THE PSYCHOLOGY OF PERSONAL CONSTRUCTS AS RELATED TO GROUP MEMBERSHIP AND LEADERSHIP

Dissertation

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By

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Acknowledgments

Research is seldom the result of a single individual's efforts. As a rule, many people contribute to a research problem. Such is the case with this study.

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Chapter One

Introduction

Foreword

This study involves predictions of individuals' predictions in a group setting. The predictions stem from a recently formulated theory known as the Psychology of Personal Constructs (22). In reading the theory, one comes across statements which seem to have direct application to social psychology. However, due to the youthfulness of the system, few of the statements have yet been tested. The writer assumes the responsibility for extending the theory more explicitly into the realm of social psychology.

Statement of the Problem

This study is concerned with the relationship of personal constructs to membership in a group. It is predicted that one aspect of group membership is the ability of a group member to utilize or understand the constructs of another group member. This, of course, is only one of several ways of understanding group membership. Yet, an important feature of group membership is hypothesized to be the ability of a person to utilize the constructs of his fellows.

A second problem is the role of the leader. It is predicted that there is a relationship between the way the leader is perceived and the best possible type of member is perceived. In this study, a campus social fraternity was used. The best possible type of member will be
designated as the "ideal fraternity type." The existence of this "person" is fictional. Each subject was asked to imagine what he would be like. It is inferred that the leader of the group would be perceived as a counterpart of the "ideal fraternity type." It is predicted that there is a significant relationship between the leader of a formal group as perceived by the group members, and what most members conceive to be the "ideal fraternity type."

The leadership phase of the study departs from early classical notions of the leader. Such approaches investigated traits of leadership. Enough leadership research has been completed (38) to suggest now that leadership traits are not highly useful constructs. The investigations of leadership have, therefore, recently concentrated on the situation in which leadership occurs. This study goes further by investigating the perceived relationships of the members of the group.

Implications of this Research

The experiment to be described in this paper may be considered as contributing to the body of psychological knowledge in several ways. First of all, the predictions stem from a systematic point of view. One way to judge a new theory is by its ability to generate testable hypotheses. In other words, does the theory reveal problems of research? The answer, in this case, is "yes."

A second implication is the contribution of information along certain specified dimensions of group and leadership behavior. In addition to such information are techniques, methods, etc.
For example, social psychology has received a much needed shot in the arm due to the increasing demand for information about groups and the way they function. The armed forces have been largely responsible for stimulating scientific observations and measurements of groups. As a result, a greater responsibility has been placed on the social psychologist to increase his battery of observational techniques, to attempt theory building, and to collect systematically related information. This study may be seen as following the recent trend toward utilizing personality theory in understanding social and group processes. Although this approach, according to Bruner (4), is a welcome point of view that leaves unclear the boundaries of social psychology, the application is certainly not new. Freud (9, 32) insisted that group psychology is as old as individual psychology. The individual is merely a convenient unit which is abstracted from the group for study. He warned that this might lead to one's ignoring the group as a legitimate unit of study.

This paper may, therefore, be thought of as presenting a somewhat different set of techniques to the social psychologist. Of greater value is the fact that the techniques and results, which it offers, are theory related.

A third implication is the verification of observations made by people operating within a psychoanalytic framework. One criticism of analytic thinking is that it leads to hypotheses which are difficult to test because of the ambiguity of the theory. Even when the hypotheses are tested, the results are difficult to accept or reject.
because of the nature of the theory. For example, if a person behaves in one way it is called hostility. If the same person acts in another way, the behavior is still called hostility. In other words, the results of the experiment can always be handled with little or no threat to the validity of the theory. The writer may be accused of attempting to satisfy two theoretical points of view, i.e., psychology of personal constructs, and psychoanalytic theory. The criticism of serving two "masters" is unimportant. It is entirely possible for two systems to observe the same event and make predictions about the event. It is also possible for two systems to make the same prediction about an event.
Chapter Two

Historical Review

Introduction

The purpose of this chapter is to present the kinds of relevant research that have gone before. It was decided that it was not necessary to review all of the literature, but only a representative sample. The sole criterion for reporting research is its relevance to the problem at hand.

It was soon seen that there was little danger of amassing a great bibliography. Indeed, there was little reported work on the leadership and membership variables with which this study is concerned. For example, leadership is not approached from the standpoint of traits or abilities in this study. Nor is this study concerned with group membership as related to the needs of the members.

Interactional Theory

Interactional theory (13) emphasizes the interaction of personality traits with the environment. It is such interaction that enables the individual to adjust to the group. Sherif (34) believes there is a spontaneous appearance of a "hierarchical structure" in a group with the leader being found at the top of the structure. The leader's position is determined by his ability to aid the group in achieving their goals.

Both Gibb and Sherif agree on the importance of the role of the
leader and his ability to maintain leadership. It is the responsibility of the leader to satisfy the needs of the group. If the leader is unable to do this he loses the position of leadership which he enjoyed. If the leader's needs are perceived as being different from those of the group his position is threatened.

It should be said that interactional theory does not speak of traits of leadership. The theory does not stress the importance of what might be referred to as "personality factors in leadership". Leadership is dependent upon the perceived ability of the individual to deal with the needs of the group. To be sure, personality is important in leadership. It is important, however, merely because it makes it possible for the individual to perceive group needs and to satisfy such needs.

In support of an interactional theory, Jenkins' (19) review suggests that leadership is specific to the situation. This approach places a premium upon the superiority of a specific ability possessed by the leader. For example, person "A" is extremely competent in solving a particular kind of problem. Whenever the group is confronted with this type of problem, person "A" assumes the leadership position.

Cowley's (6) study lends further support to the thesis set down by interactional theory. After extensive testing of leaders, Cowley concluded that traits of leadership cannot be tested. However, since leadership is a situational phenomenon, it is justifiable to speak of traits as related to specific leadership situations. Examples of the political leader and the criminal leader are given. Sanford (29)
describes leadership as a relation between leader and follower. The follower has needs which set up a situation having leadership-potential. The follower, in other words, has problems which the leader solves. The follower's needs create a demand for leadership.

Newcomb (28), like Jenkins, speaks of the leader as being outstanding in some way. The superior ability of the leader is situation-bound, and is called for only when the situation is encountered by the group. Because of this, a generalized leadership trait cannot be considered.

Benne and Sheats' (3) investigation attempted to study the actual situation of leadership. It was concluded that the leader must be seen as guiding the group in productive work and thus in the realization of group goals.

The work of Smith and Krueger (36) lend support to the interactional theory of leadership. It is their contention that it is possible for most people to occupy the position of leadership, depending upon the situation. Leadership changes when group goals and group situations change.

It is Jennings' (20) belief that general traits of leadership cannot be considered. Leaders in one group may or may not assume a leadership role in another situation. Leadership becomes a functional phenomenon dependent upon the relationship of the individual to others in the group.

A study by Sterling and Rosenthal (37) investigated leaders and followers with regard to different phases of group activity. The relationship of leader and follower personality traits, and different
aspects of group activity, constituted a second part of the study. Among other things, the following findings were deemed pertinent to this review: (a) When the group passes through different psychological phases, leaders and followers change. (b) The same leader emerges when the phases of group activity are similar. The following example was given to illustrate this finding: When the group was in the midst of an aggressive phase, the phase was usually in conjunction with people who were the most aggressive in the group. These people were also in a position of leadership.

The study of Sterling and Rosenthal appear to shed some additional light on the relationship of leadership and personality characteristics. Personality traits appear to be important only when they are related to group activity phases. The findings of Sterling and Rosenthal are compatible with an interactional theory.

The armed forces have become particularly interested in research involving different aspects of group processes. This interest is based on a desire to train more effective combat groups, and to understand group processes especially in times of national emergency. It may be profitable to review some of the military research on groups.

One study by Halpin and Winer (14) appears to us to lend support to an interactional theory. They found a wide range of individual differences with regard to how leaders perform their duties. Two important behaviors appeared when a questionnaire on leadership was factor analyzed. The factors were consideration and initiating structure. Consideration had to do with friendship and trust.
Initiating structure implied the tendency to organize and to define the member's roles of the combat team.

It was further noted that the airplane commander's (hereafter referred to as A.C.) superiors emphasized initiating structure as the most effective role to assume, and regarded consideration as a hampering, ineffective behavior. In other words, the superiors perceived the two behaviors as being antithetical. The A.C. was thus in a conflict situation. He had to please his superior officers and appear as a friendly, considerate, yet effective leader to the group.

In order to solve the conflict, the A.C.'s utilized initiating structure behaviors while in the training phase of their work. In combat, however, the A.C.'s relied heavily upon consideration behaviors. It would thus seem that the situation was a paramount influence in determining the reactions of the A.C.'s.

A further study by Halpin (15) suggests that the effective A.C. possesses skills relating to initiating structure and to consideration. It would, therefore, seem that a training program should attempt to develop both kinds of behaviors. This seems more feasible as opposed to viewing the two kinds of behaviors as alternates, or stressing one at the sacrifice of the other.

A study by Hemphill (17) seems to support the findings of Sterling and Rosenthal. Hemphill found that the behaviors of the leader are related to the type of group he is leading. The "type of group" would seem to be analogous to the phases of group activity Sterling and Rosenthal investigated.
Hemphill (16), in an unpublished manuscript, states that an individual can emerge as a leader because of certain outstanding characteristics. Such outstanding characteristics would be, for example, age and status. These features aid in carrying out completely the differentiation of the leader. In other words, some people cannot be perceived as leaders, because personal characteristics do not permit differentiation.

It would seem that the research, conducted by Hemphill and his associates, lend support to an interactional theory as well as a trait theory of leadership. For example, the importance of the group situation was pointed out in determining the kinds of behaviors the A. C.'s would use. This is the interactional point of view. On the other hand, traits are deemed important when the factor analysis studies of leadership are considered.

Because of the peculiar structure of the military group, generalizations, based upon military group research, are quite limited. The military group is inherently different from the start. For example, the leader is assigned. There is no freedom for leadership to emerge spontaneously. The leader of a military group represents one element in a very complex hierarchy of authority.

By way of summary, an interactional theory of leadership stresses the relationship of the individual and his group environment. This relationship, in turn, may or may not produce leadership behaviors. Most of the studies cited thus far emphasize this functional relationship as being paramount in determining leadership behaviors.
However, a less emphasized point of view is the matter of personality characteristics, attributes or skill possessed by the leader. It is obvious that this secondary emphasis is another expression of the inherent-leadership-trait type of theory. Stogdill's survey strongly suggests that such an approach is not useful. Stogdill concluded that general traits of leadership do not exist. He does modify this conclusion by stating that, if there are general traits of leadership, they are not revealed in the currently measured personality variables.

Psychoanalytic Understanding of the Leadership Problem

According to Freud (9, 32), the psychology of the individual is identical with the psychology of groups. This thinking stems from the primal horde concept, and the observation that people have always lived in groups. By way of example, a child is born into a group situation, i.e., the family. As the child grows older, he joins many kinds of groups. Freud thought that the secondary group gained control over the individual as a result of primary family group experiences. From the primary group, the individual carries ideas, behaviors, and attitudes into the secondary group. The secondary group may then be perceived as an extension of the family group. As a result, the leader is reacted to in much the same manner as if he were a parent.

Freud not only assumed that the leader becomes a parental figure for the follower, but stated that the leader must create the impression that he has equal love for all of the group members. He then
becomes an ideal person who is shared by the group. Freud illustrates this by pointing out how the superior officer may become the ideal of the private. If a group is to maintain itself, it must have a concept of an ideal figure as exemplified in the leader.

The thinking of Slavson (35) is closely related to our viewpoints and subsequent hypotheses to be tested. Slavson contends that the leader is expected to live up to the fantasies of his followers. Leadership is cloaked with a great deal of symbolism because of the projected ideals and attributes of the followers. A person, because of some real or imagined superiority, is elevated to the position of leader. He is perceived in as many different ways as there are members in the group. The group member's fantasies thus become highly personalized standards of measuring the effectiveness of the leader.

The analytic notion of the leader being symbolic of the follower's ideals has been applied by Erich Fromm (10) to the rise of Nazism in Germany during the thirties. Fromm points out that the people of Germany were ready for the appearance of a leader who would conform to their ideology.

Let us explore this a bit more. In order to understand the appeal of Nazism in Germany, we must have knowledge of the lower middle class strata of the German population. The lower middle class suffered most as a result of the first world war. Class differences, which held great significance for the German people, were shattered. Families were scattered, authority of the parents vanished, and savings were lost. The lower middle class was placed in the unfortunate
position of having no scapegoat or inferior class of people to look down on.

This social class felt the shame and defeat of Germany more deeply than the other people of Germany. They had wagered everything on the superiority of the German military to conquer the world, and had lost. As a result, it was relatively simple for a man of Hitler's social position and education to rise to the occasion, and be accepted by the German people.

By way of example, Hitler identified with the lower middle class. He, like the lower middle class, had nothing. Indeed, present and future were absent. A strong and powerful Germany was seen as the only way to regain one's lost social position, world prestige, and respect. The Reich, thus, became a symbol of social prestige.

Hitler capitalized on the feelings of inferiority present in the lower middle class. He emphasized, time and time again, the inferiority of the German citizen, and pointed out that such insignificance must be accepted by everyone. The only way to overcome these feelings was to surrender oneself completely to the German cause which symbolized strength and power.

Schuman (33) describes Hitler's technique of indoctrinating the masses with myths concerning the omnipotence of the country. Examples given by Schuman are: "We have the power. No one today can resist us. But now we must educate the German people to this State... The German people must place itself one hundred per cent in the service of our idea... We are the greatest organization that ever existed..."
in Germany. But not only that: We are today the only organization....

We must accomplish the great task, for beyond us there is no one who can do so." (op. cit. p 361).

In the early thirties, Lasswell (24) wrote an article which very accurately anticipated Fromm's thorough analysis of Nazism. To the mothers of Germany, Hitler was the ideal of strength. Through strength, the world could be punished for killing the young men of Germany. Hitler was also a strong replica of the old parental authority which was lacking in post war Germany. For example, Hitler would admonish, moralize, and behave in a manner quite similar to the worried and overconcerned mother who is looking out for the well-being of her son.

Homans (18) speaks of the leader reflecting the ideal of the group members. He states that the leader more closely approximates the group norms than anyone else. The leader, in addition to conforming to the norms, places a greater value on the norms and shows greater respect for them.

The influence of analytic theory is easily seen when examining the writings of Krech and Crutchfield (23) on leadership. For them, the leader is a symbol of group unity and represents the ideology of the group. They feel that Gandhi exemplified this interpretation and refer to him as, "the spiritual leader, the living conscience, and moral guide of millions of Hindus." (op. cit. p 421).

By way of summary, a description of the symbolic meaning of the leader is necessary for a psychoanalytic formulation of leadership.
The symbolism is a result of the group member's projected feelings. Fundamentally, the projected feelings are attitudes toward the parents which now are focused upon the leader. For a variety of reasons, the leader becomes an ideal figure or person in the member's world. A feeling of strength and security is achieved when the member accepts the fact that an ideal person is controlling his future.

Theories from Social Psychology and Sociology

The ideas presented in this section do not differ drastically from the theories and research that have been cited thus far. Because of this, only passing reference will be made to the contributions from this area.

Young (42, 43) has written a great deal about different aspects of groups. He states that the leader is a person who places structure on ambiguous situations. The leader, furthermore, is able to verbalize the unconscious strivings of the group members. In so doing, the leader crystalizes the member's vague feelings, and suggests solutions to group problems.

In addition to a seemingly deep and insightful understanding of the members, the leader offers himself as a person with whom the members can easily identify. He becomes an image to be followed. The great strength of the leader comes not from any inherent characteristics, but is derived from the members themselves. The leader is strong only because the members project attributes of strength onto him. Through identification with the leader, the members' feelings of strength and security are thus enhanced.
Cooley (5) once wrote that we all hope and strive for an imaginative object or an ideal figure. This figure becomes a guiding light. If a person is to have followers, and thus be a leader, he must encourage this myth. It is through this ideal that the leader is separated from the masses.

The logical deduction that follows from Cooley's interpretation of leadership, is that the abilities of the leader are unimportant. We need not consider what the person is capable of doing. Instead, we should consider only what is thought about the person. It becomes a question as to whether or not the person resembles the ideal figure. If the person does fit the image, his abilities have little importance in the judging of his competence for leadership. The fundamental thing is that the person is thought to be capable of leadership.

Semantics

It has been stated that this research is concerned with two problems. The studies, which have been presented thus far, are related to the leadership phase of this research. We may now turn to the second aspect of the study, i.e., the relationship of personal constructs to group membership. As will be stated more completely in Chapter Three, it is assumed that group membership is based, in part, upon the ability of group members to utilize the constructs of their fellow members. Let us see what light the field of general semantics sheds on this problem.

Murray (26) has attempted to combine the principles of general semantics and group dynamics. He feels that group development is
dependent upon the members entering into a cooperative relationship in order to assemble valid assumptions. The valid assumptions must be common to most of the group members. Such assumptions are valid to the extent that the abstraction of events is accurate.

In addition to the above, group development is dependent upon how information is coordinated and how action, based on the information, is carried out. The implication is quite clear that groups are not founded because of common goals alone. More basic is the ability to agree on symbols which represent events of importance in the environment. Continuously checking the validity of the communication system is a basic requirement for group maturation.

Lasswell (25) speaks of the function of communication in a group. For example, each and every group has a set of values which are made public through communication processes. The efficiency of the communication process can be observed operationally by knowing how well it permits group members to make decisions. If communication is misleading, it then becomes increasingly difficult for groups to arrive at decisions. Communication becomes misleading when the relation between sign and object, i.e., construct and event, is inaccurate.

In an enlightening paper by Barker (2), the role of language in a social setting is discussed. Barker states that in early psychological studies of language, the emphasis was on the ideas and thoughts conveyed by the spoken word. He points out that the function of language in a group cannot be limited to the expression of ideas. Language has a much more dynamic meaning, because the very
philosophy of the group is expressed verbally.

Full and complete communication is dependent upon people being members of the same group. Membership in different groups leading to communication difficulties may be seen in everyday life. For example, conflicts between political parties are due, in part, to language which reflects different value systems.

Sapir (30) classifies language along a social-function dimension. The four categories may be described in the following manner: (1) Language is a form of socialization, and may be observed in the utility of communication among members of a group. This reveals the high degree of organization in the group; (2) Language has a culture-preserving function. It is similar to heredity, because cultural elements are passed on from one generation to another; (3) Language is a way of defining the relative psychological position each and every member occupies in the group. This may be seen in the amount of communication directed to a particular group member; (4) Language is a device which reveals every group member as being unique and distinct.

Taking his cue from Sapir, Barker classifies the function of language into two categories. The first category is the function of group definition. It makes clear to the individual that he belongs to a particular group. The person is made aware of individuals who belong vs. those not belonging to "his" group.

To illustrate the above, Barker refers to primitive societies. A person is perceived as belonging or not belonging to the tribe on the basis of the language spoken. The same phenomenon is observed
today when people from the south are easily recognized as coming from that particular part of the country.

Barker's second category defines the person's psychological position within the group. Here, Sapir and Barker are in complete agreement regarding the function of language. Both authors describe language as a means of expressing the member's position relative to other group members. Through the study of language, Barker concludes, group membership, group structure, and group values may be more completely understood. It is further concluded that group membership vs. non-membership may be studied when language is classified along social function dimensions.

**Group Dynamics**

Let us turn now to studies in group dynamics which have been concerned with communication problems. The studies have dealt with communication as related to formation of opinions, channels of communication, and the direction of communication.

Before discussing the studies to be presented in this section, the following terms should be defined:

1. **Cohesiveness** is defined as the product of those forces which bring about equal attraction of membership in a group for the people belonging to the group.

2. **Slider** is a term designating a person who acted as a "stooge", and changed his opinion from marked deviate to model position.

3. **Deviate** designates a person holding a markedly divergent opinion.
4. Model designates a person holding the ideal or highly con­
forming opinion.

Back (1) was concerned with the amount and kind of communication
within small groups when such factors as relevant and irrelevant group
tasks are experimentally manipulated. Among high cohesive groups,
discussion was more effective in producing change. There was also a
great tendency to agree on matters.

The experimenter was able to arrive at some conclusions regard­
ing cohesiveness when produced by different forces. When personal
attraction served as the basis for cohesiveness, there was a great
tendency for the discussion to proceed along very "pleasant" lines.
When cohesiveness was dependent upon performing a task, discussion
was carried on to the extent that it contributed to the completion of
the task. When class prestige served as the foundation for cohesive­
ness the members did little to jeopardize status. And, when co­
hesiveness was low, the members acted in an independent fashion.

Schachter (31) found that deviates received an increasing amount
of communication from the group members during a meeting. Communi­
cations directed toward the slider decreased as his opinion began to
approximate the model position. As would be predicted from these
findings, the model received a small amount of communication, with
the rate neither increasing nor decreasing throughout the meeting.

The Michigan group dynamics' studies were described by Festinger
(8) in a paper presented to The National Conference of Social Workers.
The following findings were summarized: When there is an increase
in forces bringing about increased uniformity of opinion, there is a corresponding increase in communication directed toward those people holding non-conforming opinions. There is also a great tendency to change toward uniformity under strong pressure. In this case the deviates are "pulled" in toward the middle, thus bringing about uniformity of opinion. When cohesiveness is extremely high, there is a greater rejection of the non-conformer. This is especially true when the group is concerned with relevant issues.

Some research has concentrated on the role of communication in groups. Other studies have been concerned with problems of general semantics in groups. Although the two theoretical positions are different, there is one major point of agreement. It is this. When communication is inadequate, it produces disruptive effects within the group.

For the general semanticists, language identifies members from non-members. It expresses group values and standards, and defines the relative positions of the group members. By contrast, the group dynamics people study the effects of cohesive forces on communication, on the direction it takes, and on the relative positions of group members when the communication variable changes.

A study by Rush should be cited here. Since the study has not been completed, the following observation should be thought of as tentative. Rush worked with two groups of men designated as the Ace

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1. In a personal communication from Dr. Carl H. Rush, Jr., the writer was informed that the Korean Ace-Non-Ace study will be completed within the next two months.
and Non-ace groups. These men were jet pilots who flew combat missions in the Korean war. Rush was impressed with the highly aggressive nature of the Ace's constructs, and the absence of aggressively toned constructs in the Non-ace group.

The Ace's behaviors are similar in many ways. These men are successful in their present kind of work. They are skilled fliers and have a high percentage of kills. They are eager to enter into combat situations, and will go out of their way to engage enemy aircraft. The aggressive nature of their constructs appears to reflect the very essence of their behavior. Even their constructs are similar.

The purpose of this chapter has been to present research on two related areas. All of the research cited is related to our study in varying degrees. It is believed, however, that the experiments of Murray and Rush have the greatest relevance. It is unfortunate that Murray's work is not reported in a more complete manner. In reading Murray's published abstract, there appeared to be a great deal of similarity between our thinking and his. A similar situation arises when considering the work of Rush.

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2. Dr. Elwood Murray informed the writer in a personal communication that he has presented a more complete formulation of his thinking on general semantics and group dynamics in a recently published book entitled, Integrative Speech, New York, Dryden Press.
Chapter Three

Theoretical Basis for the Research Problem

Introduction

Today, there is a greater emphasis upon theory and system building. As a result, one requirement for judging research is whether or not it is related to a psychological theory. The arguments for this relationship include such factors as ease of communication, greater predictability, utility, and systematic relationships to other research findings. Such an approach to the investigation of psychological problems is opposed to the old, but still prevalent, methods of empirical study. Interesting but isolated bits of information usually result from research of this type. In this chapter, an attempt will be made to show how a particular psychological theory can generate hypotheses, and provide logical justification for investigating the hypotheses.

Definition of a Construct

A construct may be perceived as performing a two-fold task. First of all, a construct indicates the similarities of things. Secondly, it suggests how things are different from other events. A construct, therefore, explicitly calls for likenesses and differences. Thus, order is placed on events.

A construct may be compared with a hypothesis. It is something to be checked or validated. Validation informs the person of the con-
There is yet another way to consider a construct. Kelly has likened constructs to templates. They are ways of viewing or perceiving the world. This, in turn, enables the individual to react to life situations. This is not to imply that a construct is always valid or useful. It is, however, the construction the person places on an event at a particular time.

A construction of an event is subject to modification. A new or different construct may be substituted for the old one. This does not suggest that a person's system of constructs is necessarily fluid or that it is tight and rigid. Fluidity or rigidity of a construction system would lead to inadequate adjustment.

In summary, we may say that constructs are comparable to hypotheses or templates. Man uses constructs to establish order in life. The order results when certain events are perceived as being alike in some way yet different from other events. It is this system that places structure and personal meaning on everyday living. Since order and control are placed on events, consistency and control are also imposed upon the self.

The individual readily enters into situations because he has hypotheses or constructs for dealing with them. Inappropriate or inadequate behaviors may occur in other situations because he lacks a system for construing the situation. This approach to the understanding of man should not lead us to the conclusion that man is the master of his fate. It does suggest, however, that he is not at the complete mercy of his own wishes and needs. It is through the con-
struction system that he is able to maintain some semblance of adjust­ment.

Communication

The influence a construction system has on a person's life calls for a discussion of a person's role. By role we mean the way a person behaves in social situations, reacts to problems, etc. However, let us define role more specifically. A role is an ongoing process which depends upon person A's construction of certain elements of person B's construction system. This ongoing process takes place in a social setting. In other words, if a person is to play a role he must have an appreciation of a second person's thought processes. This may well be the primitive beginning of communication. Perhaps it would be more accurate to say that the foundation has been built so that communication may follow.

The concept of role is very much analogous to the experimenter who states hypotheses. A person who is playing a role makes predictions regarding the other person. Like the experimenter, he makes changes following the validation or invalidation of his predictions.

Although not specifically stated in the theory, communication appears to depend on two processes. They are commonality and sociality. Commonality may be defined in the following manner: "To the extent that one person employs a construction of experience which is similar to that employed by another his psychological processes are similar to those of the other person." (22, p. 2-59). The concept of commonality is illustrated in any profession where an organized body of knowledge exists, and people share the same understanding of
the knowledge. It is assumed that commonality of construction systems aids in binding people together concerning certain events. Furthermore, it is assumed that commonality provides the opportunity for communication. In other words, communication can only occur when there is some shared idea or body of knowledge.

We have discussed the concept of role and the commonality corollary as being basic to the communication process. One more corollary must be defined to complete the description of the communication process. It is sociality. Sociality may be defined in the following manner: "To the extent that one person construes the construction processes of another he may play a role in a social process involving the other person." (22, p. 2-65).

Sociality implies a certain amount of harmony with others. It means an acceptance of others as well as construing a person as a construer of events. It is easily seen that the corollary is paramount to the understanding of role.

The Relationship of the Theory to this Study

A group is formed, presumably, because certain things are shared; more specifically, because there is commonality. It is such commonality that provides for the feeling of belonging and security in a group. It is logical to assume that the person who has complete understanding of the shared group goals, will occupy an advantageous position within the group. Such a person will be able to understand the very philosophy of the group. He will know what is required for group harmony. He will be able to "call the shots" accurately. The aware-
ness enables him to understand his fellow members. He knows that his fellow members share the group goals. Thus he is aware of "what is good for them." It is further assumed that the group members, with varying degrees of awareness know that certain fellow members can plot the course of the group more successfully than others. These people are elevated to leadership positions.

In this study it is predicted that an "ideal fraternity type" construct exists within each fraternity member's construct system. Each member of the fraternity has a construct or related constructs defining the behavior of the "ideal fraternity type." The "ideal fraternity type" is hypothetical. Because of its highly personalized nature, it becomes impossible to define explicitly. Each person has his own definition.

Since the "ideal fraternity type" is an ideal, it is never personally realized. This leaves the person in the position of choosing another to place his confidence in and to emulate. This is the person who best fits his construct of the "ideal fraternity type." As has been stated, the ideal is not the same for every member, however, it is assumed that there is enough commonality to reach agreement. On the basis of the agreement, the group leader is elected.

From the above let us tease out the "ideas" to be tested. There are two of them. First, it is predicted that a person is a leader because he, more closely than anyone else, is perceived to approximate the concept of the "ideal fraternity type." Secondly, the leader will be perceived as being more like the "ideal fraternity
type" than he will be perceived as being like the average group member.

Let us carry our theoretical thinking a bit farther. It has been assumed that there is an ideal member construct, i.e., "ideal fraternity type," within a person's construction system. If such is the case, it becomes a goal to work toward. That is, the person would attempt to be more like the "ideal fraternity type." He would invest more of himself in the group. The person's efforts would be perceived, by fellow members, in the light of great concern for the group. They would see that he is vitally interested in the group and its goals.

By the same token, those members possessing a more vague ideal would have less to invest in the group. Consequently, they would have a weaker feeling of belonging. They would also be perceived in this manner. That is, their fellow members would realize that they had little interest and concern for the group.

The prediction that follows from the immediate discussion is this. If a person has a clear "ideal fraternity type" construct, he will have a strong sense of belonging to the group.

It will be remembered that commonality refers to similarity of construing processes among individuals. Can this concept account for the presence of group bonds? It is thought that it can. It is assumed that group bonds will be stronger when commonality is maximized. For example, when goals, ideals, recreation, etc., are shared, a stronger sense of belonging will take place. A person whose con-
struction system does not incorporate such elements, will feel left-out. He will be perceived as having weaker ties with the group.

From this, the prediction follows that commonality will be mirrored in the constructs of the group members. That is, from the individual member's constructs one can predict the degree of belongingness to the group.
Hypotheses to be Tested

In the previous chapter appropriate parts of the psychology of personal constructs were stated. Now, the reader should have some theoretical justification for the study. The hypotheses to be tested are four in number. They are:

**Hypothesis A.** Members of a group whose constructs are most frequently used by other members of the group will, in turn, have higher target ratings.

**Definition of Terms**

**Group.** In this study, the group is quite formal and has a high degree of structure. It is a college social fraternity.

**Construct:** A construct designates the way in which two events are alike and yet distinguished from a third event.

**Target Ratings.** These are ratings derived from a sociometric technique. The ratings reflect the degree of belongingness to the group.

**Hypothesis B.** Those group members who are able to construe an "ideal fraternity type" will, in turn, have higher target ratings.

**Hypothesis C.** The group president will be perceived as more closely resembling the "ideal fraternity type" than will he be perceived as resembling the average group member.

**Hypothesis D.** The group president will be perceived as more
closely resembling the "ideal fraternity type" than will the average group member be perceived as resembling the "ideal fraternity type".

It will be recalled that the "ideal fraternity type" cannot be explicitly defined. It is a term which subsumes all behaviors and attributes of the ideal fraternity member. There are, consequently, as many different definitions as there are group members.
Description of the Sample

The hypotheses called for a formal group. It was assumed that a fraternity would meet the requirement. It was decided that two groups of thirty each would suffice for testing the hypotheses. Each group would be treated as separate samples. This was considered necessary in order to avoid assuming that the two samples were drawn from the same population. Since it was possible to obtain only one sample, there was no difficulty regarding the assumptions about the population.

The first step was a pre-test sample. A pre-test would familiarize us with the design. It would also afford a check on unforeseen problems.

A large social fraternity was contacted by telephone. The experiment was explained to the fraternity president. The president volunteered to participate as well as secure nine other fraternity brothers. A time for beginning the first part of the experiment was agreed upon.

Four out of the promised ten were present for the initial experimental session. Furthermore, the president was uncertain as to whether or not he could induce the remaining six to participate in the experiment. A time period of two weeks lapsed following the first pre-test session. Since time was at a premium, and the president
showed no evidence of cooperation, it was decided to go on with the fixed part of the research.

Because of the experience with the pre-test group, it was decided to use an incentive in building an experimental sample. The Department of Psychology of The Ohio State University, agreed to pay one dollar per person with the sum being payable to the fraternity as a whole.

Ten fraternity presidents were telephoned, and the problem was explained to them. The phone contact was followed by a summary letter which covered all points mentioned in the phone conversation. It was assumed that the letter would aid the presidents in presenting the request to their respective groups. A copy of the letter can be found in Appendix A.

Out of the ten fraternities contacted, three or four showed interest in the project. The remaining ones declined immediately, or refused participation following presentation of the problem to the house. Of those indicating interest, the group having the largest membership was selected. Of the remaining groups, one participated in another research project while the others finally refused participation of any kind.

If the sample could have been based on a system of volunteers, it would have been relatively easy to build an N larger than the one reported in this paper. It was necessary, however, to be assumed of cooperation from every member in the house. That is, if subject A was selected we had to have some assurance that subject A would
participate in the experiment.

Thirty-one subjects were randomly selected from the active membership list. The description of the sample is as follows: ten from the sophomore class, ten from the junior class, and ten from the senior class. The fraternity president, a junior, was also included to make a total of thirty-one subjects. Of the thirty-one subjects, twenty-nine were present for the first experimental session. This number constituted the final N.

Pledges and freshmen were omitted from the sample because of the assumption that membership ties would not be strong. Weak membership ties, if such existed, would have a negative influence on the hypotheses to be tested.

Role Construct Repertory Test

The Role Construct Repertory Test (hereafter referred to as the REP Test) is a theory-related test which was designed to elicit personal constructs (22). A copy of the test appears in Appendix B. Briefly, the test is composed of a grid with role titles or names of people being used to head the columns. Blank spaces are left for writing personal constructs along the side of the grid.

The essence of the instructions, which appear in Appendix B, is to form a construct which will describe how two designated people are differentiated from a third person, in other words, a construct that tells how two people are alike and yet different from a third person. As soon as the subject thinks of a construct, he writes it down. He is also asked to write the contrast of the construct.
Sociometric Devices

Two sociometric devices were administered. They may be found in Appendix B. Because of their design, they will be referred to as targets. The target adopted was that used by Trapp (39). It consists of a series of concentric circles with the center serving as a reference point. Each subject was asked to plot every other subject in relation to the central reference point. The circles are marked off in percentages with the outermost circle being defined as zero per cent. The innermost circle received the value of one hundred per cent. Members of the group, who were perceived as having the "least" amount of the variable, were placed on the periphery of the circle.

Each subject had a list containing all subjects and their assigned code numbers. In filling out the targets, the subjects used the code numbers rather than the names of their fellow members. Since numbers can be written more quickly than names, the whole rating process was shortened. Furthermore, the smallness of the targets would have made name writing very difficult.

As was stated, two targets were administered. One target was designed to measure popularity. The second target purported to measure initiative. The instructions for both targets are in Appendix B. Popularity was defined as the degree to which each member wishes to be with each and every other member of the group in social situations. Initiative was defined as the degree to which a group member assumes house and committee duties, participates in organi-
zation activities, and the amount of expressed concern for the smooth functioning of the group.

The targets were scored by computing the average target score for each subject. This was done by adding all of the ratings assigned to each subject by every other subject. The sum was then divided by the number of ratings received. Thus, each subject had two average or global target scores. These average target scores were plotted on master initiative and popularity targets for future reference.

Modified HEP Test

A modified HEP Test was also administered to the group. A copy of the test appears in Appendix C. The modified HEP Test is basically the same as Kelly's. One major difference appeared in the role titles. Ten, instead of nineteen, role titles were used.

Another major difference can be seen in the fact that the names of people were given. This made it unnecessary for the subjects to produce their own names as was required on the original HEP Test. The names were nine fraternity brothers randomly selected from the experimental sample. One of the names was the fraternity president who was deliberately used as a modified HEP Test title. The tenth role title was called the "ideal fraternity type." The "ideal fraternity type" was not defined for the subjects. (Indeed, no definition has been supplied for the reader in this study.)

There was still another distinguishing feature of the modified HEP Test. The constructs, like the role titles, were also given.
Thus, the subjects did not have to spontaněously produce constructs or names.

First Experimental Session

The first experimental session took place at the fraternity house in the evening. The session lasted for two hours. However, a majority of the subjects were finished in one and a half hours.

The following materials were distributed to the subjects: REP Test, two targets, and instructions. In addition to these materials, a list of subjects was given to each subject. A number appeared beside each name on the list. This was the code number referred to in the above. The subjects were asked to read the instructions for the REP Test. The experimenter then read the instructions aloud and gave an example. If the second reading did not sufficiently explain the task at hand, further clarification was given individually. Due to the nature of the material, the subjects were asked to sit apart. It was assumed that they would feel more comfortable, and free from the feeling that their fellow members could see how they were progressing. This was particularly important when the targets were being completed.

The second part of the experimental session was devoted to administration of the targets. The target instructions required little clarification. Most of the subjects were able to launch into this task with little or no difficulty.

A word or two should be said about the targets. These criterion measures placed serious restriction on the size of the N. The subjects
found it difficult to rate twenty-nine people on two different variables. Even though the subjects knew each other quite well, it still remained a difficult task. As a result of speaking with the subjects after the first experimental session, it was seen that twenty-nine approached the maximum number the subjects could rate.

**Make-Up Session**

There was a period of two weeks between the first and second experimental sessions. During this time, a short session of fifteen minutes was held. This meeting was designed to correct the subject's administrative errors. The errors consisted, largely, of omissions on the targets. Since there was no patterning to the errors, it is assumed that carelessness accounted for them.

**Categories of Constructs**

The constructs, elicited by the REP Test, were sorted into fifteen categories by the experimenter. At first, it appeared that it would be necessary to have judges categorize the constructs. However, upon examination, it was observed that the constructs very clearly grouped themselves into broad categories. There was one exception. This was referred to as the "miscellaneous category."

It is assumed that had judges been utilized to categorize the constructs, the results would not have been measurably altered. In the first place, a representative sample of the member's constructs was obtained. Secondly, the constructs very neatly clustered into categories.

For example, many of the constructs dealt with a variety of
degrees and kinds of friendship. These constructs were clearly distinguished from constructs having to do with money, happiness, seriousness, etc. Furthermore, had the constructs been judged by raters, and thus placed in different categories, the constructs would have contributed to a representative list in about the same way.

Labeling the construct categories has no meaning for this study. Indeed, we could just as easily refer to categories A, B, C,.....Z. The names we assigned to the fifteen categories were for ease of categorizing the constructs. It must be emphasized that the category titles were simply convenient personal frames of reference. The category names, along with samples of constructs elicited by the REP Tests, are presented in Figure 1.

From the fifteen categories, fifty-five constructs were selected to represent the fifteen construct-categories. The list appears in appendix C. For the same reasons as mentioned above, it was decided that judges were unnecessary. The fifty-five constructs appeared on the list just as the subjects wrote them. The contrast of the constructs was also used.

Second Experimental Session

The second experimental session was of an hour and a half duration. Most of the subjects were finished within an hour. Since nine of the original twenty-nine subjects were used as names in the modified REP Test, only twenty subjects participated in the second session.

The modified REP Test and instructions were distributed to the
<table>
<thead>
<tr>
<th>Category Name</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal</td>
<td>&quot;interested in self development&quot;, &quot;striving.&quot;</td>
</tr>
<tr>
<td>Affect</td>
<td>&quot;happy&quot;, &quot;sad.&quot;</td>
</tr>
<tr>
<td>Accomplishment</td>
<td>&quot;conscientious&quot;, &quot;perseverance.&quot;</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>&quot;intolerant&quot;, &quot;understanding.&quot;</td>
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<td>Materialistic</td>
<td>&quot;money&quot;, &quot;not materialistic.&quot;</td>
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<tr>
<td>Friendship</td>
<td>&quot;friendly&quot;, &quot;brotherly.&quot;</td>
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<tr>
<td>Age</td>
<td>&quot;up in years&quot;, &quot;adult.&quot;</td>
</tr>
<tr>
<td>Physical</td>
<td>&quot;bald&quot;, &quot;tall.&quot;</td>
</tr>
<tr>
<td>Intelligence</td>
<td>&quot;educated&quot;, &quot;brilliant.&quot;</td>
</tr>
<tr>
<td>Honesty</td>
<td>&quot;untruthful&quot;, &quot;ethical.&quot;</td>
</tr>
<tr>
<td>Religion</td>
<td>&quot;religious&quot;, &quot;religious misunderstanding.&quot;</td>
</tr>
<tr>
<td>Adjustment</td>
<td>&quot;nervous&quot;, &quot;extrovert.&quot;</td>
</tr>
<tr>
<td>Social</td>
<td>&quot;sociable&quot;, &quot;polish.&quot;</td>
</tr>
<tr>
<td>O-C</td>
<td>&quot;prompt&quot;, &quot;efficient.&quot;</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>&quot;technical background&quot;, &quot;married.&quot;</td>
</tr>
</tbody>
</table>
subjects. These materials were accompanied with the list of fifty-five constructs. The same procedure, as outlined for the first experimental session, was observed. The subjects were asked to read the instructions. We then read the instructions aloud and supplied an example. Individual help was given when required. The subjects were selecting constructs on the basis of their fraternity brothers. That is, they were indicating the likenesses and differences of their fellow members. For this reason, the subjects were asked to sit apart from each other.

Summary

Thirty-one randomly selected subjects from a large social fraternity were chosen to participate in the experiment. Of the thirty-one subjects, twenty-nine appeared for the first experimental session. A REP Test, along with two devices designed to measure popularity and initiative, were administered. The REP Test elicited personal constructs. A short session was introduced to correct administrative errors made by the subjects. This session took place between the first and second experimental meetings.

A second experimental session was held in which twenty subjects filled out a modified REP Test. The task was to select constructs from a given list of constructs, and apply them to the modified REP Test. Nine fellow members constituted the names on the modified REP Test. The tenth role title was labeled, "ideal fraternity type."
Chapter Six

Analysis and Results Obtained

Hypothesis A

Members of a group whose constructs are most frequently used by other members of the group will, in turn, have higher target ratings.

Procedure

The targets measuring popularity and initiative were analyzed. Analysis consisted of examining the relative position each subject occupied in the group. This was done by tabulating the ratings each subject received on the targets.

For example, subject A might receive the following ratings from his fellow members on the popularity variable: 50, 60, 30, 40, etc. The ratings would be summed and a mean rating score computed. The mean rating score is the average of all ratings received by the subject. The mean initiative and popularity scores were then re-plotted on targets. These scores are presented in Figures 2 and 3.

Figures 2 and 3 are the master targets. Each subject's code number was plotted on the master targets. This indicated the average popularity and initiative rating for each subject. In Figure 2, for example, subject 25 received an average popularity score of 50. Subject 25 is plotted between the values 50 and 60 per cent.

A frequency count was made of the constructs used by the subjects on the modified REP Test. A weight was assigned to the constructs on
the basis of how many times it was used by the subject^*. Thus, if construct "a" was used eight time, it received a weight of eight. If construct "b" was used five times, it was assigned a weight of five. The weights were totaled for each modified REP Test. These totals will be referred to as construct scores. Each subject's construct score, popularity and initiative scores may be found in Table 1.

Chi square (2^2) was employed to test the significance of the relationship between construct scores and master target scores. It was observed from inspection of the two by two table, that the chi square value would not approach significance.

The Pearson coefficient of correlation (2^2) was obtained between construct scores and master target scores. The r between construct and initiative scores was .19. The r between construct and popularity scores was .26. These correlations are not significant.

The popularity and initiative master target scores were totaled. The r between these scores and construct scores was not significant. The r was .26.

Because of the small N, a non-parametric statistic (41) was used. It was observed that a significant r would not be obtained. The computation was, therefore, discontinued.

The correlations were not significant. However, there does seem to be some consistency of direction. The ambiguity of the results does not permit us to accept them. It suggests that a different approach or possibly a larger N would reveal more significant relationships.
<table>
<thead>
<tr>
<th>Subject</th>
<th>Construct Score</th>
<th>Popularity Target Score</th>
<th>Initiative Target Score</th>
<th>Added Target Score</th>
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<td>125</td>
<td>54</td>
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<tr>
<td>12</td>
<td>198</td>
<td>53</td>
<td>72</td>
<td>125</td>
</tr>
<tr>
<td>15</td>
<td>231</td>
<td>53</td>
<td>27</td>
<td>80</td>
</tr>
<tr>
<td>26</td>
<td>231</td>
<td>69</td>
<td>78</td>
<td>147</td>
</tr>
<tr>
<td>7</td>
<td>262</td>
<td>59</td>
<td>48</td>
<td>107</td>
</tr>
</tbody>
</table>
Hypothesis B

Those group members who are able to construe an "ideal fraternity type" will, in turn, have higher target ratings.

Procedure

The tenth role title on the modified REP Test was the "ideal fraternity type." The REP Tests were scored by a technique known as "scanning" (21). The purpose of this scoring procedure is to see if the subjects are able to construe the "ideal fraternity type." On the protocols, where the "ideal fraternity type" did match a significant portion of the grid, it was predicted that the subjects would have significantly higher master target scores.

As in the case of hypothesis A, chi square was abandoned as soon as tabulations were entered in a four fold table. Hypothesis B did not meet an acceptable statistical level of confidence. Implications of Hypotheses A and B will be discussed in the next chapter.

Hypothesis C

The group president will be perceived as more closely resembling the "ideal fraternity type" than will he be perceived as resembling the average group member.

Procedure

The modified REP Tests were scored using the president role title as the scanning figure. A test of significance (40) was employed to test the significance of relationship between the role titles and the "ideal fraternity type." If the hypothesis is supported, there will be a significant difference between the modified
REP Test names and the "ideal fraternity type" title. There will not, however, be a significant difference between the "ideal fraternity type" and the group president. With the exception of role titles A and F (Table 2), the differences are highly significant and are in the predicted direction. The differences are presented in Table 2.

Hypothesis D
The group president will be perceived as more closely resembling the "ideal fraternity type" than will the average group member be perceived as resembling the "ideal fraternity type."

Procedure
The same procedure in testing hypothesis C was used to test hypothesis D. The only difference was that the "ideal fraternity type" role title served as the scanning figure. All differences are significant and in the predicted direction with the exception of role title F. The statistical relationships are presented in Table 3.

A word or two should be said about the test of significance. The procedure is especially designed for use in examining role title relationships on the REP Test. Although the test has no name, it is similar to a critical ratio. The reader is referred to Appendix D for a complete explanation of the statistic.
Table 2
Differences Between the Average Group Member and the Group President as Measured by the Modified REP Test

<table>
<thead>
<tr>
<th>Role Titles</th>
<th>Critical Ratio</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-1.56</td>
<td>P = .0594</td>
</tr>
<tr>
<td>B</td>
<td>6.87</td>
<td>P &lt; .0001</td>
</tr>
<tr>
<td>C</td>
<td>6.04</td>
<td>P &lt; .0001</td>
</tr>
<tr>
<td>D</td>
<td>7.01</td>
<td>P &lt; .0001</td>
</tr>
<tr>
<td>E (fraternity president)</td>
<td>2.06</td>
<td>P &lt; .0001</td>
</tr>
<tr>
<td>F</td>
<td>5.10</td>
<td>P &lt; .0001</td>
</tr>
<tr>
<td>G</td>
<td>6.08</td>
<td>P &lt; .0001</td>
</tr>
<tr>
<td>J (&quot;ideal fraternity type&quot;)</td>
<td>5.10</td>
<td>P &lt; .0001</td>
</tr>
<tr>
<td>H</td>
<td>6.08</td>
<td>P &lt; .0001</td>
</tr>
<tr>
<td>I</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3
Differences Between the Average Group Member and the Ideal Fraternity Type as Measured by the Modified REP Test

<table>
<thead>
<tr>
<th>Role Titles</th>
<th>Critical Ratio</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2.70</td>
<td>P = .0035</td>
</tr>
<tr>
<td>B</td>
<td>3.95</td>
<td>P &lt; .0001</td>
</tr>
<tr>
<td>C</td>
<td>5.38</td>
<td>P &lt; .0001</td>
</tr>
<tr>
<td>D</td>
<td>4.37</td>
<td>P &lt; .0001</td>
</tr>
<tr>
<td>E (fraternity president)</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>F</td>
<td>1.18</td>
<td>P = .1190</td>
</tr>
<tr>
<td>G</td>
<td>4.30</td>
<td>P &lt; .0001</td>
</tr>
<tr>
<td>H</td>
<td>4.10</td>
<td>P &lt; .0001</td>
</tr>
<tr>
<td>I</td>
<td>3.24</td>
<td>P &lt; .0006</td>
</tr>
<tr>
<td>J (&quot;ideal fraternity type&quot;)</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
Chapter Seven

Discussion of Results and Conclusions

Introduction

The purpose of this chapter is to go beyond the simple statement of acceptance or rejection of the hypotheses. We feel that the results are based upon adequate sampling technique, appropriate statistical handling of the data, and logical theoretical assumptions. Therefore, let us also discuss some of the sources of error concerning hypotheses A and B.

Hypotheses A and B

Hypotheses A and B were tested and the results were ambiguous. This may imply that there is little relationship between personal constructs and group membership. There is also the implication that even though the members do utilize an "ideal fraternity type" construct, it is not too strongly related to group membership. Only further experimentation will answer these two questions.

Let us discuss the criteria measures. The error which possibly appears here is not in the validity of the measures. The validity can be assumed to be inherent. The error we refer to is in the actual behaviors measured. Perhaps popularity and initiative are not really good indices of membership strength. On the other hand, perhaps they should have been expanded to include other group-related behaviors.

For example, such behaviors as the number of fraternity functions attended, amount of time spent at the fraternity house, desire to keep
the fraternity grade average up, etc., may act in a fashion similar to multiple correlation. The behaviors in and of themselves contribute little to a measure of group belongingness. However, their combined influence may be great. We then present the meagerness of the criterion measures as one possible source of error.

One of the first attacks or criticism will be directed toward the theory. Is the theory in a position to make the kinds of predictions we believe it can make? Can the theory make testable statements about leadership and group membership? Is it possible that the theory is being taxed too much through an attempt to extend it into other areas of human behavior? Are hypotheses generated from the theory, or was there an attempt to make the facts fit the theory?

First, let it be said that the theory contains one basic postulate, and several systematically related corollaries. The corollaries specifically used in this study were commonality and sociality. We very clearly stated that predictions were based on the two corollaries. However, it is possible that we have unwittingly contributed to the error in the application of these corollaries. There must be more experiments on group behavior which stem from the psychology of personal constructs. We will then be able to evaluate our ability to make predictions based on the theory.

One of the obvious features of the experiment was the small N. This was due to the lack of available subjects. Although more subjects may have been drawn from the same population, the difficulties encountered in rating people on the targets would have increased in a
disproportionate manner.

The major contribution of a large N is in the emphasizing of very subtle or small differences. On the other hand, if differences are gross, a small N usually reveals such relationships. It is possible that this study dealt with subtle relationships which could not be observed in a small number of subjects. If such is the case, increasing the size of the N would constitute a more rigorous test of the hypotheses.

A last but probably very important factor is the approach used. We had two alternatives from which to choose. The choices were a concretistic vs. an abstract approach. We made our bid for the former, i.e., the concretistic.

The concrete approach represents qualitatively a low level of concept formation. It is ineffective when dealing with complex aspects of life. Indeed, a concretistic approach cannot communicate a complex concept. In the first place, it is too limited. Furthermore, it does not communicate the important or even the relevant features of an event.

The abstract approach represents the opposite end of the concept formation continuum. It is the ultimate in clear, high level, creative thinking. Where as the concrete concept is tied to obvious but relatively undistinguishing features of an event, the abstract concept subsumes all of the important features of an event. The abstract concept clearly states all of the relevant aspect of an event.

We believed, however, that communication would occur between members when using the concrete approach. Communication is nil only
when there is "complete" concretism. In other words, it was fully
realized that with N number of subjects, there would be N number of
construct definitions.

Let us take the construct "friendly" for an example. "Friendly"
was the most popular or common construct elicited by the REP Test.
All of the subjects used this construct at least once. Many of the
subjects used "friendly" many times in order to indicate how certain
fellow members were alike. We know that subject "a" did not use
"friendly" in the same manner subject "b" did. We did assume, how­
ever, that there would be enough overlap to permit communication.

The concrete approach, which we subscribed to in this study, is
object bound. Let us use the example of "friendly" to further expand
the point. The concrete approach states that subject "a" is thinking
of a particular friend when using the construct of "friendly". He is
unable to perceive the construct as representing the entire category
of friendliness. To him, it is highly specific. It becomes a question
of the uses or meanings of the construct which are subsumed on a
linear scale. The different shades of meaning are abstracted and re­
presented by the construct which is called "friendly."

It is, therefore, possible that an abstract approach to the con­
structs would have revealed more definitive results. The concrete
approach is much more simple than that of the abstract. In fact, it
was the simplicity itself which justified its use in our theory.

As the results now stand, we cannot accept or reject hypotheses
A and B. They still represent two ideas about group behaviors which may
There is some meager evidence which temptingly lends support to the validity of the statements contained in hypotheses A and B. This evidence comes out of Rush's work which was cited in an earlier chapter. This, however, is an observation that has no statistical support as yet.

Now, what can be said about the implication of these two hypotheses? First of all, there does appear to be a relationship, tenuous through it may be, between personal constructs and group membership. The nature, the degree, the importance of the relationship is not known. Therefore, the only implication is in terms of further investigation.

The above mentioned sources of error should be taken into consideration in the event hypotheses A and B are explored again.

**Hypotheses C and D**

It will be remembered that hypotheses C and D were accepted at a high level of confidence. There were two exceptions. Subject A failed to be predicted by hypothesis C, and subject F failed to be predicted by hypotheses C and D. Let us discuss these exceptions.

The prediction, with regard to subject F, is in the "right" direction. For hypothesis C, \( P = .1446 \). For hypothesis D, \( P = .1190 \). These findings may be considered acceptable in as much as a new theory is being used to make the predictions. In other words, if all of the differences had been accepted at the ten or fifteen percent level, it could be said that future research would probably reveal more definite results. The rationale is that a new theory cannot be expected to predict highly significant results. One is receiving a
great deal when the new theory predicts directionality.

Since the other predictions were so highly significant, the above rationale hardly seems plausible. The targets for subject F were re-scrutinized for an explanation of the ambiguous results. Nothing was revealed. The total N received a mean popularity score of 51. F's popularity score was 49. The mean initiative score was 52. F's initiative score was 42.

Turning to F's REP Test, it is seen that his use of constructs is quite limited. Although he can form a construct on two people to indicate their similarity, he seems unable to perceive others on the same construct dimension. This may indicate that subject F is hard to know in the sense of his fellow members being able to understand and predict him.

Hence, we see that subject F is a rather ordinary person. He is neither more nor less popular when compared with his fellow members. He is only slightly below the mean initiative score. For some reason, the group has withheld a decision as to his similarity with the "ideal fraternity type." It is almost as if they are not certain of subject F.

Subject A, who is the group secretary, was not predicted accurately by hypothesis C. In fact, the finding was in the opposite direction predicted. The result was not significant. This would imply that subject A is perceived as tending to be similar to the "ideal fraternity type." This is quite plausible since he was judged to be the person who assumes the greatest amount of initiative second only to the president, who was judged to be the first in initiative. Subject A's
initiative score was 88. The president's initiative score was 95.

Subject A's popularity score of 62 was only slightly above the mean popularity score. The subject approaches the "ideal fraternity type" when considering the initiative variable. His group, however, does not perceive him as measuring up to the "ideal fraternity type" with regard to popularity.

Before discussing the implications of hypotheses C and D, it may be well to elaborate more completely what the psychology of personal constructs has to offer about leadership. The theory is more explicit about leadership than it is concerning the relationship of constructs to group membership.

We find similar statements about leadership in the psychology of personal constructs and interactional theory. It is as if the psychology of personal constructs subsumes interactional theory. Interactional theory is a miniature system which shares common rationale with the psychology of personal constructs.

Both theories emphasize the demands of the situation, and imply that everyone probably possesses leadership potentialities. To illustrate, if the needs of the group are primarily financial, a person, who is a good money raiser, will stand a better than chance opportunity of being elected leader. To be sure, such factors as prestige are important to the leader. However, these factors are attached to the role of leadership and not to the individual.

The leader is elected because of certain needs of the group. He is also elected because he is able to predict the course of the group.
more accurately than the members.

Implications of hypotheses C and D may now be discussed. The first question should deal with the matter of generalization. How far and to what extent can the results be generalized?

It has undoubtedly occurred to the reader that the sample used in this study is highly selective. It is drawn from an atypical population. That is, it is a fraternity group selected from a population which is in and of itself far from representative of the general population. This was necessary for it was our stated intention to work with a highly formal group.

In order to test the degree to which we can generalize, a less formal group would have to be utilized. An example of such a group may be an athletic team. The experimental task would be to compare the member's perceptions of fellow members with his perception of an ideal team member.

It is also possible that groups could be graded as to degree of formal structure. It is our feeling that the group has to offer the individual personal involvement and gain. The description of the lower middle class people of pre-world war II Germany is an excellent example. A great deal of structure must be present in order for involvement to occur. In such a group there is an attempt made to have all members participating in some manner.

There should be no difficulty in testing these hypotheses in non-college groups where the criterion of formal structure could be met in varying degrees.
The findings, which lend support to hypotheses C and D, can lead to generalizations about other college fraternal organizations. Is this important? We feel it is important because we were able to make a prediction about human behavior, and obtain verification for the prediction. It is important because the prediction is not just systematically related to a theory, but was predicted by a newly formulated theory of behavior.

These findings are important from the standpoint that the very hard to test psychoanalytic theory has made the same predictions. These similar predictions were concerned with social movements within large ethnic groups.

The study has ignored the so-called traits of leadership, and accepted the philosophy of the psychology of personal constructs. That is, leadership is a situational-type of behavior which is dependent upon the needs of the group. The study has gone beyond this very limited formulation of leadership to add what may be referred to as a superordinate factor. This factor has been called the "ideal fraternity type." It would, therefore, seem that leadership is not only related to the situation, but also to the member's concept of the ideal group member type.

Since this study departs from the traditional trait approach, it offers a different measure for leadership studies. Further research along these lines may provide cues as to why some leadership is successful, while failure dooms other leadership efforts.

The study offers still another type of contribution. Questions
may be as important as answers. First of all, there is obviously communication from member to member about the "ideal fraternity type." What is the channel of communication? How does communication take place? More basic than the communication question is that of the "ideal fraternity type." What is the nature of the "ideal fraternity type?" Can it be verbalized? How is it put into words? Does something comparable to the "ideal fraternity type" exist in groups having different goals, different structure, and less formality, etc.

There is the question of generalization. For example, is there a significant relationship between the president of a Rotary Club and the ideal Rotary member type? In other words, if hypotheses C and D were tested on a civic group, would they be supported?

We have but one bit of evidence concerning the degree of generalization. Two very independent theories have predicted the same group phenomenon in two radically different types of groups. These findings should not only lend support to our results, but also suggest the range of generalization.
Summary and Conclusions

This study tested four hypotheses having to do with group behavior. In this chapter, we will briefly re-state the experimental design, hypotheses, and results.

A group of twenty-nine fraternity members were randomly selected from a large social fraternity at The Ohio State University. The subjects met as a group in two experimental sessions. In the first session, the subjects were given a REP Test which is designed to elicit personal constructs. In addition to the REP Test, two tests were administered to measure popularity and initiative. These tests were called targets.

In the second experimental session, the subjects took a modified REP Test. Instead of producing their own constructs, the subjects were supplied with a list containing representative group constructs. This list was compiled from the first REP Test. The modified REP Test presented the task of using the group constructs to indicate the likenesses and differences of the subjects' fellow members.

Each subject had a series of scores. The construct score was a value assigned which indicated the degree each subject used the representative constructs of the group. The popularity score indicated the degree to which each member wants to be with every other member in a social situation. The initiative score indicated the degree to which a subject assumes house duties, participates on committees, etc.
Hypothesis A

Members of a group whose constructs are most frequently used by other members of the group will, in turn, have higher target ratings. Correlations and a test of chi square failed to reveal a significant relationship between construct score and target scores.

Hypothesis B

Those group members who are able to construe an "ideal fraternity type" will, in turn, have higher target ratings. When tested with chi square, there were no significant differences between target scores and a value based on a factor analysis of the modified REP Test.

The results obtained for hypotheses A and B are considered to be too ambiguous to support them. Therefore, they could not be accepted or rejected. The conclusion is that a different approach to the problem may be profitable. Such an approach would depart from the concretistic use of the constructs, and move more in the direction of an abstract interpretation of constructs.

Hypothesis C

The group president will be perceived as more closely resembling the "ideal fraternity type" than will he be perceived as resembling the average group member.

This hypothesis was accepted at a high level of confidence.

Hypothesis D

The group president will be perceived as more closely resembling the "ideal fraternity type" than will the average group member be per-
coined as resembling the "ideal fraternity type."

It was possible to accept this hypothesis at a high level of confidence.

The highly selective features of the sample undoubtedly places severe restrictions on the range of generalization for hypotheses C and D. It has been pointed out, however, that the hypotheses were accepted at a high level of confidence. Furthermore, two independent theories made the same predictions. We, therefore, believe that the generalizations are not as limited as might be assumed on the basis of the sample.
Bibliography


APPENDIX A

Contact Letter
November 19, 1953

Dear [Name]:

I thought a summary letter might be of help to you in presenting my research design and plea for subjects to your house. In order to acquaint your fraternity with the research problem, I should explain that I am not interested in fraternity policy, grades, intelligence, or personality. The main factor that I am interested in studying is the factor or factors that aid in forming a group, that cause people to organize groups, and in general bind people together.

As I explained to you in our telephone conversation, I need thirty one subjects, ten from the sophomore class, ten from the junior class, and ten from the senior class, plus the fraternity president. There would be two sessions. The first session would last about one hour and a half, with the second session lasting about one hour. I would be able to pay one dollar per person making a total of thirty one dollars which would be payable to the fraternity in a lump sum. I would prefer seeing the subjects all at once in a group. This could be done here at the University or at your house which ever would be the most convenient.

In presenting this proposal to the house it is important to point out that the entire house would have to agree on participating. This does not mean that every member would be used in the project, but it does imply that if a person is chosen in my sampling it would be greatly appreciated if he would participate. In other words, I cannot use volunteers but must use subjects that I randomly select.

I wish to thank you for presenting this project to your house and am greatly appreciative for any cooperation which you might elicit. If you have any questions, you may reach me at WA 5868 or UN 3148, Ext. 387.

Sincerely,

Richard E. Cravens
APPENDIX B

Materials Used in First Experimental Session
ROLE CONSTRUCT REPERTORY TEST

Instructions

This test is comprised of three sheets: (1) the Test Sheet, (2) the Overlay Sheet and (3) this Instruction Sheet. The test is designed to help the examiner better to understand you and some of the people who have played a part in your life.

1. Start with the Overlay Sheet. Beginning with your own name write the first names of the persons described. Write their names in the diagonal blanks. If you cannot remember a person's first name write his last name or something about him which will clearly bring to your mind the person's identity. You may keep this Overlay Sheet. The examiner will be interested only in what you write on the Test Sheet.

2. Next, lay the Overlay Sheet sidewise across the top of the Test Sheet so that the numbered blanks correspond to the numbered columns in the grid. Note that the letters "M" and "F" appear at the heads of Columns 10 to 19, inclusive. If the person whose name appears at the top of Column 10 is a man, encircle the "M", if a woman, encircle the "F". Do the same in the remaining columns.

3. Now move the Overlay Sheet down over the Test Sheet until it is just above the first row of squares. Note that the three squares at the extreme right have circles in them. This means that you are first to consider the three people whose names appear on your Overlay in the last three columns—Columns 17, 18 and 19. Think about these three people. Are two of them alike in some important way that distinguishes them from the third person? Keep thinking about them until you remember the important way in which two of them are alike and which sets them off from the third person.

When you have decided which two it is and the important way in which they are alike put an "X" in the two circles corresponding to the two that are alike. Do not put any mark in the third circle.

Now write in the blank under "CONSTRUCT" the word or short phrase that tells how these two are alike.

Next write in the blank under "CONTRAST" what you consider to be the opposite of this characteristic.

4. Now consider each of the other sixteen persons whose names appear at the heads of Columns 1 to 16. In addition to the persons whom you have marked with an "X" which ones also have this important characteristic? Put a check mark (✓)—not an "X"—under the name of each other person who has this important characteristic.
5. Now slide the Overlay Sheet down to the second row. Think about persons Number 14, 15 and 16—the three who have circles under their names. In what important way are two of these distinguished from the third? Put "X's" in the circles to show which two are alike. Write the CONSTRUCT and the CONTRAST in the blanks at the right just as you did before. Then consider the other sixteen persons. Check "✓" the ones who also have the characteristic you have noted.

6. Complete the test in the way you have done the first two rows. Write your name and the date on the Test Sheet and give it to the examiner. You may keep or destroy the other two sheets.
ROLE CONSTRUCT REPERTORY TEST  
Overlay Sheet

1. Write your own first name in the first blank here.

2. Write the first name of your mother or the person who has played the part of your mother in the next blank.

3. Write the first name of your father or the person who has played the part of your father in the next blank.

4. Write the name of your brother nearest your own age, or the person who has played the part of such a brother.

5. Write the name of your sister nearest your own age, or the person who has played the part of such a sister.

6. Your wife (or husband) or closest present girl (boy) friend. Do not repeat the name of anyone listed above.

7. Your girl (boy) friend immediately preceding the person mentioned above. Do not repeat any names from this point on.

8. Your closest present friend of the same sex as yourself. Do not repeat names.

9. A close friend of the same sex in whom you have since been badly disillusioned. Do not repeat names.

10. A person with whom you have worked who, for some unexplainable reason, appeared to dislike you. Do not repeat names.

11. The person whom you would most like to help or for whom you feel sorry. Do not repeat names.

12. The person with whom you usually feel most uncomfortable. Do not repeat names.

13. The person whom you have met in the past six months whom you would most like to know better. Do not repeat names.

14. The teacher who influenced you most when you were in your teens. Do not repeat names.

15. The teacher whose point of view you have found most objectionable. Do not repeat names.

16. An employer, supervisor, or officer under whom you served during a period of great stress. Do not repeat names.

17. The most successful person whom you know personally. Do not repeat names.

18. The happiest person whom you know personally. Do not repeat.

19. The person known to you personally who appears to meet the highest ethical standards. Do not repeat names.
P-Instructions

First, place your number in the center. Now place the number of the fellow you would want to be with most of the time in most social situations nearest the center. Assume that you have equal opportunity of being with any of the fellows whose names appear on the list. The distance you place this fellow from the center depends on how often you would want to be with him. Now place the number of the fellow that you would want to be with the least amount of time farthest from the center, the distance again depending on the amount of time that you would want to be with him. Now place the rest of the fellows somewhere in between in ranked order. In the event that you would want to be with two or more fellows about the same amount of time, you would place all of their numbers the same distance from the center of the circle.

In the top left hand corner of the two targets that you have, you will find "No. ____". Please put the number that corresponds to your name on the list in this place.
Target Used for Determining Popularity Ratings
I- INSTRUCTIONS

First, place the number of the fellow you see as taking the most initiative in the fraternity in the center (initiative implies the following: assumes house duties, committee and general organization duties and responsibilities; quick to volunteer for organization activities, seems generally concerned with the smooth functioning of the organization, etc.) Assume that all members whose names appear on the list have equal opportunity for demonstrating initiative. Now place the number of the fellow who would be least likely to demonstrate initiative farthest from the center. The distance out depends on how little initiative the fellow would demonstrate. Next, place the rest of the fellows in between in ranked-order. In the event that two or more fellows would appear to you to demonstrate about the same degree of initiative, place their numbers the same distance from the center. Be certain to include your own number in the ranking.

In the top left hand corner of the two "targets" that you have, you will find "No...". Please put the number that corresponds to your name on the list in this place.
Target Used for Determining Initiative Ratings
APPENDIX C

Materials Used in Second Experimental Session
INSTRUCTIONS

This test is similar to the one you took last week. The two main differences are that the names are already given, and you must select the words to describe them from the attached list.

In this test you will notice that there are nine names of people you know; the tenth (ideal fraternity type) is not a real person. He is the ideal fraternity "type."

The task, like in the previous test, is to consider three people at a time. The people are always designated by circles. Think about these three people. Are two of them alike in some important way that distinguishes them from the third person? Look through the list of words and pick out the construct and corresponding contrast that best distinguishes the two people from the third person. Place an "X" in the two circles corresponding to the two people that are alike. Do not put a mark in the third circle. After you have found the right pair and have placed "X's" in the two circles, copy the construct under "construct" and the contrast under "contrast" on the test sheet.

Now consider each of the other people whose names appear at the heads of the columns in the row you have just completed. In addition to the people you have marked with an "X", which ones also have this important construct characteristic? Put a check (✓) -- not an "X" -- under the names of each other person who has this important characteristic.

Now go on to the second row. Think about the three people designated by the three circles. In what important way are two of these people distinguished from the third? Pick out the construct and its corresponding contrast from the list, put "X's" in the circles to show which two are alike, and copy the construct and contrast on the test sheet. Check (✓) the other persons who also have the construct characteristic you have noted.

Proceed in the way you have done the first two rows until you have finished the test.
<table>
<thead>
<tr>
<th>Construct</th>
<th>Contrast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth of thinking</td>
<td>Very shallow</td>
</tr>
<tr>
<td>Educated</td>
<td>Uneducated</td>
</tr>
<tr>
<td>Dull</td>
<td>Brilliant</td>
</tr>
<tr>
<td>Smart</td>
<td>Dumb</td>
</tr>
<tr>
<td>Dull</td>
<td>Quick</td>
</tr>
<tr>
<td>Shrewd</td>
<td>Gullible</td>
</tr>
<tr>
<td>Hard worker</td>
<td>Lazy</td>
</tr>
<tr>
<td>Lazy</td>
<td>Thorough</td>
</tr>
<tr>
<td>Exact, precise</td>
<td>Sloppy</td>
</tr>
<tr>
<td>Mature</td>
<td>Juvenile</td>
</tr>
<tr>
<td>Childish</td>
<td>Mature</td>
</tr>
<tr>
<td>Handicapped</td>
<td>Normal</td>
</tr>
<tr>
<td>Normal</td>
<td>Handicapped</td>
</tr>
<tr>
<td>Religious</td>
<td>Non-religious</td>
</tr>
<tr>
<td>Warm</td>
<td>Cold</td>
</tr>
<tr>
<td>Friendly</td>
<td>Unfriendly</td>
</tr>
<tr>
<td>Unfriendly</td>
<td>Friendly</td>
</tr>
<tr>
<td>Out of reach</td>
<td>Friend</td>
</tr>
<tr>
<td>Closeness</td>
<td>Farness</td>
</tr>
<tr>
<td>Self reliance</td>
<td>Dependence on others</td>
</tr>
<tr>
<td>Hot tempered</td>
<td>Easy going</td>
</tr>
<tr>
<td>Good natured</td>
<td>Ill natured</td>
</tr>
<tr>
<td>Moody</td>
<td>Disliked</td>
</tr>
<tr>
<td>Unlikeable</td>
<td>Likeable</td>
</tr>
<tr>
<td>Happy</td>
<td>Unhappy</td>
</tr>
<tr>
<td>Sincere</td>
<td>Two faced</td>
</tr>
<tr>
<td>False</td>
<td>Sincere</td>
</tr>
<tr>
<td>Considerate</td>
<td>Inconsiderate</td>
</tr>
<tr>
<td>Selfishness</td>
<td>Generosity</td>
</tr>
<tr>
<td>Successful</td>
<td>Unsuccessful</td>
</tr>
<tr>
<td>Socially experienced</td>
<td>Shy</td>
</tr>
<tr>
<td>Socially backward</td>
<td>Socially proper</td>
</tr>
<tr>
<td>Well mannered</td>
<td>Crude</td>
</tr>
<tr>
<td>Coarse</td>
<td>Refined</td>
</tr>
<tr>
<td>Philosophy of life</td>
<td>Don't give a darn attitude</td>
</tr>
<tr>
<td>Disillusioned</td>
<td>Sure of himself</td>
</tr>
<tr>
<td>Have a good attitude toward life</td>
<td>Pessimistic toward life</td>
</tr>
<tr>
<td>Looking to improve</td>
<td>Contentedness</td>
</tr>
<tr>
<td>Older</td>
<td>Younger</td>
</tr>
<tr>
<td>Young</td>
<td>Old</td>
</tr>
<tr>
<td>Dishonest</td>
<td>Honest</td>
</tr>
<tr>
<td>Trustful</td>
<td>Distustful</td>
</tr>
<tr>
<td>Think or reason alike</td>
<td>Reason apart</td>
</tr>
<tr>
<td>Extreme opposites</td>
<td>Much alike</td>
</tr>
<tr>
<td>Carefree</td>
<td>Serious</td>
</tr>
<tr>
<td>Inhibited</td>
<td>Uninhibited</td>
</tr>
<tr>
<td>Good looks</td>
<td>Ugly</td>
</tr>
<tr>
<td>Chubby</td>
<td>Skinny</td>
</tr>
</tbody>
</table>
CONSTRUCT

50. Good appearance
51. Slovenly
52. Stubborn
53. Open mind
54. Individualistic
55. Conformist

CONTRAST

50. Poor appearance
51. Neat
52. Reasonable
53. Closed mind
54. Conformist
55. Does not conform
APPENDIX D

A Comparison of Agreements
A Comparison of Agreements

Each of \( p \) \((14)\) events \( E_1, \ldots, E_p \) are scored or graded \( n(17) \) independent times called trials. The grade is either \( A \) (check) or \( B \) (no check). When two events are scored the same we say that agreement exists between this pair, otherwise disagreement. The problem is to determine whether the number of agreements between \( E_i \) and \( E_j \) is "significantly" greater than the number of agreements between \( E_i \) and \( E_k \) for some fixed \( i, j, k \). That is, can the discrepancy between these numbers of agreements be attributed to "chance" or not. In the next few paragraphs we shall specify what is meant by chance agreement.

Part of the difficulty in the problem stems from certain restrictions on the scoring. Of a specified three events out of the \( E_1, \ldots, E_p \) two are required to be scored \( A \). The three events so specified are not necessarily the same on each of the \( n \) trials. We shall denote the three specified events by underlining. For example in

\[ E_1, \overline{E_2}, E_3, E_4, E_5, \overline{E_6}, E_7, \ldots, E_p \]

The scores on two of \( E_2, E_3, \overline{E_6} \) must be \( A \). With this condition in mind we shall understand that "chance" scoring obtains if for any trial,

1) \( P(A \text{ on } E_i) = P(B \text{ on } E_i) = \frac{1}{2} \)
2) \( P(A \text{ on } E_i) = \frac{2}{3}, P(B \text{ on } E_i) = \frac{1}{3} \)
3) The scores on non-underlined events are independent.
4) The scores on an underlined and non-underlined event are independent.
5) \( P(A \text{ on } E_i \text{ and } \overline{E_j}) = \frac{1}{3}, P(B \text{ on } E_i \text{ and } \overline{E_j}) = 0 \)
6) \( P(A \text{ on } E_i, E_j, \overline{E_k}) = 0 \)
Using the above conditions Table I lists the probabilities of various combinations of scores on $E_i$, $E_j$, $E_k$ under the possible underlining variations.

Table I

<table>
<thead>
<tr>
<th></th>
<th>AAA</th>
<th>AAB</th>
<th>ABA</th>
<th>BAA</th>
<th>ABB</th>
<th>BAB</th>
<th>BBA</th>
<th>BBB</th>
</tr>
</thead>
<tbody>
<tr>
<td>$E_i E_j E_k$</td>
<td>1/8</td>
<td>1/8</td>
<td>1/8</td>
<td>1/8</td>
<td>1/8</td>
<td>1/8</td>
<td>1/8</td>
<td>1/8</td>
</tr>
<tr>
<td>$E_i E_j E_k$</td>
<td>2/12</td>
<td>2/12</td>
<td>2/12</td>
<td>1/12</td>
<td>2/12</td>
<td>1/12</td>
<td>1/12</td>
<td>1/12</td>
</tr>
<tr>
<td>$E_i E_j E_k$</td>
<td>2/12</td>
<td>2/12</td>
<td>1/12</td>
<td>2/12</td>
<td>1/12</td>
<td>2/12</td>
<td>1/12</td>
<td>1/12</td>
</tr>
<tr>
<td>$E_i E_j E_k$</td>
<td>2/12</td>
<td>1/12</td>
<td>2/12</td>
<td>2/12</td>
<td>1/12</td>
<td>1/12</td>
<td>2/12</td>
<td>1/12</td>
</tr>
<tr>
<td>$E_i E_j E_k$</td>
<td>1/6</td>
<td>1/6</td>
<td>1/6</td>
<td>1/6</td>
<td>1/6</td>
<td>1/6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>$E_i E_j E_k$</td>
<td>1/6</td>
<td>1/6</td>
<td>1/6</td>
<td>1/6</td>
<td>1/6</td>
<td>0</td>
<td>1/6</td>
<td>0</td>
</tr>
<tr>
<td>$E_i E_j E_k$</td>
<td>1/6</td>
<td>1/6</td>
<td>1/6</td>
<td>1/6</td>
<td>0</td>
<td>1/6</td>
<td>1/6</td>
<td>0</td>
</tr>
<tr>
<td>$E_i E_j E_k$</td>
<td>0</td>
<td>1/3</td>
<td>1/3</td>
<td>1/3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Define $x_{ij} \alpha$ to be 1 if there is "agreement" between $E_i$ and $E_j$ on the $\alpha$th trial, and 0 otherwise.

Let $y_{jk} \alpha = x_{ij} \alpha = x_{ik} \alpha$

The variable $y_{jk} \alpha$ measures the discrepancy between the agreements of $E_i$ and $E_j$ and of $E_i$ and $E_k$ on trial $\alpha$. The relationship between $x_{ij} \alpha$, $x_{ik} \alpha$, $y_{jk} \alpha$ and the A's and B's is given in Table II

Table II

<table>
<thead>
<tr>
<th></th>
<th>AAA</th>
<th>AAB</th>
<th>ABA</th>
<th>BAA</th>
<th>ABB</th>
<th>BAB</th>
<th>BBA</th>
<th>BBB</th>
</tr>
</thead>
<tbody>
<tr>
<td>$x_{ij} \alpha$</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>$x_{ik} \alpha$</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>$y_{jk} \alpha$</td>
<td>0</td>
<td>1</td>
<td>-1</td>
<td>0</td>
<td>0</td>
<td>-1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Under chance scoring, the probabilities of the variable \( y_{jk\alpha} \) being -1, 0, or 1, the mean of \( y_{jk\alpha} \), the variance of \( y_{jk\alpha} \) and the notation for the number of occurrences in \( n \) trials are given in Table III.

Table III

<table>
<thead>
<tr>
<th>( E_i )</th>
<th>( E_j )</th>
<th>( E_k )</th>
<th>( y_{jk\alpha} )</th>
<th>( B(y_{jk\alpha}) )</th>
<th>( \sigma^2 y_{jk\alpha} )</th>
<th>Number of occurrences in ( n ) Trials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>1/2</td>
<td>1/4</td>
<td>0</td>
<td>1/2</td>
<td>( \lambda_{ijjk} )</td>
<td></td>
</tr>
<tr>
<td>1/4</td>
<td>1/2</td>
<td>1/4</td>
<td>0</td>
<td>1/2</td>
<td>( \lambda_{ijjk} )</td>
<td></td>
</tr>
<tr>
<td>1/4</td>
<td>1/2</td>
<td>1/4</td>
<td>0</td>
<td>1/2</td>
<td>( \lambda_{ijjk} )</td>
<td></td>
</tr>
<tr>
<td>1/4</td>
<td>1/2</td>
<td>1/4</td>
<td>0</td>
<td>1/2</td>
<td>( \lambda_{ijjk} )</td>
<td></td>
</tr>
<tr>
<td>2/6</td>
<td>3/6</td>
<td>1/6</td>
<td>-1/6</td>
<td>17/36</td>
<td>( \lambda_{ijjk} )</td>
<td></td>
</tr>
<tr>
<td>1/6</td>
<td>3/6</td>
<td>2/6</td>
<td>1/6</td>
<td>17/36</td>
<td>( \lambda_{ijjk} )</td>
<td></td>
</tr>
<tr>
<td>1/3</td>
<td>1/3</td>
<td>1/3</td>
<td>0</td>
<td>2/3</td>
<td>( \lambda_{ijjk} )</td>
<td></td>
</tr>
<tr>
<td>1/3</td>
<td>1/3</td>
<td>1/3</td>
<td>0</td>
<td>2/3</td>
<td>( \lambda_{ijjk} )</td>
<td></td>
</tr>
</tbody>
</table>

Let \( y_{jk} = \sum_{\alpha=1}^{n} y_{jk\alpha} \)

Then \( \lambda_{ijjk} = \lambda_{ijjk} + \lambda_{ijjk} + \lambda_{ijjk} + \lambda_{ijjk} + \lambda_{ijjk} + \lambda_{ijjk} + \lambda_{ijjk} = n \)

and we have \( B(y_{jk}) = \frac{1}{6} (\lambda_{ijjk} - \lambda_{ijjk}) \).

\[
\sigma^2 y_{jk} = \frac{1}{36} \left[ 18(\lambda_{ijjk} + \lambda_{ijjk} + \lambda_{ijjk} + \lambda_{ijjk}) + 17(\lambda_{ijjk} + \lambda_{ijjk}) + 24(\lambda_{ijjk} + \lambda_{ijjk}) \right]
\]
For example in the data given:

\[ 7,9,11 = 11, 7,9,11 = 2, 7,9,11 = 2, 7,9,11 = 1, 7,9,11 = 1 \]

and \( \mathbb{E}(y_{9,11}) = 0, \sigma^2_y = 1 \frac{1}{36} \left[ 18(11+1) + 17(2+2) + 24(1) \right] = \frac{308}{36} \)

Summary

Three events \( E_i, E_j, E_k \) are scored \( n \) times subject to certain conditions.

A variable \( y_{jk} \) is defined as follows:

\[
y_{jk} = \begin{cases} 
1 & \text{if the scores on } E_i \text{ and } E_j \text{ agree and } E_k \text{ and } E_j \text{ disagree on trial } \alpha. \\
0 & \text{if the scores on } E_i \text{ and } E_j \text{ agree and } E_i \text{ and } E_k \text{ agree on trial } \alpha. \\
-1 & \text{if the scores on } E_i \text{ and } E_j \text{ disagree and } E_i \text{ and } E_k \text{ agree on trial } \alpha.
\end{cases}
\]

The variable \( y_{jk} \) measures the discrepancy of agreements between \( E_i \) and \( E_j \) as opposed to \( E_i \) and \( E_k \) on trial \( \alpha \), while \( y_{jk} = \sum y_{jk} \) measures this discrepancy for the entire group.

Under the hypothesis of "chance" scoring the mean and variance of \( y_{jk} \) are given above and for large \( n \) \( y_{jk} \) will be approximately normally distributed.

For computation it is necessary to find:

1) \( y_{jk} \) from \( \sum x_{ij} \) and \( \sum x_{ik} \), these values having already been recorded.

2) \( \lambda_{ijk} \)'s from the given configuration of circles and non-circles.

3) \( \mathbb{E}(y_{jk}) \) and \( \sigma_y \) of \( y_{jk} \)

4) \( y_{jk} - \mathbb{E}(y_{jk}) \)

\( \sigma_y \)
Test of significance.

If the sample value of $y_{jk}$ exceeds $E(y_{jk})$ by as much as $1.64 \sigma_{y_{jk}}$ we may reject the hypothesis of "chance" scoring on a 5% significance level. This would be a "one tail" test where the alternative $E_i \neq E_j$ agree more than $E_i \neq E_k$ has been specified in advance.

Dr. D. Ransom Whitney
and Mrs. Lydia Kinzer
The Statistics Laboratory
Department of Mathematics
The Ohio State University
March 2, 1954
APPENDIX E

Figures 2 and 3
Figure 2

The Popularity Master Target
Figure 3  Richard B. Cravens

The Initiative Master Target
Autobiography

I, Richard Baldwin Cravens, was born in Excelsior Springs, Missouri, January 11, 1928. I received my secondary school education in the public schools of the city of Excelsior Springs, Missouri. My undergraduate training was obtained at the Willamette University, Salem, Oregon, from which I received the degree Bachelor of Arts in 1949. From The Ohio State University, I received the degree Master of Arts in 1951. While in residence at The Ohio State University, I acted in the capacity of Research Assistant to Dr. Mervin A. Durea, Department of Psychology, during the spring and fall quarters of 1950 and the winter quarter of 1951. In the spring quarter of 1951, I received an appointment as Teaching Assistant at The Ohio State University, Department of Psychology and worked under the direction of Dr. Delos D. Wickens. From the fall of 1951 to the fall of 1953, I took my psychology internship at The Harding Sanitarium, Worthington, Ohio. I served in the capacity of Assistant Instructor in the Department of Psychology, Psychological Clinic, The Ohio State University, from the fall of 1952 to the summer quarter of 1953. In June of 1953, I received a direct commission of 2nd Lt., Medical Service Corps, United States Army and was placed on active duty at The Ohio State University while completing the requirements for the degree Doctor of Philosophy.