented in Tablex XV through XIX, below.

TABLE XV

SCORE VALUES FOR CLUSTER A

	F	Fl	P	CP	D	CD
Most Like	-	-	-	17	24	25
Least Like	42	14	22	-	-	-

No modality is strongly accepted. There is medium acceptance of D and CD, and low acceptance of CP. F is strongly rejected. There is medium rejection of P and low rejection of Flight.

TABLE XVI

SCORE VALUES FOR CLUSTER B

	F	F1	P	CP	D	CD
Most Like	26	16	24	9	-	8
Least Like	7	14	14	17	7	9

There is medium acceptance of F and P and low acceptance of F1, CP and CD. All modalities are slightly rejected.

TABLE XVII

SCORE VALUES FOR CLUSTER C

	F	F1	P	CP	D	CD
Most Like	-	45	8	-	17	9
Least Like	7	8	-	-	-	46

Flight is strongly accepted. There is low acceptance of D and CD. CD is strongly rejected. There is also slight rejection of F and F1.

TABLE XVIII

SCORE VALUES FOR CLUSTER AC

	F	F1	P	CP	D	CD
Most Like	-	9	8	20	24	17
Least Like	38	9	8	-	-	15

There is medium acceptance of dependency and low acceptance of F1, P, CP and CD. There is strong rejection of F and slight rejection of F1, P and CD.

TABLE XIX

SCORE VALUES FOR CLUSTER BC

	F	F1	P	CP	D	CD
Most Like	-	33	16	26	16	-
Least Like	7	9	23	8	7	15

There is high acceptance of Fl, medium acceptance of CP and low acceptance of P and D. There is medium rejection of P and slight rejection of all other modalities.

Analysis of Each Cluster

Having identified the content for each of the clusters and computed the score values of each modality for each cluster, we can now analyze and integrate this information. The process of interpretation requires forming and then testing hypotheses about the needs of the cluster.

This requires "qualitative" analysis of the content of the several characteristic items. A single item may suggest a hypotheses regarding the cluster but it is the combination of items supporting and elaborating the hypothesis that provides confidence in such a hypothesis. Usually a constellation of items emerges which forms a pattern or gestalt. The pattern is associated with some pervasive need-expression or with an area of conflict. When the gestalt or configuration is revealed the items are readily seen in their relationship to the need or conflict.

The formulation of the hypotheses is a two-step operation. The first step, (1), is to examine all the items keyed for each modality, and attempt to describe the cluster's areas of acceptance and rejection of that modality. The second step, (2), is to ferret out a more basic interpretative picture of need which "explains" why the patterns in each modality area have their particular flavor. This step, then, views the specific operations with each modality as instrumental to a more underlying need.

The fruitfulness of the interpretation in the qualitative analysis depends on the psychological sophistication of the investigator and his insight into the meaning of the valency combinations. In an effort to make the source of the interpretation more explicit and public all interpretative statements in the analyses which follow are documented by reference to the items on which they are based.

In this section, each cluster will be analyzed in turn. The procedure followed in every case involves four steps:

1. Present the content: the "most like" and "least like" items for the clusters.
2. Present, in parallel columns, the information we can gain from the score pattern and the information we can gain from content.
3. Identify some hypotheses about the needs of the cluster, in terms of both preferences and dynamic tendencies.
4. Summarize the interpretation in terms of need, emotional dynamics, behavior pattern and group conditions required for adequate need-meeting.

TABLE XX

THE "MOST LIKE" AND "LEAST LIKE" ITEMS FOR CLUSTER A

Score Value	Keyed Mod.	Item No.	Most Like, Content
9	CD	36	Inclined to assume a directive role in th group
)	CP	28	Oriented toward the group as a whole rather than toward particular members
8	CD	30	Tended to maintain himself in a focal position during discussion
8	D	39	Expected the leaders to take major responsibility for planning group activity
8	CD	48	Felt competitive toward individuals who attempted to dominate the group
8	CP	10	Detached in manner
8	D	3	Inclined to follow the suggestions of the leader
8	D	27	Preferred to proceed along established lines
			Least Like, Content
8	P	1	Liked to keep group discussion on a personal level
7	Fl	8	Reluctant to come to meetings
7	P	29	Prolonged or intensified arguments
7	P	37	Inclined to bring intimate material to the group
7	P	56	Tended to start arguments
7	P	33	Wanted to be a member of a clique
7	P	17	Tended to sidetrack the group from its goals
7	P	35	Subtle in attacking others
7	P	41	Tended to express annoyance toward other members of the group
7	P	47	Tended to become sarcastic when annoyed
7	Fl	55	Didn't like to express negative or critical opinions

Total Scores

Modality	Ft.	Fl.	P	CP	D	CD
Most Like	0	0	0	17	24	25
Least Like	42	14	22	0	0	0

Information Concerning Each Modality Derived from Score Pattern and Content for Cluster A

Score Pattern	Content
High Scores	
Strong acceptance -- None Strong rejection -- Fight (no acceptance)	
Fight -- Cluster members will become anxious when other group members exhibit fight behavior. With such strong rejection the A's will attempt to change the group into a more acceptable modality. Rejections of fight will characterize the cluster.	Fight -- Strong denial of personal behavior that initiates or prolongs arguments such as attaking members and making negative or sarcastic remarks (39, 56, 35, 41, 47, 53)
Medium Scores	
Medium acceptance -- Dependency (no rejection) Counter Dependency (no rejection) Medium rejection -- Pairing (no acceptance)	
Dependency and Counter-dependency -- The cluster members can sustain and may move the group into these modalities, although there is not a strong valency for them.	Dependency -- Accept leaders for the purpose of the structure they can provide (3, 39, 27) Counter-dependency -- A definite desire to be central and directive (36, 30). Feelings of competitiveness towards those who try to dominate (48).
Pairing -- A's will tolerate Pairing but will initiate change to a preferred modality if Pairing becomes pronounced or prolonged.	Pairing -- Denial of entering into close inter-personal relationships or of being members of cliques (1, 37, 31).
Low Scores	
No Score -- Flight Low Acceptance -- Counter-Pairing (no rejection)	
Counter-Pairing -- The cluster accepts this modality but has no particular preference for it.	Counter-Pairing.-- Denial of Pairing behavior and preference for a group-centered approach (28). Also the adoption of a detached manner.
Flight -- No concern expressed.	Flight -- No concern expressed.

Hypotheses about Needs of Cluster A

Preferences

1. Cluster members strongly reject Fight and, to a lesser extent, Pairing; there is no acceptance of either.

2. The low acceptance of Counter-Pairing is related to the rejection of Pairing and is a preference for the former over the latter.

3. Dependency and Counter-Dependency are the preferred modalities -- not strongly preferred -- and there is no accompanying rejection. These two modalities are polars; the acceptance of both suggests that there is either conflict, confusion, or selective acceptance and rejection of aspects of the modality.

4. For all of the modalities there is a clear-cut acceptance or rejection. This suggests some decisiveness in the cluster members' feelings. The absence of any strongly preferred modality suggests that these members can move within their preferences and shift from one to another readily if need be.

Dynamic Tendencies

1. A very strong denial of aggressive personal behavior and to a lesser extent a rejection of any desire for intimacy in the group.

2. There is a preference for a group-centered orientation. This suggests that the above mentioned Fight and Pairing behaviors are feared as schismatic in their effects on the group. The group-centered approach will prevent schism and provide a measure of personal control.

3. Counter-Dependency is manifested in a definite desire to be influential and central in the group. The competitiveness toward those who try to be dominant may lead to conflict with the cluster. There is dependence on or acceptance of structure; and the leader is valued as being able to provide this. Structure may be valued as a way of curbing undue domination and also of curbing aggression and intimacy. Structure probably means group-centered structure.

Summary

Need -- To be central in the group and to take a directive role.

Emotional Dynamics -- The rejection of Fight and Pairing is, in part at least, a result of anxiety over their own impulses toward aggression and intimacy; these may be felt to be undesirable and possibly destructive to the group.

Behavioral Pattern -- We would expect the A cluster to support group-building or group-centered activity and would thus tend to minimize the threats of Pairing and Fight. The cluster members indicate a desire to be central and directive in the group but none can obtain the support of the others because they also feel competitive toward anyone who tries to dominate. Their Dependency is an acceptance of a leader who can provide structure within which they can operate, provided the structure is group-centered minimizing Pairing and Fight and permitting them safely to work out their drives to be central.

Group Situation for Need Meeting -- A somewhat impersonal group-centered structure in which intimate relationships and inter-personal hostilities will remain at a minimum and in which members can be central and influential.

TABLE XXI

THE "MOST LIKE" AND "LEAST LIKE" ITEMS FOR CLUSTER B

Score Value	Keyed Mod.	Item No.	Most Like, Content
9	CP	28	Oriented toward the group as a whole rather than toward particular members
9	F	11	Ready to take sides in an argument
9	F	39	Eager to respond to attack by counterattack
8	F1	50	Tried not to show his true feelings
8	P	43	Inclined to extend group friendships outside the group
8	CD	48	Felt competitive toward individuals who attempted to dominate the group
8	F1	32	Inclined to mediate arguments
8	P	19	Wanted to know some of the other members of the group intimately
8	P	13	Enjoyed personal interchanges with one or two particular members
8	F	23	Impulsive in expressing negative feelings

Least Like, Content

9	CP	40	Unresponsive to gesture of friendship
9	CD	12	Wanted to assume active leadership himself
8	CP	10	Disinclined to form special friendships
7	F1	44	Tried to avoid being drawn into an argument
7	F	17	Tended to sidetrack the group from its goals
7	F1	8	Reluctant to come to meetings
7	P	1	Liked to keep group discussion on a personal level
7	P	52	Liked to make side comments to one other member
7	D	54	Inclined to direct his comments to the leader rather than to group members

Total Scores

Modality	Ft.	F1	P	CP	D	CD
Most Like	26	16	24	9	0	8
Least Like	7	14	14	17	7	8

Information Concerning Each Modality Derived from Score Pattern and Content for Cluster B

Score Pattern	Content
High Scores	
Strong acceptance -- None Strong rejection -- None	
Medium Scores	
Medium acceptance -- Fight (no rejection) Pairing (low rejection) Medium rejection -- None	
Fight -- B's will sustain Fight and may move the group into it. Valency for fight is low enough that members may postpone fight behavior and operate in other modalities.	Fight -- An acceptance of aggression and a willingness or desire to argue and express negative feelings (23, 59, 48, 44)
Pairing -- Cluster members will sustain Pairing and may move the group into it. There is a little rejection of pairing or some aspects of it, but essentially it is acceptable.	Pairing -- An acceptance of and a desire for intimate personal relationships in the group (43, 19, 13, 40, 10). There is some rejection of this (1, 52 and, probably, item 17).
Low Scores	
Low acceptance -- Flight (no rejection) Counter-dependency (low rejection) Low rejection -- Counter-Pairing (low acceptance) No Score -- Dependency	
Flight -- The cluster accepts flight but has no strong valency for it.	Flight -- Indication of concern over own aggressive impulses (50) and some desire to mediate arguments (32)
Counter-Dependency -- B's accept and somewhat reject Counter-Dependency or some aspects of it.	Counter-Dependency -- Denial of desire to be leader (12). Competitive feeling toward those who try to dominate (48).
Counter-Pairing -- Cluster members accept and reject this modality or some aspects of it. There is indication that the cluster leans more toward rejection, but this is not very strong.	Counter-Pairing.--Some acceptance of the group-centered orientation (28). Item 17 is interpreted in this context as expressing a desire to be a good group member, i.e., group-centered.
Dependency -- No concern expressed.	Dependency -- No concern expressed

Hypotheses about Needs of Cluster B

1. The preferred modalities are Fight and Pairing. These are not marked by strong valencies, however.	1. The cluster has strong egocentric needs for "clash" and intimacy in the group.
2. The rejection of Pairing may be seen as opposed to the acceptance of Pairing and to the rejection of Counter-pairing since these modalities are polar in this test. The strongest acceptance is for Pairing but there is, as well, a weaker acceptance of its polarity, Counter-pairing. There may be conflict, confusion, or selective acceptance and rejection; or it could be that Counter-pairing is used as a control or modification over the stronger Pairing preference.	
3. The acceptance of Flight may be related to its polarity Fight and may be a control of Fight. Some aspects of Flight may however, be preferred.	3. There is some indication of concern over aggressive impulses and some desire to mediate arguments. Flight and Counter-Pairing are seen as controls or modifying factors of the definite Fight and Pairing needs.
4. There is no concern over Dependency; there is some slight acceptance and rejection of Counter-Dependency	4. Cluster members deny having leadership aspirations. They feel competitive toward persons who try to dominate. The leader aspirants would be seen as a threat to the gratification of their ego-centric needs.
5. There is no rejection -- either strong or medium -- of any modality. The cluster should be able to operate in all of them.	

Summary

Need -- to gratify their ego-centric needs for intimate relationships and direct aggressive outlets.

Emotional Dynamics -- The relatively strong desire for intimacy and "clash" is accompanied by (some) anxiety. It appears that the cluster members sense that all-out indulgence in these modalities would not be in their own best interests and that some control and consideration for the rest of the group is necessary if they are to be tolerated in the group. Thus, there is some concern or anxiety over the appropriateness of their desires. They do not evidence any strong status needs.

Behavioral Pattern -- Basically, the B's will operate in the Fight and Pairing modalities. In a somewhat unpredictable manner they may at times surrender to group needs and inhibit their Pairing and Fight. Ordinarily cluster members will enter into Fight or Pairing initiated by others. However, on occasion in order to protect themselves from being rejected by other group members, these Fight prone persons may ignore pairing or Fight invitations until some more appropriate time. They will oppose anyone who is perceived as trying to take the group over or who might curtail the possibilities for expression of Fight and Pairing.

Group Conditions for Need-Meeting -- The type of group will best meet their needs when they can indulge in Pairing and Fight to a maximum; at such a time other group members are willing to tolerate the B's individualistic styles.

TABLE XXII

THE "MOST LIKE" AND "LEAST LIKE ITEMS FOR CLUSTER C

Score Value	Keyed Mod.	Item No.	Most Like, Content
9	Fl	38	Uneasy during disharmony
9	D	15	Inclined to go along with the dominant mood of the group
9	Fl	53	Didn't like to express negative or critical opinions
9	Fl	20	Preferred to remain neutral when several members of the group were arguing
9	CD	24	Tended to look to other members to back up his position
9	Fl	50	Tried not to show his true feelings
9	Fl	2	Uncomfortable when negative feelings were expressed in the group
8	D	3	Inclined to follow the suggestions of the leader
8	P	13	Enjoyed personal interchanges with one or two particular members

			Least Like, Content
9	CD	30	Tended to maintain himself in a focal position during discussions
8	CD	36	Inclined to assume a directive role in the group
8	CD	12	Wanted to assume active leadership himself
8	Fl	8	Reluctant to come to meetings
7	F	25	Impulsive in expressing negative feelings
7	CD	18	Enjoyed counterposing himself to the leader
7	CD	48	Felt competitive toward individuals who attempted to dominate the group
7	CD	42	Tried to lead others against the leader

Total Scores

Modality	Ft.	Fl.	P	CP	D	CD
Most Like	0	45	8	0	17	9
Least Like	7	8	0	0	0	46

Information Concerning Each Modality Derived from Score Pattern and Content for Cluster C

Score Pattern	Content
High Scores	
Strong acceptance -- Flight (with no rejection)	
Strong rejection -- Counter-Dependency (with low acceptance)	
Flight -- The cluster's behavior will be characterized by a strong valency for Flight. They can be expected to initiate, support, and sustain it.	**Flight** -- Feelings of uneasiness when there is disharmony in the group (38, 2). In the face of arguments in the group they remain neutral (20) and there is inhibition of personal feelings and the expression of critical opinions (53, 50, 23).
Counter-Dependency -- Cluster members may be expected to become anxious when other group members are challenging or competing with the designated leader. The C's will probably attempt to change to another modality whenever Counter-Dependency is exhibited. Rejection of Counter-Dependency will characterize the cluster.	**Counter-Dependency** -- Complete rejection of any aspect of power-oriented behavior. Deny having competitive feelings towards the leader (18, 42) or any desire to be central in the group (30, 36, 12). They even deny feeling competitive towards those who try to dominate the group (48).
Medium Scores	
Medium acceptance -- None Medium rejection -- None	
Low Scores	
Low acceptance -- Pairing (with no rejection) --Dependency (with no rejection) Low rejection -- None No Score -- Fight -- Counter-Pairing	
Pairing -- Accepts the modality (or some aspect of it) but no strong valency for it.	**Pairing** -- Some acceptance of friendly pairing relationships (13)
Dependency -- Accepts the modality or some aspect of it but no strong valency for it.	**Dependency** -- A willingness to go along with either the leader or the group (15, 3). Item (24) is seen as dependency in this context - an indication of feelings of personal inadequacy and need for the backing of others.
Fight -- No concern expressed.	**Fight** -- Denial of being impulsive in expressing negative feelings (23)
Counter-Pairing -- No concern expressed.	**Counter-Pairing** -- No concern expressed.

Hypotheses about Needs of Cluster C

1. The strong acceptance of Flight indicates a valency sufficiently strong to characterize the behavior of the cluster members.	1. The cluster is characterized by the strong acceptance of Flight. The Flight may be for the purpose of escape from group disharmony, inhibition of feelings, or control over negative critical behavior.
2. The strong rejection of Counter-Dependency suggests that cluster members have little toleration for such behavior and will be made anxious by it. They will have a need to change the group from this modality. The strong acceptance of Flight suggests that cluster members use Flight as a way of escaping from the anxiety caused by Counter-Dependency.	2. Members are traumatized by any power struggle in the group and divorce themselves completely from any aspect of it.
3. There is some acceptance of Dependency.	3. The acceptance of Dependency is an acceptance of anything or anyone (leader included) which relieves the cluster members of responsibility for taking action.
4. The absence of medium scores suggests that the cluster is mainly concerned over Counter-Dependency and Flight and that members are unconcerned with the other modalities and will be able to operate in them.	4. The passivity in (3) above is also to be found in the Flight and Counter-Dependent items.

Summary

Need -- To avoid power struggles and dissension and to avoid taking personal responsibility for action.

Emotional Dynamics -- The cluster members have anxiety over their own aggression and their inability to operate where there is dissension and competition for leadership.

Behavioral Pattern -- The anxiety caused by Counter-Dependency in the group is handled by control of the kind of feelings and behavior which might be expected as reactions to competition and aggression. This is an over-control which produces immobility most noticeable as passivity. The passivity will take the form of non-participation, neutrality and acceptance of the prevailing pattern in the group.

Group-Conditions for Need-Meeting -- A group where competitiveness for leadership and discord would be minimal and where the cluster members would not be required to be active in directing the group's activities or decisions.

TABLE XXIII

THE "MOST LIKE" AND "LEAST LIKE" ITEMS FOR CLUSTER AC

Score Value	Keyed Mod.	Item No.	Most Like, Content
10	CP	22	Preferred discussing issues in intellectual rather than personal terms
10	CP	28	Oriented toward the group as a whole rather than toward particular members
9	F1	32	Inclined to mediate arguments
9	CD	57	Concerned with maintaining a high status in the group
8	D	21	Comfortable when the leaders were active and directive
8	CD	48	Felt competitive toward individuals who attempted to dominate the group
8	D	9	Liked to appear in a good light in relation to group leaders
8	P	43	Inclined to extend group friendships outside the group
8	D	15	Inclined to go along with the dominant mood of the group

			Least Like, Content
9	F1	8	Reluctant to come to meetings
8	F	29	Prolonged or intensified arguments
8	P	31	Wanted to be a member of a clique
8	F	17	Tended to sidetrack the group from its goals
8	F	56	Tended to start arguments
8	CD	60	Tended to express negative feelings about the leader
7	F	47	Tended to become sarcastic when annoyed
7	CD	18	Enjoyed counterposing himself to the leaders
7	F	5	Critical of other members

Total Scores

Modality	Ft	F1	P	CP	D	CD
Most Like	0	9	8	20	24	17
Least Like	38	9	8	0	0	15

Information Concerning Each Modality Derived from Score Pattern and Content for Cluster AC

Score Pattern	Content
High Scores	
Strong acceptance -- None Strong rejection -- Fight (with no acceptance)	
Fight -- Cluster members will become anxious when other group members operated in this modality. The rejection is strong enough to indicate that A's would attempt to change to a more acceptable modality. Rejection of Fight is the most noticeable characteristic of the cluster	Fight -- Denial of behavior which would promote arguments and dissension in the group (29, 56, 47, 5)
Medium Scores	
Medium acceptance -- Counter-Pairing (with no rejection) -- Dependency (with no rejection) Medium rejection -- None	
Counter-Pairing and Dependency -- Members can sustain and may move the group into these modalities. There is no strong valency for them.	Counter-Pairing -- Definite orientation to the group as a whole; this group-centered approach is characterized by an impersonal non-emotional group climate (22, 28) Dependency -- Accept a directive leader who can fulfill their status needs (9, 57)
Low Scores	
Low acceptance -- Flight (with no rejection) --Pairing (with low rejection) --Counter-Dependency (with low rejection) Low Rejection -- None	
Flight -- Accept this modality (or some aspect of it) but no strong valency for it.	Flight -- Inclined to mediate arguments (32)
Pairing -- Slight acceptance and slight rejection of the modality or some aspect of it. Essentially an area of no particular concern.	Pairing -- Rejection of clique-forming activity (31). Friendship is extended outside the group (43)
Counter-Dependency -- Some acceptance and some rejection of the modality or some aspect of it.	Counter-Dependency -- Denial of being antagonistic to the leader (60, 18). They are concerned over their status in the group (57), and see the leader as conferring status (9). Competitive toward anyone trying to dominate the group (48).

Hypotheses about Needs of Cluster AC

1. In Fight and Flight the AC's are like the A's, more or less, and not like the C's in that they have strong rejection of Fight (C's unconcerned) and unconcern for Flight (C's strong acceptance).	1. Both AC and A reject personal behavior that would promote arguments and dissension in the group. The C's show in Fight items that they have uneasiness also in such situations. Neither A nor AC show much interest in Flight: the AC's would mediate arguments perhaps, which is consistent with their Fight rejections. The C's strong valency for Flight is a control of feelings and actions which are negative or critical; it is not found in the AC's.
2. In Dependency also they are more like the A's than the C's in having medium acceptance; the C's have low acceptance. This is not however, very differentiating.	2. The AC's accept the leader since he can provide for their status needs, the A's because he can provide the desired structure, and the C's accept the leader or the group whichever provides the path of least resistance.
3. In Counter-Pairing the AC's are also more like the A's in accepting the modality; but the AC's have a greater valency than the A's. The C's are unconcerned.	3. Both the A's and the AC's espouse a group-centered approach; although the AC's emphasize more the non-emotional aspects. The C's are unconcerned.
4. In Pairing the AC's are more like the C's in being more or less unconcerned, whereas the A's have a medium rejection.	4. In Pairing, the AC's show no particular acceptance like the C's, whereas the A's have some concern over close personal relationships.
5. In Counter-Dependency the AC's are not like either A or C but have ambivalence or conflict; or they accept and reject specific aspects of the modality, whereas A's and C's are antithetical to each other. (A's have medium acceptance and the C's strong rejection.)	5. The A's are desirous of being central and directive, but the AC's merely wish to maintain status. Both are competitive toward those trying to dominate. The C's are not competitive and have no desire to be involved in status-driven activities.

Summary

Need -- To retain their status in the group and to avoid dissension.

Emotional Dynamics -- There is some anxiety aroused by dissension in the group and it seems to be anxiety over their own aggressive impulses. There may also be some concern over their status in the group, and some feelings of insecurity with respect to status perceptions.

Behavioral Pattern -- The AC's support the leader and look to him for their status needs. They support a group-centered approach which would be emotionally non-involving, as a way to handle their anxieties over aggression in the group. They are competitive to those who would dominate the group since such persons may threaten their own status and also may mobilize their own aggressive impulses.

Preferred Group for Need-Meeting -- A group which is non-emotional in its inter-personal relationships, which is group-centered, and where the leader will provide recognition of their status.

TABLE XXIV

THE "MOST LIKE" AND "LEAST LIKE" ITEMS FOR CLUSTER BC

Score Value	Keyed Mod.	Item No.	Most Like, Content
10	CP	28	Oriented toward the group as a whole rather than toward particular members
9	F1	32	Inclined to mediate arguments
8	D	9	Liked to appear in a good light in relation to group leaders
8	P	43	Inclined to extend group friendships outside the group
8	D	51	Tended to defend the leaders when they were attacked by others
8	F1	2	Uncomfortable when negative feelings were expressed in the group
8	CP	16	Disinclined to make personal comments about other members
8	F1	50	Tried not to show his true feelings
8	P	19	Wanted to know some of the other members of the group intimately
8	CP	34	Embarrassed when other members made personal comments about him
8	F1	38	Uneasy during group disharmony

Least Like, Content

9	F1	8	Reluctant to come to meetings
8	P	31	Wanted to be a member of a clique
8	CP	40	Unresponsive to gestures of friendship
8	P	1	Liked to keep group discussion on a personal level
8	CD	42	Tried to lead others against the leaders
7	F	29	Prolonged or intensified arguments
7	D	54	Inclined to direct his comments to the leader rather than to group members
7	P	7	Attached to one or two particular members
7	CD	12	Wanted to assume active leadership himself

Total Scores

Modality	Ft	F1	P	CP	D	CD
Most Like	0	33	16	26	16	0
Least Like	7	9	23	8	7	15

Information Concerning Each Modality Derived from Score Pattern and Content for Cluster BC

Score Pattern	Content
High Scores	
Strong acceptance -- Flight (with no rejection) Strong rejection -- None	
Flight -- A strong valency for this modality would be reflected in behavior which is accepting, supporting, initiating and sustaining, of Flight	Flight -- Uneasy during group disharmony (69, 2, 38) and inclined to mediate arguments (32) and to exercise control over own feelings and actions (16, 50)
Medium Scores	
Medium acceptance -- Counter-Pairing (with low rejection) Medium rejection -- Pairing (with low acceptance)	
Counter-Pairing -- They will sustain Counter-Pairing and try to move the group into it. There is some reluctance to operate in the modality or some aspect of it but essentially there is acceptance	Counter-Pairing -- Embarrassed when others make personal comments about them (34) and oriented toward the group-centered approach (28, 54) but not totally cold to others (40)
Pairing -- Could tolerate Pairing and a slight acceptance for it or some aspect of it but would tend to initiate change to a more preferred modality if Pairing became pronounced or prolonged	Pairing -- Some acceptance of intimacy (19) and (perhaps also item 43). They deny clique-forming behavior (31, 7) and wanting to keep the group discussion on a personal level (1)
Low Scores	
Low acceptance -- Dependency (with no rejection) Low rejection -- Counter-Dependency (with no acceptance) No score -- Flight	
Dependency -- Accepts the modality or some aspect of it but no strong valency for it.	Dependency -- Wanted to appear in a good light with the leaders (9) and would defend them from attack (51). But more concern for the group than the leader (54)
Counter-Dependency -- Rejects this modality or some aspect of it but could operate in it if not too intense or over too long a time	Counter-Dependency -- Deny having leadership aspirations (12) or that they would lead others against the leader (42)
Flight -- No concern expressed	Flight -- Reject the idea that they would prolong or intensify arguments (29). Their reaction to Flight is found in the Flight items.

Hypotheses about Needs of Cluster BC

1. In Fight, Flight and Dependency the BC's are like the C's and differ from the B's. They both have a strong acceptance for Flight (B's have a low acceptance) and they have no particular concern for Fight (B's have a medium acceptance and it is their most preferred modality); and they both have the same low acceptance of Dependency (B's have no particular concern. The latter is not particularly differentiating.)

1. For Fight neither the BC's nor C's indicate concern whereas the B's have insistent ego-centric needs for Fight. In Flight both BC and C clusters feel uneasy during disharmony -- the BC's showing some willingness to mediate and the C's to be neutral. Both wish to control their feelings and actions. The B's also have some concern over their own aggressive needs. However, if we look at Fight and Flight together we see that neither BC or C want "clash" and are made uneasy by it. But the B's want it, although they have some willingness to modify this. In the case of Dependency the BC's support the leader and he has a positive value for them but not a strong one. The C's go along with the leader or the group indiscriminately and the B's are unconcerned. All three have little investment in this modality.

2. The BC's are like the B's in that they accept and reject both Pairing and Counter-Pairing. The reactions to these modalities are seen as linked for both clusters. In the case of the BC's however, the Counter-Pairing is more accepted and less rejected than the Pairing whereas for the B's it was vice versa. The C's are virtually unconcerned over these modalities.

2. The BC's have some acceptance of intimacy but reject clique forming behavior and the indulgence in personal discussions. The C's have small acceptance of Pairing. The B's however have an insistent need for close personal associations, but have some awareness of possible rejection. They therefore indicate some acceptance of a group-centered approach. The C's are not concerned about this approach but the BC's find Pairing overtures upsetting and accept the Counter-Pairing group-centered approach firmly.

3. In Counter-Dependency the BC's have a low rejection (with no acceptance) which is not comparable to the strong rejection of the C's nor does it correspond to the slight acceptance and rejection of the B's.

3. The BC's, like the B's, have no leadership aspirations but the B's oppose those who would dominate the group. The C's deny that they would do this and pre-empt the leadership field completely.

Summary

Need -- To avoid disharmony in the group and to have some well controlled personal associations in the group.

Emotional Dynamics -- The desired close relationships cannot be sustained comfortably by the cluster; it has also some uneasiness when there is disharmony in the group.

Behavioral Pattern -- The BC's, like the C's, are upset by dissension but they are not so controlled or passive in their reaction -- they would mediate arguments and would defend the leader. They attribute some positive value to close relationships in the group but are not as strong in their preference as the B's and, in fact, have some distress in some Pairing situations. They have a group-centered approach to their anxiety over Fight and Pairing, and they tend to subordinate their relationships with members, the leader, and their own needs. They are protective of the leader. Their status needs, to the maintenance of the total group, are met by approbation from the leader.

Preferred Group for Need-Meeting -- A group which is cohesive and whose orientation is group centered. The leader is entrenched in his position but not stronger than the group. There is some warm but safe inter-personal relationships, and dissension is minimal.

Analysis of the Dynamics in the Group as a Whole

The interpretative prediction of the needs and behaviors of each "cluster" enables us to guess that intercluster behavior will at times appear to be cooperative, competitive, antagonistic, etc. It seems reasonable to suppose that the "productivity" (however measured) of the total group will depend on the interactions between clusters on each task or emotional situation.

We have made little analysis of the task dimensions of group operation, and so our attempt to interpret total group behavior will be organized around interaction in various types of emotional situations.

Figures 12, 13, and 14 shows the total D, CD, F, Fl, P, and OP found for each of the five clusters. These graphs recapitulate the totals shown on the bottom of Tables XX, XXI, XXII, XXIII and XXVI. What, then, are the implications for total group operation of the fact that each cluster responds differently to and has different need for each of these emotional conditions? We shall consider each modality seperately.

Counter-Dependency

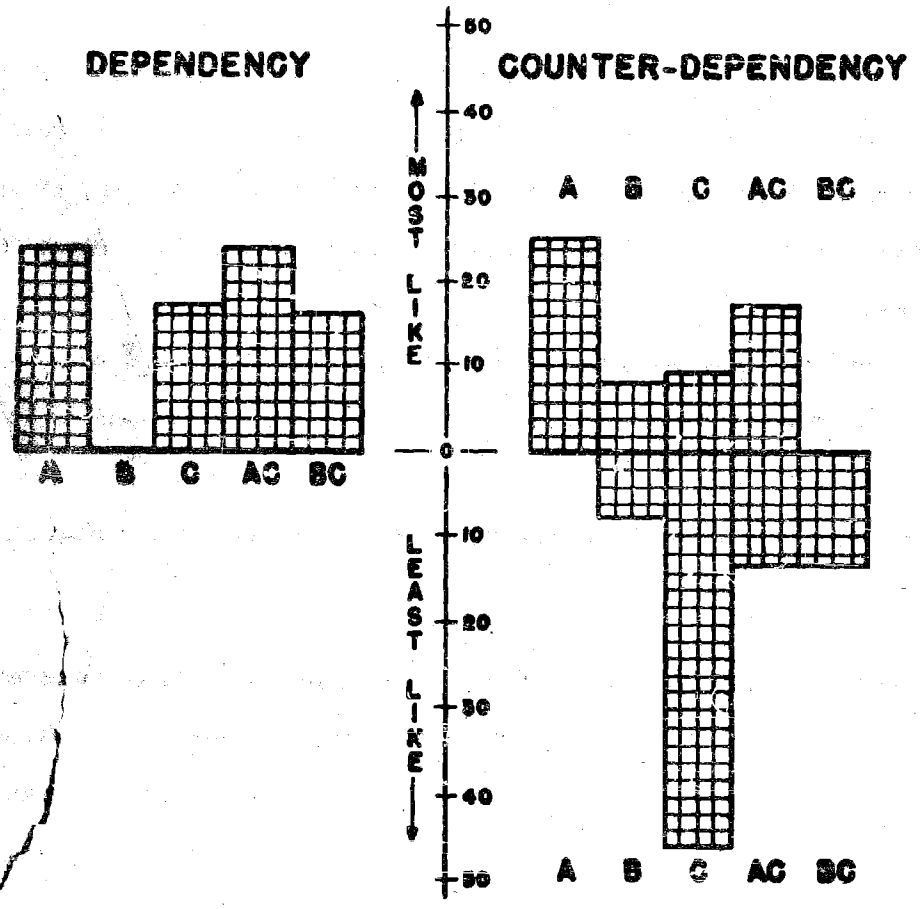
The C's show a very strong rejection of counter-dependency. They seem to be traumatized by power struggles in the group and deny possibilities for taking action in such situations. The A's two most-like statments are that they wish to be central and to be directive. They are the leader aspirants in the group. B's feel competitive toward anyone who tries to dominate the group. The A's, as individuals, also have this feeling. Thus, leadership bids from any A cluster member would likely meet with resistance from B people as well as from other members of his own cluster group. This group as a whole may be unwilling to allow any leadership to emerge from its membership.

Dependency

There is no rejection of dependency -- all clusters accept the designated leader. An inspection of the dependency items accepted by each cluster shows that each cluster accepts the designated leader for different reasons. The A's accept him because he can provide a satisfactory structure for them to operate in; the C's accept him because it is easier to do so than

FIGURE 12

RELATIVE DEPENDENCY AND
COUNTER-DEPENDENCY IN THE CLUSTERS



not to do so; and the AC's and BC's accept him because he can confer status.

Fight

In this graph we see that only the B's show a preference for fight and that the A's and AC's strongly reject it. We can assume that the B's will not receive support from other clusters. The content of the fight items for B indicate that they like dissension and argument, while the A's and AC's deny that this is part of their behavior.

Flight

The C's show a strong acceptance of flight. The content indicates that they express flight -- in the form of passivity and neutrality -- as a reaction against group disharmony. The strength of the acceptance of flight for the C cluster reflects a concern over controlling their own emotions.

Since Flight often becomes a method for dealing with Fight or disharmony in the group, the flight score for the B cluster (who accept fight) needs to be explained. This acceptance of flight is most likely a control of their aggressive impulses for the expedient reasons of maintaining membership in a group where the other members reject fight behavior.

Pairing

The B's show a preference for pairing -- a willingness to bring personal and emotional data into group discussion and to establish warm personal friendships in the group. The A's, on the other hand, show a clear-cut denial of pairing, indicating that they do not care for warm personal relationships. Their acceptance of counter-pairing indicates a preference for a climate that is impersonal, intellectual, and group centered. The AC's and BC's prefer the same kind of group climate. As in the case of fight and flight, the B's have no allies. Their slight rejection of pairing and acceptance of counter-pairing is a control of their pairing needs for expedient reasons.

Clues to Validity of Interpretations

A legitimate question at this point is, whether there is any relationship of the behavior of individuals to our descriptions of the clusters.

First, we have data on the amount of participation. From the analysis of the subgroups we would expect that the A's with their leadership aspirations would make a greater number of contributions than any other cluster, while the B's, because of their expressive needs, might come next. The C's, with their passive orientation would be expected to

FIGURE 13

RELATIVE FIGHT AND FLIGHT
IN THE CLUSTERS

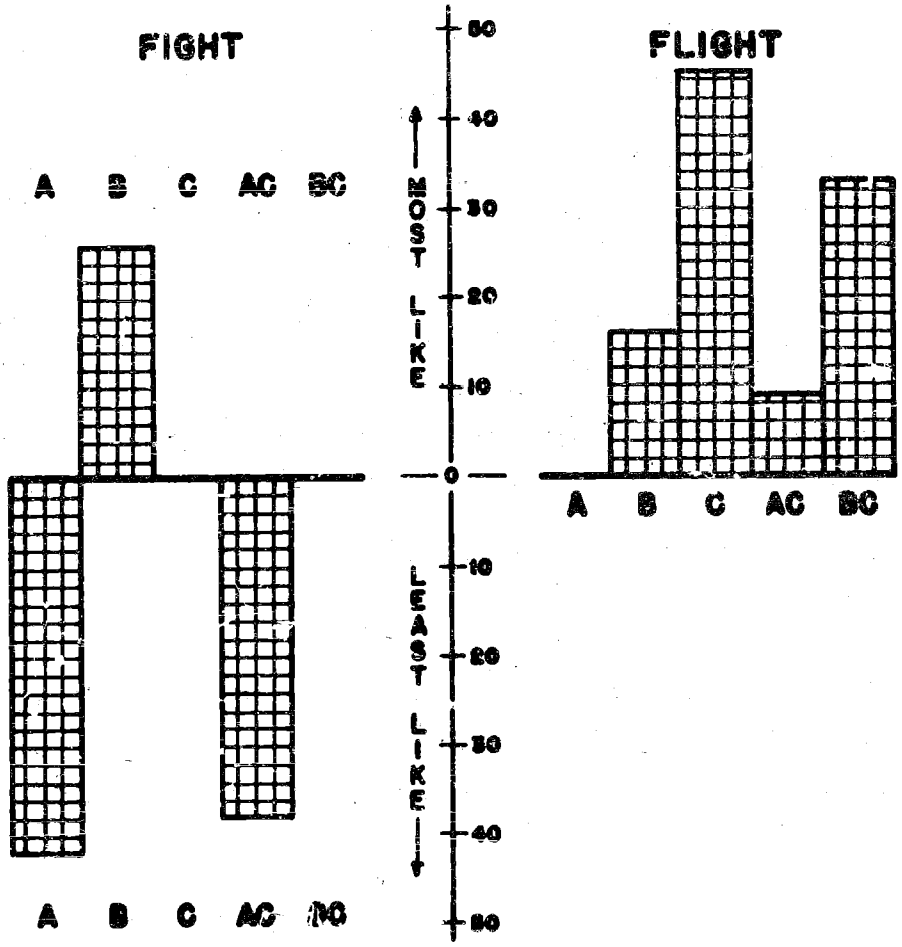
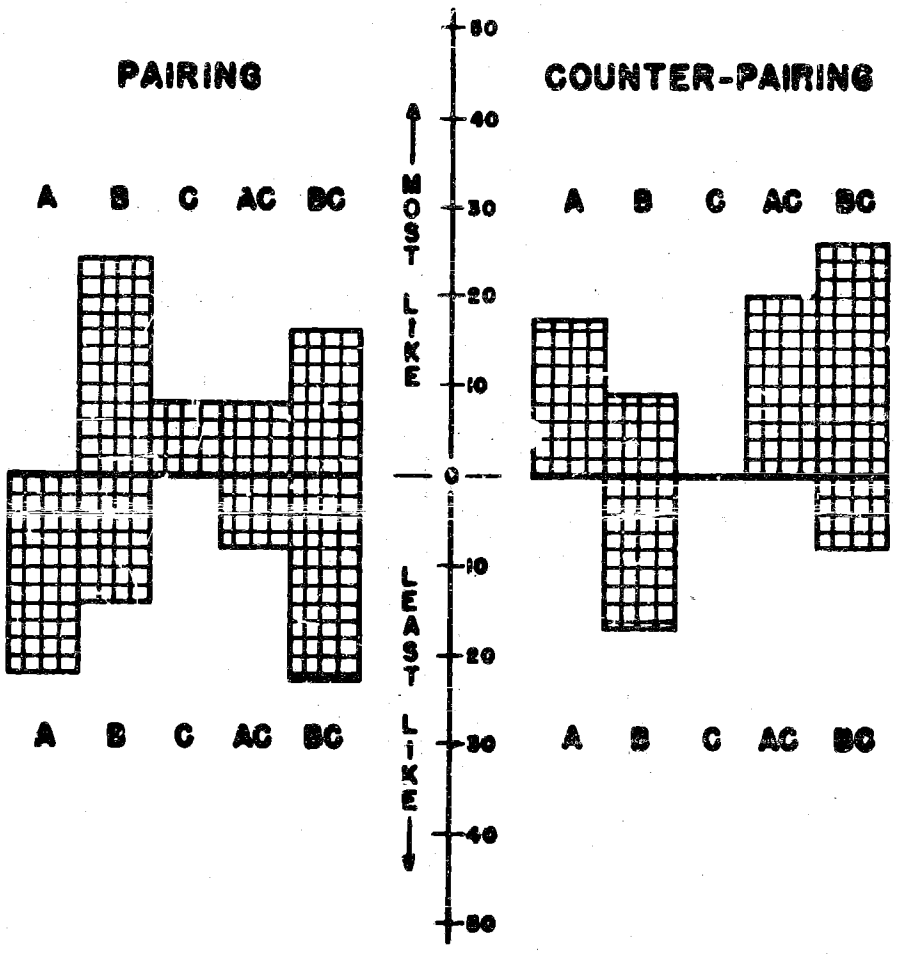


FIGURE 14

RELATIVE PAIRING AND
COUNTER-PAIRING IN THE CLUSTERS



participate least, and the BC's and AC's ought to fall somewhere in between. This rank order for number of contributions per sub-group prevails. Out of a total of fourteen meetings, 2,810 statements were rated for this group:

A's	contributed	32 per cent
B's	"	25 per cent
BC's	"	17 per cent
AC's	"	16 per cent
C's	"	10 per cent

The difference between sub-groups is significant at the .01 level for all except the BC's and AC's.

Second, we rated meetings for frequency of leadership bids -- behavior which attempts to change the topic or direction of the group. In a spot check on two meetings, the A's were by far the more active in such leadership behavior. They made over 45 per cent of such contributions. No other sub-groups produced more than 17 per cent of such statements.

Third, three sociometric type questions were given daily in the group. The results have been analyzed for one of these:

"Which member was the best spokesman from your point of view?" The findings, based on responses for fourteen days, show that all clusters except the C cluster choose within their own clusters significantly better than chance (.01 level). The fact that the C's are non-participants may mitigate against within-cluster choices regarding spokesman in their case.

These findings are rather global and present investigation is now concerned with an analysis of units and the interaction of the sub-groups in specific situations. We are trying to identify and classify natural units and see if there are characteristic ways in which sub-group members behave in certain kinds of units and if these characteristic behaviors are consistent with the sub-group analysis.

We expect to show that this valency sub-group approach will relate sociometric sub-group structure and will enable us to make behavioral predictions. It will do this through providing understanding of the motivational bases of sub-grouping.

By dealing with group phenomena through the sub-group structures we hope to simplify understanding of the complexities of group life without distorting or destroying the subtle character of the dynamics of groups.

APPENDIX A

APPENDIX TO CHAPTER III

A Sample Sequence Showing the Independent Ratings of Two Observers and the "Official" Record of the Same Sequence

Table XXV, below, shows a fifteen minute sample of group behavior which has been rated independently by two observers, who then reviewed their judgments and produced an official record of the sequence.

TABLE XXV

INDEPENDENT RATINGS OF TWO OBSERVERS AND OFFICIAL RECORD, FOR A FIFTEEN MINUTE SEQUENCE

Minute	Participant		Work Rating		Emotionality Rating		Official Record		
	Obs. 1	Obs. 2	Obs. 1	Obs. 2	Obs. 1	Obs. 2	Part.	W	E
12	11	11	3	3	0	0	11	3	0
13	1 7	1 7	2 2	3 3	(f)[a] fl	(f) fl	1 7	2 2	(f) fl
14	17	17	3	4	0	0	17	4	0
15	17	17	4	4	0	0	17	4	0
16	1 1	1 1	2 1	1 3	F F,fl	F d	1 1	2 2	F fl, d
17	1	1	1	1	(f)	0	1	1	(f)
18	6 11 1 5	6 11 1 5	3 2 1 2	3 3 1 2	f 0 0 F	f 0 0 F	6 11 1 5	3 3 1 2	f 0 0 F
19	9 1 1	9 1 1	2 1 1	2 1 1	0 f F	0 f, d f, d	9 1 1	2 1 1	0 f f, d
20	14 5	14 5	2 3	2 1	0 F	0 F	14 5	2 2	0 F
21	14 8 1 5 1 11 1	- - 1 5 - - 1	2 1 1 1 1 1 1	- - 1 1 - - 1	0 0 F F F f F	- - f F - - F	14 8 1 5 1 11 1	2 1 1 1 1 1 1	0 0 f F F f F
22	1	1	1	1	F, f	F	1	1	F

Table XXV (Continued)

INDEPENDENT RATINGS OF TWO OBSERVERS AND OFFICIAL RECORD FOR A FIFTEEN MINUTE SEQUENCE

Minute	Participant		Work Rating		Emotionality Rating		Official Record		
	Obs. 1	Obs. 2	Obs. 1	Obs. 2	Obs. 1	Obs. 2	Part.	W	E
23	9	9	1	2	F	F	9	1	F
	9	9	2	2	0	0	9	2	0
24	14	14	2	3	0	0	14	2	0
	5	5	2	1	0	0	5	2	0
	-	9	-	1	-	f	9	1	f
	14	-	1	-	0	-	14	1	0
	16	16	2	2	0	0	16	2	0
25	9	2	2	2	(f)	0	9	2	0
26	9	9	1	2	x	e	9	2	0
	1	1	1	1	F	F	1	1	F
	9	9	2	2	0	0	9	2	0

[a](f) refers to defensiveness and is a special rating used in this group.

Inspection of this table gives some idea of the kinds of errors individual raters are likely to make. A common error occurs when the interaction rate goes up and it becomes difficult to catch all the contributions. Minutes 21 and 24 show how each rater is likely to miss something under such circumstances. By going over the content the raters can figure out the actual sequence of contributions. The ratings represented in the last three columns are likely to be a more accurate representation of what actually occurred than either of the independent ratings.

Another source of error is the tendency for individual observers to be especially sensitive to one or another of the modalities or work categories. A possible bias in this sequence is the fact that Observer 2 tends to see more dependency than does Observer 1. In three cases where Observer 2 saw dependency and Observer 1 did not, the rating of d was accepted twice and rejected once. A similar bias can be seen in the work columns, where Observer 1 tends to rate Work slightly lower than Observer 2. (Observer 1's average work ratings are 1.7 while Observer 2's average work ratings are 1.9.)

APPENDIX B

APPENDIX TO CHAPTER V

Additional Refinements

Lee Way in Primary Points

The question may always arise as to where the minute at which a block of repetitions begins is to be included -- whether it is to be included in the first unit or in the second unit. This is because that minute is transitional between the units: that minute includes some speakers who may belong more appropriately in one unit and others who belong in the other unit and, in addition, it may include speakers that are unique to that minute and do not belong in either of the two units. In many ways this situation is advantageous because it makes it possible to make the decision more compatible with the other criteria. Typical situations are:

(1) If inclusion of the transitional minute in the second unit would make the turning point between the units a False Primary Point and if its inclusion in the first unit would make it a true Primary Point then the latter should be the choice made. This permits changing some of the False Primary Points back to true Primary Points without tampering with the theoretical structure of the unitizing procedure.

Figure 15 is an example of such a change.

When the Block of Repetitions are rather long, that is to say, when the Vertical Repetitions of the block are long (more than four minutes), then it is permissible to shift down yet another minute in order to change the False Primary to a true Primary Point. When the second unit is longer than usual the time ratio between the units will not be greatly changed by this additional shift.

(2) In the same way the decision concerning allocation of the transitional minute may be made in favor of better comparability ratios of unit sizes with respect to time and with respect to the number of speakers in each.

Because the requirement for Turnover Ratio and the requirement for Speaker Ratio may work against each other, the disposition of the transitional minute should be made wherever possible so that the second unit should include not much more nor much less than half the number of speakers in the first unit.

Lee Way in Forward Secondary Points

Ordinarily the Forward Secondary Point should be placed just after the last minute of the Block of Repetitions. However, there may be many cases where a large number of new speakers are added one or two minutes after that. In such cases it seems reasonable to place the turning point at that point of change. This will not basically upset the theoretical justification for the unit because very few additional speakers will be added to that unit (since the turning point would be assigned just before a large number of new speakers are added). In addition, the fact that one or two minutes would be added to the length of the second unit would increase the comparability of the two units with respect to time (since the second unit would normally be smaller than the first).

Figure 15

A Sample Sequence Demonstrating the Change of a False Primary Point to a True Primary Point

Horizontal Accumulations Row	Min	Speakers	Vertical Accumulations Columns									
		Min	1	2	3	4	5	6	7	8	9	10
	1	8,10,11,14 15,16	6									
	2	3,8,10,15	7	4								
	3	2,3,10	8	5	3							
	4	2,3,8,10 14,15	8	6	6	6						
	5	2,10,12,16	9	8	8	8	4					
	6	3,6,12,16	10	9	9	9	6	4				
	7	6,8,11	10	10	10	10	8	8	3			
	8*	1,2,3,6,7 8,11,12	12	12	12	12	11	11	8	8		
	9	1,3,8,10,11	12	12	12	12	11	11	10	10	5	
	10	10	12	12	12	12	11	11	10	10	5	1

← A False Primary Point

← A True Primary Point one minute away

* The Block of Repetitions begins at the eighth minute. If the Primary Point were to be assigned between the seventh and eighth minute the Turnover would be four and the Turnover Ratio would be Three to one (12/4) which is higher than the allowed maxima of two to one. If the turning point is assigned in the next minute the Turnover would be seven and the Turnover Ratio would be lower than two to one (12/7).

In order to determine then, where the Forward Secondary Point should be placed it is necessary to look at the Accumulations Column which starts at the minute where the Primary Point has been assigned and to assign the Secondary Point at the minute interval where the accumulations increase at the greatest rate. This holds true if there is such a point within about three minutes after the end of the repetitions. If there is no such conspicuous point within this range then the Forward Secondary Point is automatically defined at the interval just after the minute which ends the Vertical Repetitions.

Figure 16 illustrates a shift in the Forward Secondary Point.

The Primary Point occurs in the interval between minutes five and six and the Forward Secondary Point should normally be in the interval between minutes seven and eight. However, looking at the Accumulations Column for the sixth minute it is noted that at the interval between minutes seven and eight there are two new speakers added (the accumulation changes from three to five), and that in the following interval, between minutes eight and nine, five new speakers are added (the accumulation changes from five to ten). Placing the turning point at the latter interval would therefore place it where a greater change has occurred. (Note also that in this example the Primary Point has also been shifted one minute, for had it been placed at the interval between minutes four and five it would have been a False Primary Point. This shift would have made the second unit only two minutes long as compared with a first unit of five minutes' duration, but the shift of the Secondary Point makes the second unit three minutes long and therefore more comparable to the first unit. Occurrences of this sort are very common.)

Figure 16

A Sample Sequence Showing Where a Shift in the Forward Secondary Point is Justified

Horizontal Accumulations Row	Min	Speakers	Vertical Accumulations Columns									
		Min	1	2	3	4	5	6	7	8	9	10
	1	9,12,13	3									
	2	12	3	1								
	3	7,10,13,18	6	5	4							
	4	7,9,10,11	7	7	6	4						
	5	10,12,16,18	8	8	8	7	4					
	6	7,10,11	8	8	8	7	6	3				
	7	10	8	8	8	7	6	3	1			
	8	10,12,13	9	9	9	8	7	5	3	3		
	9	1,3,7,8 13,18	12	12	12	12	11	10	9	9	6	
	10	3,12,13,18	12	12	12	12	11	10	9	9	6	4

← The Primary Point

← Where the Forward Secondary Point would ordinarily be located

← The location of the shifted Forward Secondary Point

Additional Back Secondary Points

It may be possible and desirable to subdivide the unit preceding the Primary Point further when the unit is of comparatively long duration and there is evidence of homogeneity separately for two parts of the unit. Evidence of homogeneity in the first part of this unit is provided by the presence of a Horizontal Repetition within the unit. In such cases the original block of repetitions is approached by parallel lines of Horizontal Repetitions of the same length as the width of the block (see example). The first of these Horizontal Repetitions ends the first sub-unit. Evidence for the homogeneity of the second sub-unit must be provided for by some indication of a Horizontal Repetition at the end of this sub-unit and beginning to the right of the Block of Repetitions.

Figure 17 is an example of this operation.

The first unit extends from minute one to minute seven inclusive. Note that there is a Horizontal Repetition at minute four, and that this is followed by parallel Horizontal Repetitions of the same length (this is also the length of the Horizontal Repetitions in the block) in minutes five, six, and seven. The first of these repetitions is at minute four. This establishes the homogeneity of the period of time between minutes one and four inclusive. Note also that in minute seven there is a Horizontal Repetition of sevens at the right of the block of repetitions. This establishes the homogeneity of the remainder of the unit. The two sub-units are therefore homogeneous.

Recall the equations whereby the number of old speakers dropping out, new speakers joining in, and the Total Turnover were calculated. As expressed there, the Turnover equals 2v - u - w, which in this specific case is 2(10) - 8 - 7, which equals five. Since v = 10 the Turnover Ratio is ten to five, or two to one. The units, in addition, are also comparable because the Speakers Ratio is eight to seven (much less than four to one), and the Duration Ratio is four to three (much less than three to one). Having satisfied the three criteria, the Additional Back Secondary Point was shown to be a valid turning point in this example.

Figure 17

A Sample Sequence Demonstrating Subdivision of the First Unit

Horizontal Accumulations Row	Min	Speakers	Vertical Accumulations Columns 1	2	3	4	5	6	7	8	9	10	
		Min											
1	1	4,14,17	3										← The Back Secondary Point
2	2	3,4,15	5	3									
3	3	2,3,4,8 13,14,15	8	7	7								
4	4	2,15,17	(u) 8	8	8	3							
5	5	4,8,12,15	5	9	9	6	4						← The Additional Back Secondary Point
6	6	4,8,12, 15,16	10	10	10	7	5	5					
7	7	2,16,17	(v) 10	10	10	7	(w) 7	7	3				
8	8	1,6,7,17	13	13	13	11	11	11	6	4			← The Primary Point
9	9	2,6	13	13	13	11	11	11	6	5	2		
10	10	2,3,6	13	13	13	12	12	12	7	6	3	3	

Such sub-units are usually comparable because they generally tend to be of similar size with respect to duration and with respect to number of speakers and also because both sub-units together comprise a larger period that is homogeneous.

These sub-units also tend to be different for the following reasons. There are never any Vertical Repetitions in the second sub-unit. If there were any Vertical Repetitions, there would automatically have been a Block of Repetitions since there are already parallel Horizontal Repetitions in the same sub-unit. The fact that there are no Vertical Repetitions between u and v implies that v is greater than u, or that v - u is more than zero. In the paragraph above it was pointed out that the number of speakers in both units tend to be the same. Assume that they are the same. Then u = w, and the equation for the Turnover simplifies to equal 2v - 2u, or 2(v - u). The expression v - u represents the new speakers that have been added. This expression was also shown to be more than zero, which means that there will always be some new speakers added between the two sub-units. The Turnover is, then, double the number of new speakers. The doubling effect which occurs in this special case accounts for the tendency of the Turnover to be large enough to produce a sufficiently low Turnover Ratio.

The sub-units are homogeneous because this sort of additional division applies only to cases where there occur Horizontal Repetitions, and the homogeneity which has been previously ascribed in the description of this procedure to Horizontal Repetitions applies here too.

Note, however, that in this case the sub-units were spoken of as tending to be comparable and different. It is an expression of tendency and not certainty; although the Additional Back Secondary Point will usually be a valid turning point when there are parallel Horizontal Repetitions. Its validity in terms of the three criteria is not automatic and requires checking with respect to each criterion in each case.

Overlapping Blocks

There are instances when two Blocks of Repetitions overlap as they do in Figure 18 below. In such cases that block is chosen to determine the turning points that does not yield a False Primary Point, or which would bring about a smaller Turnover Ratio (i.e., a greater Turnover), or whose distance from the right edge is smaller, or whose comparability ratios are more favorable. In other words, that block is chosen whose units would fit the criteria and the limits to a greater degree.

Figure 18

A Sample Sequence Showing Overlapping Blocks

Min	Speakers	Vertical Accumulations Columns										
Horizontal Accumulations Row		1	2	3	4	5	6	7	8	9	10	11
1	18	1										
2	18	1	1									
3	2,18	2	2	2								
4	14,16,18	4	4	4	3							
5	3,16,18	5	5	5	4	3						
6	16,18	5	5	5	4	3	2					
7	3,18	5	5	5	4	3	3	2				
8	2,18	5	5	5	5	4	4	3	2			
9	18	5	5	5	5	4	4	3	2	1		
10	2,18	5	5	5	5	4	4	3	2	2	2	
11	17,18	6	6	6	6	5	5	4	3	2	2	2

← The chosen Primary Point

There are two Blocks of Repetition in this figure, ACDG and BCEF. If ACDG was to be the block upon which the unitization were to be based then its Primary Point would be false, even were it to be placed in the sixth minute by taking advantage of the lee way in Primary Points. The Block of Repetitions BCEF, however, yields a true Primary Point, and upon this fact is based its choice for unitization. If both blocks had yielded true Primary Points then the decisions would have had to be made to suit the other criteria.

Where There Are No Definite Blocks

There are two types of situations where it is not possible to locate Blocks of Repetitions in sequences of long duration. One situation is where there are too many Horizontal and Vertical Repetitions so that there are too many possible Blocks of Repetitions. Another case is where there are not enough repetitions to form a minimum three by three block.

Where there are too many repetitions.--This situation is most likely to come about when the theoretical limit of total group participation is too low and is therefore attained after comparatively few minutes. Once this limit is reached the repetitions go on indefinitely. This occurs in this experiment whenever role-playing situations were rated by the observers, since in most role-playing situations only a small part of the group, five to seven role-players, participate for a long period of time. A condition of this sort results, obviously, from the fact that the elementary time unit chosen for the observed period was too large. In this study the elementary time unit was one minute throughout, but for special situations, such as role-playing, it should have been smaller. However, it is not possible to adjust the time unit for all possible contingencies because it is not always possible to foretell them. And such situations as described here will tend to arise. In such situations the Turning Points are assigned to those minutes where the most abrupt change occurs, as demonstrated in Figure 19.

This method does not mark off an abrupt change in the identity of the speakers, for there are no such changes since all, or almost all, the speakers would participate in any period of minimum length. However, it does mark off abrupt changes in rates of accumulations. In other words, it marks off periods where the entire group is involved (where the totals are accumulated in a short period of time) from periods where it appears that the activity is less group involved. Where the totals are accumulated in a longer period of time it means either that the statements are longer, or that there are fewer individuals who repeat their participation over a long period of time during that period, or both possibilities. The activity where the accumulation rate is slower, can therefore be seen as centering about a smaller number of members of the group. In Figure 19, for example, the first period (where the accumulation rate is slow) is characterized by the repeated participation of member number nine, and there is no such focus on an individual member in the second period (where the accumulations rate is fast).

Theoretically, there are two other alternatives to this procedure. The first is to consider the entire period one homogeneous unit, and the second is to subdivide the sequence into small one, two, and three minute periods. The first alternative assumes that the entire role-playing scene is one natural event; the second alternative makes distinctions that are finer than the organization of the data allows (for example, the information concerning the speakers in any one minute unit would not differentiate between units where the speakers repeat themselves and where they do not. So no information concerning the homogeneity of the small units is available.) Because of its greater usefulness and validity the procedure described above is preferred.

Where There Are No Minimum Blocks.--When this situation occurs in a long sequence it indicates that there are no periods in this sequence that are comparable in homogeneity to periods in corresponding sequences. This sequence can be treated, if so desired, as one period. However, this lower homogeneity may also be seen as a peculiarity of the long sequence under consideration. In spite of this, there may be distinct events within this sequence, events which differ on the basis of the speakers who take part in them, but which are not internally homogeneous with respect to these speakers. In terms of group activity this might take place when there are different sub-groups acting during different periods but where the interaction within the subgroups is comparatively low. This might occur, for example, when the sub-groups are reporting instead of interacting, as during buzz-group reports to the larger group where the interaction took place elsewhere and only the reporting phase is recorded by the observers.

Figure 19

A Sample Sequence Showing a Turning Point Where There Are Too Many Repetitions

Horizontal Accumulations Row	Min	Speakers	Vertical Accumulations Columns											
		Min	1	2	3	4	5	6	7	8	9	10	11	12
	1	7,9	2											
	2	6,9	3	2										
	3	8,9	4	3	2									
	4	9	4	3	2	1								
	5	2,6,7	5	5	5	4	3							
	6	2,6,7,8,9	5	5	5	5	5	5						
	7	6,7	5	5	5	5	5	5	2					
	8	2,7	5	5	5	5	5	5	3	2				
	9	8,9	5	5	5	5	5	5	5	4	2			
	10	2,6,8	5	5	5	5	5	5	5	5	4	3		
	11	2,6,7,8,9	5	5	5	5	5	5	5	5	5	5	5	
	12	2,6,7,8	5	5	5	5	5	5	5	5	5	5	5	4

← Location of the Turning Point

There are only five speakers in the whole sequence. This sample was taken out of a thirty minute sequence where only these five speakers were participating. The limit of five is reached very soon and repeats in each Vertical column. The Turning Point was assigned in the interval between minutes four and five because in the period up to and including minute four the limit is reached at a much slower rate than in any other period. It takes five minutes here to reach a limit of five, but in all other periods it takes from zero to three minutes for the limited to be reached. The Turnover Ratio is five to one and would therefore seem to invalidate the chosen turning point. However, the maximum limit of two to one was chosen considering that the total group was about sixteen and that limit is therefore not applicable here.

The decision whether to unitize a long sequence lies with the unitizer. Generally, it is of value to unitize all such sequences and to allow the information yielded by the units to influence the decision whether the units should remain or whether the entire sequence be considered one unit. When such sequences are unitized, it is done on the basis of difference and comparability, laying aside the homogeneity criterion. Figure 20 illustrates the procedure. In order to make possible this kind of unitization it is necessary to have available the information contained in the last four columns of Figure 20.

In this operation the comparability ratios are taken into consideration in deciding how many of the top Total Differences are to be assigned turning points. In Figure 20, for example, a Total Difference of eight and above could have been considered sufficient to determine a turning point, but it would have produced a one minute unit (minute nine) and the sufficient Total Difference was therefore raised to nine. In like manner it is possible to change the sufficient Total Difference in order to produce units that are comparable in terms of their time and speakers ratios.

Figure 20

Unitization of a Sample Sequence Taken from a Long Sequence Where There Are No Blocks of Repetitions

Horizontal Accumulations Row	Min	Speakers	Min	Vertical Accumulations Columns 1	2	3	4	5	6	7	8	9	10	11	Diff. Between Minutes for the Last Three Minutes			Total Diff.	
	1	13,16		2													3		
	2	6,7,12,13		5	4												2	2	
	3	6,11,12,15		7	6	4									3	4	5	12	← Location of a Turning Point
	4	4,7,10,15 16,17		10	10	9	6								1	1	1	3	
	5	2,15,17		11	11	10	7	3							1	1	3	5	
	6	2,7,10, 14,17		12	12	11	8	6	5						0	0	0	0	
	7	10,17		12	12	11	8	6	5	2					2	2	2	6	
	8	1,10,12,17		13	13	12	10	8	7	4	4				3	3	3	9	← Location of a Turning Point
	9	3,8,16		15	15	14	12	11	10	7	7	3			2	2	4	8	
	10	7,12,13		15	15	15	13	12	11	9	9	7	5		1	1	1	3	
	11	7,11,12,17		15	15	15	14	13	12	10	10	8	6	4					

There are three columns on the right entitled "Difference Between Minutes for the Last Three Minutes." Here is how the figures in these columns are derived. Look at the Vertical Columns for minutes one, two, and three as they appear when going from minute three to minute four. Between minute three and four there is a difference of three for Vertical Accumulations Column one, a difference of four speakers for Vertical Column two, and a difference of five for Vertical Column three. This operation is carried on between all succeeding minutes with respect to the three rightmost Vertical Accumulations Columns which they have in common, and the results are noted in the columns of differences between minutes. These differences indicate how each minute differs from each of the three previous minutes. In the column titled "Total Difference" the differences are summed up. The turning points are located at the minute interval where the Total Differences are largest. In this case they are between minutes three and four, where the total is twelve, and between minutes eight and nine, where the total is nine. These are the largest totals in the fragment presented in Figure 20. It is assumed here that at minutes where there is the greatest difference from the preceding three minutes there occurs the most abrupt change of participants.

In this study there were definable Blocks of Repetitions in about eighty-five per cent of all twenty minute sequences. The operations described in this section are therefore applicable to typical cases which occur in about fifteen per cent of the sequences.

Overlap and Transition

Each Block of Repetitions has a "zone of influence" -- a period of time within which it defines turning points and Natural Units. A large sequence is broken up into various zones of influence. The zones may have gaps between them, they may overlap, or they may adjoin each other. These three possibilities are discussed below.

(1).--When the zones of influence of two succeeding Blocks of Repetitions have a gap between them which is not covered by either of the two blocks, what sort of period lies between them?

The entire period, from the beginning of the first zone of influence to the end of the second, can be assumed to be homogeneous. There are two periods, the zones of influence at either end of the larger period, that are taken as homogeneous. This leads to the probability that the gap period is also homogeneous, although not as homogeneous as the two periods at the ends since there is no Block of Repetitions within it.

The units adjacent to the gap period are different from it because their turning points were chosen at abrupt changes.

And the gap period can be made comparable to the adjacent units by subdividing it into sub-periods when necessary.

The transition or gap period between two zones of influence can therefore be considered either one Natural Unit or several Natural Units that are internally homogeneous, different from and comparable with the surrounding units.

(2).--When the zones of influence overlap there are periods of time which include combinations of two internally homogeneous and separate events and periods of time which consist of the events in uncombined form. All periods, combined and uncombined, would therefore be homogeneous and different. In order to produce comparability it is possible to recombine several periods when necessary.

(3).--When zones of influence adjoin, all adjacent units are homogeneous, different and comparable.

Turning points are considered to be coincident when they occur at a distance of less than three minutes between them because there cannot be a minimum unit between them.

Thus, when adjustments are made for comparability and when turning points that are less than three minutes apart are combined into one turning point, then all periods between all succeeding turning points are well defined Natural Units. This holds true whether the zones of influence overlap or adjoin or have gaps between them.

Overlap Sheets

In this study the meetings were unitized on Accumulations Charts that were twenty minutes long. (Figure 9 is an example of such a chart.) When the coded periods were longer they were divided into twenty minute sections with an overlapping sheet between them which included the last half of the first sheet and the first half of the second sheet. When there were additional turning points on the overlapping chart they were noted down on the original charts.

This was done in order to save labor. In an Accumulations Chart of twenty minutes' duration there are 190 (or 20 x 10 - 10) accumulations boxes to fill. If a chart of forty minutes' duration had been used there would have been 780 (40 x 20 - 20) boxes to fill, or four times the labor for twice the duration. The overlap sheet eliminates the boxes at the extreme left, which are useless because they lie far beyond the maximum block distance, and reduces the labor of calculating the figure in the accumulation boxes to three times per twice the duration.

APPENDIX C

APPENDIX TO CHAPTER VII

Sample RGST Form and Scoring Sheet

SENTENCE COMPLETIONS

Directions: Imagine that you are a member participating in a group session. Complete each statement by indicating your reaction to the situation. Write the first thing that comes to your mind. Do not erase. If you want to change something, cross through and go on. If you can't think of a completion to an item, put a check beside the number of the item and come back to it after you have finished the rest of the test. You have twenty minutes. Work as rapidly as you can.

1. When the group first started, Ned felt

2. It's more important for the group to

3. Bert felt the leader was

4. When Jerry was joking, the group

6. When Abe asked the group's permission to present his idea, Paul

6. When the group was bogged down, Ray said

7. When Sam said, "Let's get to the problem," I

8. Since Jack liked some members more than others, he

9. When he realized he was angry at Phil, Charles

10. Sid praised the leader, and Roger

11. When Tom and Mary arrived twenty minutes late, the group

12. When the group disparaged his idea, Frank

13. When the leader offered to help him, Pete

14. When several members dropped out of the discussion, Hank

15. When Marvin suggested that the group assess its own resources, we

16. The leader usually

17. Chuck's detached manner

18. Together John and Fred

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19. When Jim realized quite a few people were taking digs at each other, he

20. When the group just couldn't seem to get ahead, I

21. When Ed seemed to be day-dreaming, Bill

22. Since the group wanted to test the suggested procedure, Milt

23. The leader got mad at the group, and Bob

24. Dick felt that his role

25. When Len turned to me, I

26. During the argument, Henry's vehemence caused Earl

27. When the leader changed the subject, Al

28. When my attention wandered from the discussion, Jim

29. When Morris said we needed more information about how we felt, I

30. When there was a pause in the group, Stan

31. When Walt and the leader made side remarks to each other, James

32. When the group was particularly friendly toward one of its members, Ken

33. When Hal felt hostile to the group, he

34. When Harry said that we needed help, Martin

35. When Jim left the meeting early, we

36. When Ray recommended that the group consider the theoretical aspects of the problem

37. Occasionally the group needed

38. When Mark criticized Fred's idea, I

39. When it was suggested that the group stick to the job, Glen

40. When George attacked the group, Bob

41. When the leader offered to help Carl, Joe

42. When the group pointedly ignored Steve's idea, John

43. When the group seemed to be breaking up, Nick

Reactions to Group Situations Test Scoring Form

Pairing	1 Accept	2 Non-Accept	3 Covert	4 Overt	5 Feeling	6 Action Plus	7 Action Minus	8 Ideation	9 ?
8									
11									
18									
25									
32									
Flight									
9									
12									
19									
26									
34									
41									
Dependency									
3									
13									
20									
27									
35									
42									
Flight									
4									
14									
21									
28									
36									
44									
Work									
7									
15									
22									
29									
37									

General	Covert	Overt	f	a	a -	I	?
1							
2							
5							
6							
10							
16							
17							
23							
24							
30							
31							
32							
38							
39							
40							
43							

Illustration of the Scoring Procedure: Two Scored Protocols

Time began: 8:13
Time ended: 8:33

SENTENCE COMPLETIONS

Directions: Imagine that you are a member participating in a group session. Complete each statement by indicating your reaction to the situation. Write the first thing that comes to your mind. Do not erase. If you want to change something, cross through and so on. If you can't think of a completion to an item, put a check beside the number of the item and come back to it after you have finished the rest of the test. You have twenty minutes. Work as rapidly as you can.

1. When the group first started, Ned felt enthusiastic.
2. It's more important for the group to work at the job.
3. Bert felt the leader was was doing a poor job.
4. When Jerry was joking, the group laughed.
5. When Abe asked the group's permission to present his idea, Paul said no.
6. When the group was bogged down, Ray said that there were things to do.
7. When Sam said, "Let's get to the problem," I said I agree.
8. Since Jack liked some members more than others, he was partial.
9. When he realized he was angry at Phil, Charles quieted down.
10. Sid praised the leader, and Roger agreed with him.
11. When Tom and Mary arrived twenty minutes late, the group was soon thrown into confusion.
12. When the group disparaged his idea, Frank insisted on pushing it.
13. When the leader offered to help him, Pete refused.
14. When several members dropped out of the discussion, Hank left the group.
15. When Marvin suggested that the group assess its own resources, we agreed.
16. The leader usually talked too much.
17. Chuck's detached manner bothered me.
18. Together John and Fred organized the discussion.
19. When Jim realized quite a few people were taking digs at each other, he brought the group to order.
20. When the group just couldn't seem to get ahead, I suggested a new angle.
21. When Ed seemed to be day-dreaming, Bill told him to pay attention.

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22. Since the group wanted to test the suggested procedure, Milt tried it out.

23. The leader got mad at the group, and Bob left the meeting.

24. Dick felt that his role was to lead the group.

25. When Len turned to me, I told him what I thought.

26. During the argument, Henry's vehemence caused Earl to shut up.

27. When the leader changed the subject, Al brought it up again.

28. When my attention wandered from the discussion, Jim brought called my attention back to it.

29. When Morris said we needed more information about how we felt, I told him what I thought.

30. When there was a pause in the group, Stan spoke out.

31. When Ben contradicted the leader, I agreed with him.

32. When Walt and the leader made side remarks to each other, James ignored them.

33. When the group was particularly friendly toward one of its members, Ken started a general discussion.

34. When Hal felt hostile to the group, he left.

35. When Harry said that we needed help, Martin volunteered.

36. When Jim left the meeting early, we lost interest.

37. When Ray recommended that the group consider the theoretical aspects of the problem we had an interesting discussion.

38. Occasionally the group needed a push in the right direction.

39. When Mark criticized Fred's idea, I defended it.

40. When it was suggested that the group stick to the job, Glen said that there were other aspects of the job.

41. When George attacked the group, Bob defended it.

42. When the leader offered to help Carl, Joe said it wasn't necessary.

43. When the group pointedly ignored Steve's idea, John brought them up.

44. When the group seemed to be breaking up, Nick got things organized again.

Reactions to Group Situations Test Scoring Form

Pairing	1 Accept	2 Non-Accept	3 Covert	4 Overt	5 Feeling	6 Action Plus	7 Action Minus	8 Ideation	9 ?	10
8	x								x	
11		x		E		x				
18	x			W		x				
25		x		W		x				
33		x		W		x				
Fight										
9		x		Fl			x			
12	x			W		x				
19		x		W		x				
26		x		Fl			x			
34		x		Fl			x			
41	x			P		x				
Dependency										
3		x	F		-					
13		x		P		x				
20		x		W		x				
27		x	F	W		x				
35		x		W		x				sees self as leader
42		x		FW		x				
Flight										
4	x					x				
14	x						x			
21[a]		x		WF		x				
28		x		W		x				
36	x						x			
44		x		W		x				
Work										
7	x			P		x				
15[b]	x			P					x	
22	x					x				
29	x					x				
37	x					x				

[a]This is scored "W" because it is group-oriented behavior -- it brings the flighting individual back into the group situation.

[b]The response "agreed" is scored "P" in the Overt Column and question mark, by convention.

Reactions to Group Situations Test Scoring Form

General	Covert	Overt	f	a/	a-	I	?	
1			x					
2		W		x				
5		F		x				
6		W		x				
10		P		x				
16	F			x				
17		E	x					
23		Fl						
24								Counter-dependent
30		W		x				
31	F	P		x				
32[a]	F	Fl			x			
38		W		x				Counter-dependent
39		P, F		x				
40		F, W		x				
43	F	P, W		x				

[a]While "ignored" indicates withdrawal from the situation on a behavioral level, it also involves some hidden negative feelings. Responses such as "teased" and "kidded" are also scored Overt Fl and Covert F. Here, the Fl has the character of being diverting rather than withdrawing.

Time began: 7:38
Time ended: 7:45

SENTENCE COMPLETIONS

Directions: Imagine that you are a member participating in a group session. Complete each statement by indicating your reaction to the situation. Write the first thing that comes to your mind. Do not erase. If you want to change something, cross through and go on. If you can't think of a completion to an item, put a check beside the number of the item and come back to it after you have finished the rest of the test. You have twenty minutes. Work as rapidly as you can.

1. When the group first started, Ned felt sick.

2. It's more important for the group to work together.

3. Bert felt the leader was stupid.

4. When Jerry was joking, the group laughed.

5. When Abe asked the group's permission to present his idea, Paul said yes.

6. When the group was bogged down, Ray said let's co-operate.

7. When Sam said, "Let's get to the problem," I said let's do.

8. Since Jack liked some members more than others, he played favorites.

9. When he realized he was angry at Phil, Charles hit him.

10. Sid praised the leader, and Roger said he was right.

11. When Tom and Mary arrived twenty minutes late, the group thought they had been courting on the way.

12. When the group disparaged his idea, Frank was sorry and mad.

13. When the leader offered to help him, Pete was grateful.

14. When several members dropped out of the discussion, Hank became discouraged.

15. When Marvin suggested that the group assess its own resources, we agreed.

16. The leader usually was well liked.

17. Chuck's detached manner indicated that he was not interested.

18. Together John and Fred made a good pair.

19. When Jim realized quite a few people were taking digs at each other, he tried to stop it.

20. When the group just couldn't seem to get ahead, I urged more co-operati

21. When Ed seemed to be day-dreaming, Bill told him to wake up.

22. Since the group wanted to test the suggested procedure, Milt agreed.

23. The leader got mad at the group, and Bob got mad too.

24. Dick felt that his role not important.

25. When Len turned to me, I spoke to him.

26. During the argument, Henry's vehemence caused Earl to become angry.

27. When the leader changed the subject, Al was irrated.

28. When my attention wandered from the discussion, Jim called it back.

29. When Morris said we needed more information about how we felt, I provided it.

30. When there was a pause in the group, Stan tried to get them to go on.

31. When Ben contradicted the leader, I felt glad.

32. When Walt and the leader made side remarks to each other, James was suspicious.

33. When the group was particularly friendly toward one of its members, Ken was jealous.

34. When Hal felt hostile to the group, he did not come.

35. When Harry said that we needed help, Martin agreed.

36. When Jim left the meeting early, we were glad.

37. When Ray recommended that the group consider the theoretical aspects of the problem I said this was unnecessary.

38. Occasionally the group needed help.

39. When Mark criticized Fred's idea, I disagreed.

40. When it was suggested that the group stick to the job, Glen was for it.

41. When George attacked the group, Bob defended it.

42. When the leader offered to help Carl, Joe was mad.

43. When the group pointedly ignored Steve's idea, John was mad.

44. When the group seemed to be breaking up, Nick was sorry.

Reactions to Group Situations Test Scoring Form

Pairing	1 Accept	2 Non-Accept	3 Covert	4 Overt	5 Feeling	6 Action plus	7 Action minus	8 Ideation	9 ?	10
8	x		F						x	
11	x							x		
18	x								x	
25	x					x				
33		x		F	x					
Fight										
9	x					x				
12	x			E	x					is experiencing pain
19		x		W		x				
26	x				x					
34		x		Fl			x			
41[a]	x			P						
Dependency										
3		x		F	-					
13	x				x					
20		x		W,P		x				
27[b]		x	Fl	F	x					
35	x			P					x	
42		x	D	F	x					
Flight										
4	x					x				
14		x		E	x					

Reactions to Group Situations Test Scoring Form

Flight (Continued)	1 Accept	2 Non-Accept	3 Covert	4 Overt	5 Feeling	6 Action plus	7 Action minus	8 Ideation	9 ?	10
21		x		W,F		x				
28		x		W		x				
36	x		F		x					
44		x		E	x					Note E: not as immobilizing as usual "E's"
Work										
7	x					x				
15[c]	x		Df	P					x	
22	x			P					x	
29	x					x				
37		x		F		x				

[a]This is scored F because of the protective feeling toward the group. It is scored acceptance of F because he fights to protect the group.

[b]The slip ("Irrated" instead of "irritated") suggests that the S was somehow disturbed by his own expression of F and had to hurry over it (get away from it), leaving out a syllable on the way.

[c]Here is another slip. The nature of the error ("greed" instead of "agreed") suggests some possible need for nurturence. Thus, there may be some flavor of D in this response.

General	3 Covert	4 Overt	5 f	6 a/	7 a-	8 I	9 ?	
1[a]		E	-					
2		W		x				
5				x				
6		P,W		x				
10		P		x				
16		P					x	
17[b]								
23		F	x					
24[c]		D	-					
31		W		x				
31	F		x					

Reactions to Group Situations Test Scoring Form

General	3 Covert	4 Overt	5 f	6 a/	7 a-	8 I	9 f
32		F	x				
38		D					x
39		F		x			
40		W					x
43		F	x				

[a]Manner of responding column already determined by the stimulus item.

[b]This type of response, which is only an interpretation of the stimulus item, cannot be scored.

[c]Feelings of personal inadequacy scored D by convention.

APPENDIX D

APPENDIX TO CHAPTER IX

Part 1. Q-Sort Statements

Overt Pairing, covert pairing (P, p):

1 Acts supportive because of real feeling for others.
21 Likes groups because they afford an opportunity to form warm relationships.
41 "Mothers" other members.
61 Wants to get to know some of the other members of the group more intimately.
81 Feels personally close to some of the other members.

Overt Pairing, covert dependency (Pd):

2 Chooses people that she can lean on as her friends.
22 Likes people who will protect her.
42 Makes friends with people who will tell her what to do.
62 Makes friendly gestures to those who will help her.
82 Likes the leaders because they structure the situation for her.

Overt Pairing, covert fight (Pf):

3 Covers up feelings of hostility towards others by pretending to like them.
23 Uses friendliness as a technique to control others.
43 Her friendliness carries an undercurrent of superiority.
63 Is controlling even when she acts supportive towards others.
83 Attempts to manipulate the group by bestowing her support on various people.

Overt Pairing, covert flight (Pfl):

4 Acts friendly to everyone to avoid becoming really involved with anyone.
24 Supports others to avoid having to make suggestions herself.
44 Likes those who postpone action.
64 Shows a preference for people who don't take the meeting too seriously.
84 Chooses as her friends those who crack jokes throughout the meeting.

Overt Fight, covert pairing (Fp):

5 Will become aggressive to support her friends.
25 Becomes angry with those who oppose her friends' opinions.
45 Fights to defend her friends.
65 Although she really wants to make friends, she gets angry when others get too close.
85 Acts aggressive rather than show her feelings of warmth.

Overt Fight, covert dependency (Fd):

6 Acts aggressive to cover up her insecurity.
26 Openly attempts to control the group.
46 Vigorously counteractive to feelings of dependency.
66 Decreases her feelings of inadequacy by telling others what to do.
86 Counter-dependent.

Overt Fight, covert fight (Ff):

7 Shows her underlying hostility by immediately attacking anyone else's suggestions.
27 Maintains a rather distrustful attitude.
47 Generally hostile.
67 Her anger is indicated more by the intensity of her comments than by their content.
87 Expresses annoyance easily.

Overt Fight, covert flight (Ff1):

8 Becomes angry when forced to participate in group decisions.
28 Acts aggressive because of a need to avoid entering in.
48 Is touchily defensive at references to her lack of interest.
68 Becomes angry when meeting gets off the "safe" theoretical level.
88 Acts angry as a cover-up for her need to avoid dealing with certain situations.

Overt Dependency, covert pairing (Dp):

9 Acts dependent on particular individuals to protect her.
29 Depends upon particular people for advice.
49 Will follow certain people in the group.
69 Goes along with the opinions of her friends.
89 Asks for direction from her friends.

Overt Dependency, covert dependency (Dd):

10 Is a follower.
30 Tags along with the dominant mood of the group.
50 Prefers to have others make decisions for her.
70 Will allow others to make decisions for her.
90 Accepts her dependency.

Overt Dependency, covert fight (Df):

11 Appears helpless when she is mad.
31 Protests that she is too weak to fight.
51 Her dependent behavior in the group irritates her.
71 Follows others but is angry about doing so.
91 Her anger is concealed by an apparent helplessness.

Overt Dependency, covert flight (Df1):

12 Depends on the leaders to protect her from having to participate.
32 Acts helpless so that the group will not expect her to contribute.
52 Would much rather follow the suggestions of others than have to participate herself.
72 Expresses weakness in order to avoid responsibility.
92 Depends on others to talk for her.

Overt Flight, covert pairing (Flp):

13 Indulges in gay repartee with her friends about their extra-group experiences.
33 Takes time out to joke with members in order to bring them back into the group.
53 Leaves group tasks in order to make side remarks to her friends.
73 Likes to talk with her friends about outside activities during the meeting.
93 Becomes humorous in order to release tension in those she likes.

Overt Flight, covert dependency (Fld):

14 Withdraws because she feels unable to cope with the situation.
34 Becomes silent because she feels insecure.
54 Avoids participating because she's afraid she won't be right.
74 Doesn't enter in because she feels she can't measure up to group expectancies.
94 Tries to disguise her insecurity by not participating.

Overt Flight, covert fight (Flf):

15 Her withdrawal seems fraught with criticism.
35 Sits back and waits to pounce on the mistakes of others.
55 Withdraws as if to judge the group.
75 She attempts to cover up her distrustful attitude by an apparent lack of interest
95 Her silence hides her hostility.

Overt Flight, covert flight (FLf1):

16 Avoids entering in.
36 Detached from the group.
56 Is an onlooker.
76 She regards aloofness as the ideal role for her in the group.
96 Doesn't participate.

Overt Work, covert pairing (Wp):

17 Suggests work tasks that will involve most of the members.
37 Facilitates group progress by seeing that everyone feels accepted.
57 Likes to work out solutions cooperatively with other members.
77 Enjoys planning group activities with certain other members.
97 Her warmth facilitates the working together of the group.

Overt Work, covert dependency (Wd):

18 Making suggestions gives her a feeling of belongingness.
38 Proves her point by citing authority.
58 Suggests workable solutions in order to feel that she is important to the group.
78 Makes suggestions that she thinks will please the leaders.
98 Proposes alternative plans of action in order to gain the recognition she needs.

Overt Work, covert fight (Wf):

19 Tends to maintain herself in a focal position during discussions.
39 Expresses hostility under the guise of making a contribution to group progress.
59 Her plans for action carry an underlying aggressiveness.
79 Proposes solutions as though she knows what is best for the group.
99 Makes proposals as a way of gaining control of the group.

Overt Work, covert flight (Wf1):

20 Perceives changing the topic of discussion as a way to get out of uncomfortable situations.
40 Makes "safe" theoretical suggestions rather than specifically applicable ones.
60 Can analyze group problems best by temporarily detaching herself from the others.
80 Proposes many solutions solely to get the meeting over with as soon as possible.
100 Is very eager to get into the discussion, even when she has nothing to say.

Part 2

Complete Correlation Matrices for the Five Subjects[1]

Each of the five tables gives the cross-correlations among all the sorts thrown by both Observers and Clinicians on that Subject. The correlation coefficients which are underlines are statistically significant at the .01 level of confidence.[2,3] The letters along the top and left-hand side of each table represent the twelve participants who threw sorts on each Subject. O_1, O_2, and O_3 are the three Observers who described the Subject's behavior during the group

---

[1] See "Statistical Note" following Table XXX.

[2] These r's are interpreted as being based on an N of 20. The significant values at the various levels of confidence are: .05 = ± .44; .01 = ±.56; .001 = .68.

[3] The correlation coefficients presented in a matrix of this type are not completely independent since high correlations between, for example, O_1-O_2 and O_1-O_3 tend to produce a high correlation between O_2-O_3. However, our results are not based directly on those tables, but rather on Table X (Chapter IX) where each r is completely independent of the others.

meeting. A_1 through D are the eight Clinicians described on pages 120-21 . E is the staff member who threw sorts both as an Observer, O_2, and a Clinician, E.

These tables are included to give a somewhat more detailed picture of our results than was possible in the main text. Thus the top three rows of each table (to the right of the double line) give the correlations of the various Clinicians' predictions for that Subject with each of the three Observer descriptions before the Observer sorts were averaged to give the correlations presented in Table X of the text. The three correlations in the upper left-hand corner of each table give an estimate of the reliability and objectivity of the RGT as we have used it in the experiment reported in Chapter IX.

TABLE XXVI

SUBJECT NO 1: COMPLETE CORRELATION MATRIX

	O_1	O_2	O_3	A_1	A_2	B_1	B_2	B_3	C_1	C_2	D	E
O_1		.34	.55	.11	.23	-.24	.07	.66	-.02	.04	-.39	.18
O_2			.73	.75	.85	.14	.68	.66	.50	.22	-.22	.80
O_3				.70	.70	.22	.64	.56	.57	.39	-.06	.65
A_1					.79	.50	.71	.43	.69	.36	.15	.83
A_2						.31	.76	.60	.75	.35	.11	.78
B_1							.61	.51	.63	.73	.73	-.14
B_2								.29	.86	.73	.44	.68
B_3									.21	-.15	-.35	.42
C_1										.65	.63	.61
C_2											.65	.48
D												.10
E												

TABLE XXVII

SUBJECT NO. 2: COMPLETE CORRELATION MATRIX

	O_1	O_2	O_3	A_1	A_2	B_1	B_2	B_3	C_1	C_2	D	E
O_1		.61	.55	.49	.42	.17	-.10	.16	.19	-.03	-.23	.42
O_2			.72	.69	.65	.04	-.13	.47	.30	.14	-.20	.47
O_3				.68	.81	.06	-.21	.56	.49	.13	-.32	.55
A_1					.74	.39	.20	.66	.55	.32	.17	.67
A_2						.44	.30	.78	.67	.56	.25	.79
B_1							.72	.44	.58	.75	.72	.73
B_2								.40	.38	.69	.91	.49

TABLE XXVII (Continued)

	O_1	O_2	O_3	A_1	A_2	B_1	B_2	B_3	C_1	C_2	D	E
B_3									.63	.75	.40	.79
C_1										.73	.28	.79
C_2											.68	.78
D												.25
E												

TABLE XXVIII

SUBJECT NO. 3: COMPLETE CORRELATION MATRIX

	O_1	O_2	O_3	A_1	A_2	B_1	B_2	B_3	C_1	C_2	D	E
O_1		.65	.72	.69	.57	.74	-.29	.00	-.01	-.23	.22	.71
O_2			.66	.59	.73	.43	-.09	.35	.21	-.08	.47	.68
O_3				.76	.61	.80	-.40	-.17	-.08	-.34	.34	.84
A_1					.68	.66	-.31	.10	-.08	-.04	.34	.85
A_2						.41	-.01	.46	.19	.17	.54	.59
B_1							.58	-.34	-.14	-.36	.18	.75
B_2								.65	.27	.61	.30	-.49
B_3									.14	.71	.57	.00
C_1										.31	.21	-.21
C_2											.42	-.30
D												.34
E												

TABLE XLIX

SUBJECT NO. 4: COMPLETE CORRELATION MATRIX

	O_1	O_2	O_3	A_1	A_2	B_1	B_2	B_3	C_1	C_2	D	E
O_1		.75	.53	-.68	.68	-.30	-.70	-.29	-.53	-.49	-.25	.83
O_2			.15	-.71	.49	-.59	-.68	-.09	-.68	-.28	-.44	.90
O_3				-.37	.40	.34	-.39	-.67	-.03	-.49	.07	.30
A_1					-.19	.18	.65	.48	.74	.33	.27	-.72
A_2						-.15	-.58	-.16	-.38	-.48	-.30	.51
B_1							.05	-.45	.27	-.23	.17	-.54
B_2								.50	.62	.64	.62	-.68
B_3									.29	.38	-.05	-.08
C_1										.25	.39	-.56
C_2											.15	-.46
D												-.26
E												

TABLE XXX

SUBJECT NO. 5: COMPLETE CORRELATION MATRIX

	O_1	O_2	O_3	A_1	A_2	B_1	B_2	B_3	C_1	C_2	D	E
O_1		.58	.69	.90	.83	.49	.83	.49	.43	.63	.58	.68
O_2			.36	.44	.74	.68	.51	.72	.81	.46	.44	.49
O_3				.60	.66	.56	.62	.67	.47	.54	.20	.48
A_1					.77	.50	.82	.43	.32	.55	.55	.67
A_2						.80	.80	.69	.68	.43	.54	.69
B_1							.56	.72	.88	.18	.30	.51
B_2								.45	.36	.35	.81	.86
B_3									.82	.40	.20	.53
C_1										.33	.14	.34
C_2											.22	.43
D												.79
E												

Statistical Note to Chapter IX, Table X, and Tables XXVI-XXX

Each of the entries in these tables is a product-moment r between the mean values given to the twenty modality-combinations by two of the participants. Thus, each correlation is based on an N of 20 and the fixing of levels of significance is in accord with an N of this magnitude. However, the correlations are probably considerably more stable than this rather low N would indicate since they are computed from means rather than single observations.

It will be remembered[1] that each of the twenty modality-combinations is one of the various pairings of the five Overt and four Covert modalities. Each combination (category of behavior) was operationally defined and the five statements representing it were constructed as replications of this definition. This allowed us to average the five scores on each combination and use this mean as the value representing the amount of this type of behavior that the Subject would exhibit (or did exhibit, for the Observers). A random sample of tests of homogeneity[2] together with the low variances (average st. dev. = 1.86) in each combination provided a check on the assumption that both Observers and Clinicians did perceive the five statements within one category as replications of one another. Therefore, we are able to use the combination means from each Q-sort, instead of the sort as a whole, for correlation purposes. This eliminated the chance variations within each combination, which would otherwise have obscured the true correlation values. The fact that these r's are based on 20 means ($N_{\bar{x}} = 5$) also makes them much more statistically stable and reliable than if they were based on merely twenty single observations.[3]

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[1] See Chapter IX, pages 121-22, for a description of the basis upon which the Q-sort was constructed.

[2] Bartlett's test of homogeneity of variance was applied to a random sample of 47 of the sixty Q-sorts used in this experiment. The use of sequential analysis in performing these tests allowed us to conclude that if tests of homogeneity had been applied to all sixty of the sorts, not more than three of them (5 per cent) would have been found inhomogeneous at the 5 per cent level of confidence with an alpha-risk of .05. This null hypothesis of inhomogeneity in less than 5 per cent of the sorts (chance expectancy) was accepted against an alternative hypothesis of 20 per cent inhomogeneity with a beta-risk of .05. These same tests of homogeneity indicated that the assumption of homoscedasticity required for the correlations was met in this experiment.

[3] As a check, we computed a random sample of 75 (15 from each table) of the corresponding correlations between all one hundred scores on each sort. The pattern of r's obtained was very similar to the ones presented in Tables XXVI to XXX, but each r was approximately thirty-five points lower than those given here. Due to the much larger N (100), the r's obtained in this manner also tended to be significant at a much better level of confidence (although numerically lower) than those in Tables XXVI to XXX.

APPENDIX D

Part 3

TABLE XXXI

PROPORTION (P) OF CORRELATIONS WITH OBSERVER AVERAGE SIGNIFICANT AT THE .01 LEVEL OF CONFIDENCE[1]

a

By Group
Together with the Probability
of Obtaining Such a Result by Chance[a]

Group	Sign of r	Group p	N	Probability (by chance)
A	+	.90	10	$<1.0\times10^{-8}$
	-	.10		.091
B	+	.40	15	$<1.0\times10^{-8}$
	-	.13		.009
C	+	.20	10	.004
	-	.10		.091
D	+	.00	5	.531
	-	.00		.951
Total	+	.425	40	$<1.0\times10^{-8}$
	-	.10		.001
E	+	.80	5	$<1.0\times10^{-8}$
	-	.00		.951

b

By Subject
(Excluding E)
Together with Average r[b]

Subj.	Sign of r	p	N	Average r
1	+	.625	8	.55
	-	.000		
2	+	.250	8	.34
	-	.000		
3	+	.375	8	.37
	-	.000		
4	+	.125	8	-.41
	-	.500		
5	+	.750	8	.68
	-	.000		

[a]Due to chance factors alone we would expect .005 of these correlations to be $\geq +.56$ and .005 to $\leq -.56$. The probability figures given here tend to be somewhat conservative since they are for a chance expectancy of .01 rather than .005 (which cannot be read directly from the tables). These probabilities were taken from Tables of the Binomial Probability Distribution (1951), U. S. Government Printing Office, Washington), Part II.

[b]These average r's represent the average correlation of the eight Clinicians with the "Observer Average" on each of the five Subjects. They were computed using Fisher's r to z transformation and are all significantly different from zero at the .01 level of confidence.

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[1]These tables present a summarization of the data given in Chapter IX, Table X, by Group (of Clinicians) and by Subject, respectively.

Part 4

An Explanation of the Variance Analysis Summarized in Table XII, Chapter IX

Table XII, Chapter IX, summarized the results obtained by applying an analysis of variance to each of the sixty Q-sorts thrown in our experiment by giving the proportion of significant F-tests obtained for each of the several "Effects" broken down by groups of Clinicians and Observers. Since this is a rather unusual manner of applying analysis of variance techniques, we felt that it might make the basis for these results and our manner of interpreting them a little clearer if we illustrated the application of an analysis of variance to a single Q-sort -- that thrown by Clinician A_1 on Subject 1.

TABLE XXXII

TYPICAL ANALYSIS OF VARIANCE TABLE
(A_1's SORT ON SUBJECT 1.)

Effects (b^2 components)		SSq.	DF	Mean Sq. (b^2 est.)	$F = \frac{x}{WG}$	$F = \frac{ME}{OC}$
MAIN Effects	Overt ("column")	195.90	4	48.98	16.33*	3.81*
	Covert ("row")	51.68	3	17.23	5.74*	1.34
Interaction (OC)		154.42	12	12.87	4.29*	
Within Groups (WG)		240.00	80	3.00		
Total		642.00	99			

In the above table, the column headed "Mean Square" gives an estimate of the variance (b^2) due to each of the Effects given in the left-hand column (an Effect is one of the major dimensions along which the Q-sort was organized). The column headed "$F = \frac{x}{WG}$" gives the result of the three F-tests in which the variance due to each of the three Effects was tested to see whether it was significantly greater than the Within Groups ("error") variance. This "Within Groups" variance is an average of the variances within the twenty modality-combinations and is assumed to be due purely to chance factors.[1] The starred values (*) are significant at the 5 per cent level of confidence. The interpretation given to a significant value of $F(=\frac{x}{WG})$ in this column is:

Overt Effect: The person throwing this sort (A_1) distinguished between the five major categories (modalities) of Overt behavior in her prediction of the way this Subject would behave in the group meeting.

Covert Effect: A_1 distinguished between the four major modalities of Covert behavior in her description of this Subject's (future) behavior.

Interaction Effect: A_1 distinguished between the twenty modality-combinations (subcategories of behavior) in predicting this Subject's actions.

---

[1] This assumption was tested by performing tests of homogeneity of variance on a random sample of Q-sorts, see Appendix D, Part 3, footnote b.

The last column on the right ($F = \frac{ME}{OE}$) gives the value of a similar F-test of whether the variance due to each of the Main Effects is greater than that due solely to Interaction. A significant F here is interpreted as indicating that the person throwing the sort (A_1) made considerably greater distinctions between the major Bionic classificatory constructs into which that Effect (overt or covert) is divided than she made between the twenty sub-categories in her description of this Subject's behavior. Thus, such an analysis of the sorts thrown on each of the five Subjects by each of the participants (Observers and Clinicians) gave us an indication of the relative usefulness of the major Bionic modalities (Pairing, Dependency, Fight, Flight, and Work) for describing the behavior of an individual Subject in a group situation -- when compared with the twenty sub-categories of behavior used in this experiment.

From the above table we see that A_1 distinguished between both the Overt modalities and the Covert modalities as well as the twenty sub-categories in her prediction on Subject 1 (all the entries under "$F = \frac{X}{WG}$" are significant). However, she made greater distinctions between the major Bionic modalities than between the twenty sub-categories only on the Overt level of behavior. ("$F = \frac{ME}{OE}$" is significant only for the Overt Effect).

A glance at Table XIV, Chapter IX, will show that all the participants made distinctions between the major Bionic modalities in almost every case at both the Overt and Covert levels of behavior (.95 and .93, respectively). Their use of the twenty sub-categories was not nearly so consistent although these distinctions were also made in more than half (.63) of the sorts. The major Bionic modalities were more important descriptive units than the sub-categories for all groups of participants in a high proportion of cases, particularly for describing Overt behavior (.73 and .60 for Overt and Covert respectively). We also see that the pattern of where the most important distinctions were made does not vary too drastically from Group to Group.

APPENDIX E

APPENDIX TO CHAPTER X

Part 1. Population of Q-Sort Statements Used in the Illustration

Dependency (D)

(3) Inclined to follow the suggestions of the leader
(9) Liked to appear in a good light in relation to group leaders
(15) Inclined to go along with the dominant mood of the group
(21) Comfortable when the leaders were active and directive
(27) Preferred to proceed along established lines
(33) Annoyed when the actions of the leader were not what he expected
(39) Expected the leaders to take major responsibility for planning group activities
(45) Inclined to follow the suggestions of another group member
(51) Tended to defend the leaders when they were attacked by others
(54) Inclined to direct his comments to the leader rather than to group members

Counter-Dependency (CD)

(6) Tended to suggest alternative action to that proposed by the leader
(12) Wanted to assume active leadership himself
(18) Enjoyed counterposing himself to the leaders
(24) Tended to look to other members to back up his position
(30) Tended to maintain himself in a focal position during discussions
(36) Inclined to assume a directive role in the group
(42) Tried to lead others against the leader
(48) Felt competitive toward individuals who attempted to dominate the group
(57) Concerned with maintaining a high status in the group
(60) Tended to express negative feelings about the leader

Pairing (P)

(1) Liked to keep group discussion on a personal level
(7) Attached to one or two particular members
(13) Enjoyed personal interchanges with one or two particular members
(19) Wanted to know some of the other members of the group intimately
(25) Felt that social relationships were maintained on too formal a level
(31) Wanted to be a member of a clique
(37) Inclined to bring intimate material to the group
(43) Inclined to extend group friendships outside the group
(49) Would have preferred a smaller, more intimate group
(52) Liked to make side comments to one other member

Counter-Pairing (CP)

(4) Disinclined to form special friendships
(10) Detached in manner
(16) Disinclined to make personal comments about other members
(22) Preferred discussing issues in intellectual rather than personal terms
(28) Oriented toward the group as a whole rather than toward particular members
(34) Embarrassed when other members made personal comments about him
(40) Unresponsive to gestures of friendship
(46) Resistive against breaking up into smaller sub-groups
(55) Felt that social relationships were too intimate
(58) Tended to discourage personal discussion between two other group members

Fight (F)

(5) Critical of other members
(11) Ready to take sides in an argument
(17) Tended to sidetrack the group from its goal
(23) Impulsive in expressing negative feelings
(29) Prolonged or intensified arguments
(35) Subtle in attacking others
(41) Tended to express annoyance toward other members of the group
(47) Tended to become sarcastic when annoyed
(56) Tended to start arguments
(59) Eager to respond to attack by counterattack

Flight (Fl)

(2) Uncomfortable when negative feelings were expressed in the group
(8) Reluctant to come to meetings
(14) Inclined to make light of ill-feeling expressed
(20) Preferred to remain neutral when several members of the group were arguing
(26) When attacked felt uncomfortable and remained silent
(32) Inclined to mediate arguments
(38) Uneasy during group disharmony
(44) Tried to avoid being drawn into an argument
(50) Tried not to show his true feelings
(53) Didn't like to express negative or critical opinions

Part 2. Directions and Response Sheet for Making the Q-Sort

Directions:

Please sort the attached statements according to the way they describe your feelings, attitudes or behavior in this group.

Sort the items into eleven categories of the following frequencies:

Least Characteristic								Most Characteristic		
I	II	III	IV	V	VI	VII	VIII	IX	X	XI
1	2	4	7	10	12	10	7	4	2	1

Place the single trait which you feel is most characteristic of yourself in Category XI. The trait least characteristic should be placed in Category I. Category X will then include the two next most characteristic descriptions, and so on. Category VI will contain the twelve items which you feel are neutral or irrelevant.

After the cards have been sorted and the appropriate number of items placed in each category, record the sort in the blank provided. This is done in the following manner: Suppose you have placed statement 28 in Category I. Write the number one (1) in the space corresponding to item 28 on the record blank. If statements 12 and 40 have been placed in Category II, write the number two (2) in the space corresponding to 12 and 40 on the record blank, and so on, until all the spaces are filled.

Be sure to write your name on the record blank.

Group _____

Date _____

Name _____

_____ 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. _____
53. _____
54. _____
55. _____
56. _____
57. _____
58. _____
59. _____
60. _____

APPENDIX F

APPENDIX TO CHAPTER XI

Part 1. Steps for Determining the Array for a Factor

This appendix presents a specific illustration (Factor A, Group I) of the steps involved in determining the array for a factor from a number of individual sorts, and for identifying significant "high" and "low" items. Table XXXIII presents the raw data -- the four individual sorts which must be combined to produce the array for the factor. Table XXXIV illustrates the manner in which each individual sort is weighted, depending on the magnitude of the factor loading, and Table XXXV presents the high and low items for the array for the factor.

TABLE XXXIII

DISTRIBUTION OF SCORE VALUES OF FOUR MEMBERS REPRESENTING CLUSTER A IN GROUP I

Item No.	Scores for Members No:				Item No.	Score for Members No:			
	8	15	17	18		8	15	17	18
1	3	1	5	6	31	5	4	4	4
2	4	8	3	6	32	9	4	6	5
3	8	7	9	8	33	7	6	9	8
4	8	4	4	6	34	6	8	4	6
5	6	6	9	3	35	3	7	1	6
6	7	8	5	4	36	10	11	6	10
7	6	7	8	5	37	4	3	4	6
8	1	2	6	8	38	7	6	6	5
9	4	7	7	7	39	9	7	10	8
10	11	5	8	9	40	5	3	7	5
11	7	6	10	7	41	5	4	7	2
12	6	9	3	9	42	2	7	4	7
13	8	8	7	5	43	6	5	2	5
14	6	4	6	4	44	7	6	6	7
15	6	9	6	9	45	8	5	7	5
16	4	6	5	7	46	7	5	8	5
17	6	4	2	4	47	3	7	7	2
18	4	6	4	7	48	7	9	9	9
19	8	6	3	6	49	5	5	3	7
20	5	6	6	6	50	6	3	8	4
21	8	5	8	10	51	5	7	6	3
22	6	8	11	5	52	7	8	5	4
23	8	5	5	1	53	4	7	4	3
24	5	5	5	6	54	6	6	9	6
25	5	7	5	5	55	3	5	7	6
26	4	8	5	6	56	2	6	7	4
27	10	5	8	8	57	7	10	6	7
28	9	9	7	11	58	5	4	7	7
29	5	2	6	3	59	6	5	5	4
30	9	10	6	8	60	7	6	3	7

TABLE XXXIV

WEIGHTED SCORE VALUES FOR THE ITEMS AND WEIGHTED SCORE TOTALS FOR THE ITEMS FOR THE FOUR MEMBERS OF CLUSTER A

Member No:	8	15	17	18	Total Weighted Score	Member No:	8	15	17	18	Total Weighted Score
Factor Loading	.64	.53	.40	.50							
Weight	1	3/4	1/2	2/3							
Item No.	Scores					Item No.	Scores				
1	3	0.75	2.50	4.00	10.25	31	5	3.00	2.00	2.66	12.66
2	4	6.00	1.50	4.00	15.50	32	9	3.00	3.00	3.33	18.33
3	8	5.75	4.50	5.33	23.08	33	7	4.50	4.00	5.33	20.83
4	8	3.00	2.00	5.33	18.33	34	6	6.00	2.00	4.00	18.00
5	6	4.50	4.50	2.00	17.00	35	3	5.25	0.50	4.00	12.75
6	7	6.00	2.50	2.66	18.16	36	10	8.75	3.00	6.66	27.91
7	6	5.75	4.00	3.33	18.58	37	4	2.25	2.00	4.00	12.25
8	1	1.50	3.00	5.33	10.83	38	7	4.50	3.00	3.33	17.83
9	4	5.25	3.50	4.66	17.41	39	9	5.25	5.00	5.33	24.58
10	11	2.25	4.00	6.00	23.25	40	5	2.25	3.50	3.33	14.08
11	7	4.50	5.00	4.66	21.16	41	5	3.00	3.50	1.33	12.83
12	6	6.75	2.50	6.00	21.35	42	2	5.25	2.00	4.66	13.91
13	8	6.00	3.50	3.33	20.83	43	6	3.75	1.00	3.33	14.08
14	6	3.00	3.00	2.66	14.66	44	7	4.50	3.00	4.66	19.16
15	6	6.75	3.00	6.00	21.75	45	8	3.75	3.50	3.33	18.58
16	4	4.50	2.50	4.66	15.66	46	7	3.75	4.00	3.33	18.08
17	6	3.00	1.00	2.66	12.66	47	3	5.25	3.50	1.33	13.08
18	4	4.50	2.00	4.66	15.16	48	7	6.75	4.50	6.00	24.25
19	8	4.50	1.50	4.00	18.00	49	5	3.75	1.50	4.66	14.91
20	5	4.50	3.00	4.00	16.50	50	6	2.25	4.00	2.66	14.91
21	8	3.75	4.00	6.66	22.41	51	5	5.25	3.00	2.00	15.25
22	6	6.00	5.50	3.33	20.83	52	7	6.00	2.50	2.66	18.16
23	8	3.75	2.50	0.66	14.91	53	4	5.25	2.00	2.00	13.25
24	5	3.75	2.50	4.00	15.20	54	6	4.50	4.50	4.00	19.00
25	5	5.25	2.50	3.33	16.08	55	5	3.75	3.50	4.00	14.25
26	4	6.00	2.50	4.00	16.50	56	2	4.50	3.50	2.66	12.66
27	10	3.75	4.00	5.33	25.08	57	7	7.50	3.00	4.66	22.16
28	9	6.75	3.50	7.33	26.58	58	5	3.00	3.50	4.66	16.16
29	5	1.50	3.00	2.00	11.50	59	6	3.75	2.50	2.66	14.91
30	9	7.50	3.00	5.33	24.83	60	7	4.50	1.50	4.66	17.66

Selecting High and Low Total Scores

By inspection of the "Total" column in Table XXXIV we can discover which items have the highest total scores for Cluster A and those which have the lowest total scores. The high items are those that members have indicated were most characteristic of them while the low items are those seen as being least characteristic. These are collated for the top fifteen and bottom fifteen items in rank order in the first two columns of Table XXXV.

Making High and Low Scores Comparable from Cluster to Cluster

Since factor loadings make the weighting different from cluster to cluster the total score values from one cluster cannot be directly compared to the totals of another cluster. In order to make comparison possible two operations are required:

1. the weighted totals reported in column B of Table XXXV are multiplied by the reciprocal of the total of the weightings;

2. as there may be more members in one cluster than in another it would be necessary to obtain average scores on any item in order to compare them. Thus the value obtained by multiplying the totals by the reciprocal of the total of the weightings is divided by the number of members in a cluster to obtain such an average. This manipulation is reported in column C, Table XXXV, and rounded to the closest whole number in column D.

Converting High and Low Scores into Equivalent Magnitudes

By the foregoing manipulation the average score values have been brought back into the original one-to-eleven continuum for all the clusters.[1] For the purpose of a quantitative analysis it is desirable to express the scores in terms of their distance from the midpoint (5.5) of the distribution. Thus a score of 3, being 2.5 points from the midpoint (5.5) becomes a low or least-like score of 8. Similarly a score of 4 becomes a least-like score of 7 and so on. The results of this operation are reported in Column E, Table XXXV.

Defining Criteria for Inclusion of Items

It is necessary to decide on how many of the items with high scores and with low scores are to be utilized as the bases for the interpretation. There are three considerations or criteria used in making what is essentially an arbitrary decision. First it is desirable to have discriminating items; these are the extreme items. It was decided that eight to twelve items on either end of the continuum would provide a reasonable basis for interpretation. Second, from the point of view of score values, it is undesirable to include any items in the middle range of scores. The middle range of scores has been defined as being from 4.5 to 7.5. Third, within the limitations of the first two criteria there will probably be a gap between the scores of two items which is larger than other intervals. This indicates specifically where to make the cut-off. For example, in Table XXXV, starting with the Most Like, column C, we note that we take the top twelve items we have penetrated below the score of 7.50. The item furtherest down the list, using the second criterion, is the eighth, with a score of 7.60. In respect to the third consideration we find that the item preceding the eighth has the same score value whereas the ninth item represents a relatively large jump in score value of .22. We therefore cut between the eighth and ninth items. Similarly, in the Least Like, column C, the twelfth item from the top penetrates too far (4.64) and we retreat to the eleventh item (4.42). This item has a score value quite close to the tenth (4.36) whereas the twelfth item incurs a jump of .22. Thus the cut-off point is placed between the eleventh and twelfth items. Thus finally, we conclude that the content of Cluster A is represented by Most Like items 3, 10, 27, 28, 30, 36, 39, 48, and by Least Like items 1, 8, 17, 29, 31, 35, 37, 41, 47, 53, and 56.

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[1] Step (1) for paragraph two above would not have to be done for AC and BC as they were not weighted but step (2) would be required in order to obtain average scores.

TABLE XXXV

ILLUSTRATION OF THE WEIGHTING PROCEDURE FOR THE FIFTEEN HIGHEST AND LOWEST ITEMS FOR CLUSTER A

Most Like				Least Like				
A Item No.	B Total Weighted Score	C De-weighted Average Score	D Rounded Score	A Item No.	B Total Weighted Score	C De-weighted Average Score	D Rounded Score	E Reciprocated Score
36	27.91	9.30	9	1	10.25	3.42	3	8
28	26.58	8.86	9	8	10.83	3.61	4	7
30	24.83	8.27	8	29	11.50	3.83	4	7
39	24.58	8.19	8	37	12.25	4.08	4	7
48	24.25	8.08	8	17	12.66	4.22	4	7
10	23.25	7.75	8	31	12.66	4.22	4	7
3	23.08	7.69	8	56	12.66	4.22	4	7
27	23.08	7.69	8	35	12.75	4.25	4	7
21	22.41	7.47	7	41	12.83	4.27	4	7
57	22.16	7.39	7	47	13.08	4.36	4	7
15	21.75	7.25	7	53	13.25	4.42	4	7
12	21.25	7.08	7	42	13.91	4.64	5	6
11	21.16	7.05	7	43	14.08	4.69	5	6
22	20.83	6.94	7	40	14.08	4.69	5	6
33	20.83	6.94	7	55	14.25	4.75	5	6
13	20.83	6.94	7					

Part 2. Conventions for Interpreting Score Values

In Group I the score values were found to range from 0 to 46. This range has been divided empirically into three segments and these are taken as representing low, medium and high preference or rejection of a modality. (When "most like" item emotionality is summed, the result is interpreted as preference; "least like" item emotionality is interpreted as rejection.)

The ranges for each of these categories (low, medium and high) and their theoretical characterization are:

Low -- The low interval is assigned a range from zero to twenty. Since each item can have a score value of from 7 to 10, the low interval can have at most two items contributing to it. Cluster members have a comparatively low investment in a modality with such a low score, and they would tend to be attracted to other modalities for which they have more valency.

Most-like -- Cluster members slightly accept the modality and can operate within it.

Least-Like-- Cluster members slightly reject the modality but can operate within it.

Medium -- The medium interval has a range from twenty-one to thirty-two. Three or four items make up the score value.

Most-Like -- Cluster members will accept the modality and operate in it comfortably; and they may attempt to move the group into it.

Least-Like-- Cluster members will be reluctant to operate in the modality, but will be flexible enough to operate in the modality for short periods. They will, however, tend to initiate and support change to a preferred modality.

High -- The range for the high interval is from thirty-three to forty-six. Four high ranking items or five or more lower ranking items make up the total. Scores in this interval indicate sufficient concern over the modality to characterize the behavior of the cluster.

Most-Like -- Members will initiate the modality and try to thwart efforts to change from it.

Least-Like-- Cluster members will strongly reject operating in the modality. Members will become anxious when the group operates in the modality. The anxiety may take the form of immobilization, disturbance, withdrawal or active attempts to change the group to another modality. Anxiety over the modality will characterize the cluster.

For any cluster, in respect to a modality, we may find any of the four following conditions.

1. The modality has only a Most-Like score.

2. The modality has only a Least-Like score.

3. The modality has zero score for both Most and Least Like.

4. The modality has both Most and Least Like scores.

Each of these patterns has its implications for interpretation. Suggestions for interpretation are:

1. Where the modality is represented solely by a Most Like score it is assumed that the modality has a valency for the cluster members; that they have a toleration for operating in this modality; and that the modality is to some degree acceptable to them. The higher the score, the greater the valency, toleration and acceptability. The absence of Least Like scores suggests that the valency, toleration and acceptance is not accompanied with any marked anxiety over the modality. Nor is there evidence of reluctance, conflict, ambivalence or strong need for control.

2. Where the modality is represented solely in terms of a Least Like score it is assumed that situations, attitudes or behaviors characteristic for that modality are rejected by the cluster members. The cluster members have, what might be called, "negative" valency for the modality in that they would not be likely to initiate behavior or support members operating in this modality. The fact that it is a modality state which is rejected rather than ignored suggests that there may be anxiety attached to the behaviors, attitudes and situations characteristic of the modality state. The larger the score the greater the possible anxiety. Behaviors in reaction to such anxiety would include: immobilization, disturbance, flight and attempts to change the modality.

3. Where the modality is not represented by either a Least or Most Like score it is assumed that the cluster members do not react in any particular manner to the modality. It has neither the appeal of the Most Like nor the possible anxiety of the Least Like but is mainly an area of unconcern.

4. Where the modality is represented by Most and Least Like scores, there has been selection of specific aspects which are acceptable and other aspects which are not. Some aspects of the modality have appeal for the cluster and, at the same time, some other aspects of the modality may be anxiety arousing. There is indication of ambivalence, conflict or confusion in the face of the modality. This would be indicated most clearly by approximately equal scores for both Most and Least Like. It is predicted that the cluster will react to the modality, and its behavior will be similar in some respects to that ascribed to both the Most and Least Like scores. In the case where one score is high and the other low the low score is seen either as a reaction to a specific aspect of the modality or as a control or modification of the preference or denial, whichever the case may be, of the modality.