

THE DIFFERENTIAL EFFECTS OF THREE INFERENTIAL RULES
ON PREDICTIONS ABOUT UNKNOWN INTERPERSONAL
RELATIONSHIPS WITHIN SIMPLE SOCIAL
STRUCTURES AS MEDIATED BY SUBJECTS'
INVOLVEMENT IN THE TASK ACTIVITY

by

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For my family,
Barbara, Harvey, and Rondi
with all my love

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CHAPTER ONE

INTRODUCTION

Researchers in the area of interpersonal and social perception have investigated the ways people perceive, label, and construct the nature of their social relationships. People cognitively construct a general "picture" about the nature of their social relationships and others' social relationships in a fairly consistent and systematic manner through the use of constructs, or descriptive terms, and various types of rules which relate these constructs to one another and to some general organizing theme(s) which defines the social situations. An individual's cognitive representations of social relationships have been found by social psychologists to be rather stable and pervasive, and influence, or "bias," an individual's interactions with others. Kuethe (1962) has labeled these cognitive biases "social schemata." A "social schema" provides an individual with a convenient way of organizing information about social relationships so that the relationships make sense to him/her and provides the individual with meaning for a given social situation. When an individual interacts with others in a social group, he/she forms a cognitive picture about the type of social group that it is, about the nature of the interpersonal relations which characterize the social

group. A "social schema" is the "interpretive frame" (Crockett, 1979) an individual uses to construct and interpret the nature of the interpersonal relationships which exist within a social group and, as DeSoto (1960) points out, the concept of a "social schema" can be compared to an individual's naive theory about the nature of the interpersonal relationships within a social group. It is as if an individual has a theory about the social structure, and "such a theory, marked by certain essential properties but doubtlessly skeletal and sketchy in other respects seems most aptly called a 'schema'" (p. 420).

A "social schema" provides an individual with understanding about the nature of the interpersonal relations which characterize a social group because the use of a "social schema" revolves around rules, or principles, which an individual uses to make inferences and form attributions about the nature of a given social structure. As Cottrell (1975) explains, "A classification principle or conceptual rule specifies how the relevant attributes are combined for use in determining the class membership of particular stimuli" (p. 714). The classification rules used by an individual in his/her construction of a "social schema" have been labeled "inferential rules" by social psychologists. An "inferential rule" is "a principle by which a perceiver can use information about a few relations within a set of elements to infer the quality of unknown, missing relations" (Crockett, 1979, p. 1). A brief review concerning the nature of three

inferential rules is presented below, followed by a discussion about the specific focus of this research project.

The Nature of Three Inferential Rules: Positivity, Source/Target Generalization, and Balance

Three general inferential rules, widely recognized by social psychologists, have been found to significantly affect an individual's construction of "social schemas": positivity, source/target generalization, and balance. As Crockett (1979) has shown, these three inferential rules differ, "(a) in the number of inferential principles they assume, (b) in the amount of information they require, and (c) in the complexity of the pattern of relations they yield" (p. 2).

Positivity assumes only that people like one another. No prior information is required to infer unknown relations from this rule. As Crockett (1979) states, "One simply infers a homogeneous pattern of like relationships between all pairs of persons in any group" (p. 2, author's italics). DeSoto and Kuethé (1959) reported that even in the absence of any information about two people, subjects showed a positivity bias, the assumption of a similarity of positive sentiment interpersonal relationships.

Generalization biases assume that there are one-way influences from one relation to another. In their research, DeSoto and Kuethé (1959) found that subjects' estimates about sentiment relations between people were based on

inferences about the general traits of the source person (e.g., "A seems like a friendly person") and of the target person (e.g., "B seems to be a popular person"). These generalization biases, such as the "friendliness" bias or the "popularity" bias (Rubin & Zajonc, 1969) refer to the assumptions people make about the nature of interpersonal relationships. Source generalization assumes that if a person feels one way toward another person, then he/she will probably feel the same way toward other people as well; that is, if person A likes (dislikes) person B, then person A will probably like (dislike) persons C, D, and E. Target generalization assumes that all people feel the same way toward a particular person; that is, if person A is liked (disliked) by person B, then person A will probably be liked (disliked) by persons C, D, and E. As Crockett (1979) has shown, source/target generalization is more complex in nature than the positivity bias because of the amount of information that it requires. As Crockett (1979) states:

To use either source generalization or target generalization for inferring unknown relations among a set of people, at least one relation between two of those persons must be known. Thus, if one knew how person A felt toward person B, it would be possible (a) to infer from source generalization how A felt toward other people and (b) to infer from target generalization how other people felt toward B (p. 2).

Balance is a bias which involves the interaction of the liking relationship between two people and the agreement between them about some object x. According to

Heider (1958), people prefer "balanced" to "unbalanced" cognitive systems. For triadic structures, balance is defined by a simple rule. Balanced structures contain an even number of negative sentiment relations and unbalanced structures contain an odd number of negative relations. Because of its postulated effects upon people's perceptions of social structures, balance has been termed a "cognitive bias." Cottrell (1975) found that individuals are capable of classifying perceived social situations as either balanced or imbalanced. In addition, because the inferential rule of balance also depends upon the overall structuring of interpersonal and attitudinal relations, it may be referred to as a "structural bias." Zajonc and Burnstein (1965a) have demonstrated the existence of a cognitive bias which derives from structural balance effects. These findings have tended to be in accordance with Heider's (1958) view that people will tend to change unbalanced systems into balanced ones. However, there has lately been a reorientation in the views about the inferential rule of balance as a structural bias. As Picek, Sherman, and Shiffrin (1975) state, "Rather than a force leading to change, it {balance} has been depicted as a principle which deals with the cognitive organization of social structures. In this context, the balance principle is viewed as a rule used in the processing, storing, retrieving, and decision-making about social information" (p. 758). Thus, Heider's (1958) concept of balance can be

conceived of in terms of a "social schemata," and, as Zajonc and Burnstein (1965a) point out, "If there exists a pervasive tendency to think of social groupings in terms of balance this tendency should manifest itself when Ss are asked to learn a hypothetical set of relationships which form balanced and unbalanced structures" (p. 154). This same line of reasoning should apply to subjects' attempts to predict unknown relations among people within a given social structure.

Balance as an inferential rule makes three assumptions about relations between people. As Crockett (1979) states:

(a) like-dislike relations are symmetric, that is, if A likes (dislikes) B, B will like (dislike) A in return; (b) like relations are transitive, that is, if A likes B and B likes C, then A will like C; and (c) dislike relations are what may be called anti-transitive, that is, if A dislikes B and B dislikes C, then A will like C (p. 2, author's italics).

The principle of symmetry requires knowledge only about how one person feels toward another, as it is then assumed that the feelings are reciprocated. In this regard, the amount of information needed for inferring unknown relations through the use of the symmetry principle is the same as that required for the principle of source/target generalization, how one person feels toward another.

To use transitivity and/or anti-transitivity, one needs to know how two relations in a triplet of three people feel about each other. As Crockett (1979) points out:

(a) knowing that A likes B and B likes C permits the inference, from transitivity, that A likes C.

Similarly, (b) knowing that A likes B and B dislikes C (or that A dislikes B and B likes C) permits the inference, from transitivity, that A dislikes C. Finally, (c) knowing that A dislikes B and B dislikes C permits the inference, from anti-transitivity, that A likes C (p. 3)

Research directed toward understanding the role of the three inferential rules discussed above in the development of an individual's "social schema" has tended to focus in two directions: the effects of the inferential rules upon the predictions people make about unknown interpersonal relationships within social structures, and the influence of the inferential rules upon the ease with which interpersonal relationships within social structures are learned. Both these lines of research have attempted to determine the existence of the three inferential rules discussed. The three inferential rules and the principles subsumed by these rules--positivity; source/target generalization; and symmetry, transitivity, and anti-transitivity--have been demonstrated to operate under experimental conditions (Crockett, 1979).

While research has established the existence of the three inferential rules identified, little attempt has been made to determine under what conditions one inferential rule or another appears to dominate in an individual's attributions about interpersonal relationships. The purpose of this study concerns an analysis of the ways "social schemas" influence an individual's predictions about unknown interpersonal relationships within social structures by

identifying the conditions under which one inferential rule or another appears to dominate in the predictions made. Given that people interact in social groups, and given that people make judgments about the nature of the interpersonal relationships within those social groups, it is important to determine under what conditions, different attributions are formed. By identifying the conditions under which one inferential rule or another appears to dominate, it may be possible to understand how people form different attributions about the nature of social structures given the same initial information.

This study also investigates the effects of an individual's involvement in the task activity upon the differential use of the inferential rules. In the prediction research, individuals have been asked to serve as either observers of the social groups or as participants within the social groups. The generalizability of the results from such studies across involvement conditions will be validated by contrasting the two involvement conditions directly and observing the differential effects upon the dependent variables. The nature of an individual's involvement in the task activity may represent a condition under which one inferential rule or another may dominate in an individual's use of a "social schema."

A review of the relevant literature associated with the effects of the three inferential rules identified upon an individual's predictions about unknown interpersonal

relationships within social structures is presented. This is followed by a review of the relevant literature concerned with the effects due to an individual's involvement in the prediction task upon the use of the three inferential rules. The relevant research hypotheses for this experimental study will then be discussed.

Review of the Literature

There have been numerous attempts to demonstrate the existence of certain cognitive biases which serve as useful tools by which individuals form perceptions and impressions about interpersonal and social relationships. In particular, the theories of cognitive consistency, which includes Heider's (1958) notion of balance, have received widespread interest in the research literature. Weist (1965) reported that the predictive power of cognitive consistency theories had been demonstrated in a wide variety of research settings (Brehm & Cohen, 1962; Burdick & Burnes, 1958; Cohen, 1960; Horowitz, Lyons, & Perlmutter, 1951; Jordan, 1953; Kogan & Tagiuri, 1958; Morrissette, 1958; Newcomb, 1953, 1961; Osgood, 1960; Rosenberg, Hoveland, McGuire, Abelson & Brehm, 1960; Runkel, 1956; Sampson & Insko, 1964). In general, however, the existence and the relative strength of the three major inferential rules which reflect underlying cognitive biases have been investigated by the use of three research techniques: (a) subjects' affective responses to hypothetical social structures (Jordan, 1953; Sampson &

Insko, 1964; Price, Harburg & McLeod, 1965; Price, Harburg, & Newcomb, 1966; Rodrigues, 1966, 1967; Aderman, 1969; Gutman & Knox, 1972); (b) the ease with which subjects learn different hypothetical social structures (DeSoto, 1960; Kuethe, 1962; Zajonc & Burnstein, 1965a, 1965b; Van Kreveld & Zajonc, 1966; Zajonc & Sherman, 1966; Gerard & Fleisher, 1967; Mosher, 1967; Press, Crockett, & Rosencrantz, 1967; DeSoto, Henley, & London, 1968; Rubin & Zajonc, 1969; Cottrell, Ingraham, & Monfort, 1971; Delia & Crockett, 1973; Picek, Sherman & Shiffrin, 1975); and (c) the nature of subjects' predictions about the relationship between two elements given information about the relation of these elements to a third element. Studies of the latter type have attempted to understand the "processes whereby subjects infer the relations between cognitive elements (symbolic representations of persons and objects) on the basis of information they have about other relationships involving these elements" (Wyer & Lyon, 1970, p. 598). The relevant research literature associated with the prediction paradigm will be discussed below.

Predictions about unknown interpersonal relationships.

The earliest research associated with the prediction method attempted to assess the probability of the occurrence of certain interpersonal relationships and certain social structures. Balanced interpersonal and social relationships were found to occur more frequently than imbalanced configurations (Horowitz, Lyons, & Perlmutter, 1951; Kogan &

Tagiuri, 1958). In their famous study, DeSoto and Kuethé (1959) asked subjects to infer the probability of a relationship between two people based upon ten different types of interpersonal relations (e.g., "likes," "trusts," "feels superior to," "is happier than," "confides in," "dominates," "lies to," "dislikes," "is afraid of," and "hates"). As noted by Homans (1950), a strong positivity bias existed as subjects assigned high probabilities to the occurrence of positive affective interpersonal relationships. Evidence for a source/target generalization bias was also noted as the findings indicated that relations such as "likes" and "trusts" were regarded as dividing people into friendship groups or cliques. DeSoto and Kuethé (1959) also reported a strong cognitive balance bias as the effects emphasized reciprocal and symmetric interpersonal relationships.

Deutsch and Solomon (1959) attempted to study the existence of a cognitive balance bias by hypothesizing that, "if an individual evaluates some aspect of himself (as positive or negative) and another evaluates it similarly, the individual will tend to evaluate the other person favorably; if their evaluations are dissimilar, the individual will tend to evaluate the other unfavorably" (p. 97). Subjects were brought into the experimental sessions in groups of eight and proceeded to engage in two group contests. After the contests were over, the subjects filled out

rating scales indicating their evaluation of their own performance and their expectation of how their performance and they themselves would be evaluated by their teammates. Subjects then exchanged written evaluative notes with another teammate, which the experimenter systematically varied, and were asked to form an impression about the other person based on a number of evaluative dimensions. The results showed a strong positivity bias as subjects responded more favorably to positive than negative evaluations from the other person. The results also supported a cognitive balance bias as subjects responded more favorably to evaluations from another which were consistent, rather than inconsistent, with their own evaluations of their performances, when the noted positivity effect was held constant.

Rosenberg and Abelson (1960) investigated the existence of a cognitive balance bias by hypothesizing that individuals will follow the principle of least effort in resolving imbalance by making the fewest number of changes necessary to restore balance. Subjects were asked to assume the role of a department store owner and were presented with imbalanced cognitive structures involving a subordinate and his sales record. Subjects were then presented with a number of communications regarding various aspects of the cognitive dilemma which were arranged so that the acceptance of one of them would restore balance through a single cognitive change. Rosenberg and Abelson (1960) reported a significant tendency

to maximize gain and minimize loss which they interpreted as providing support for a tendency to resolve imbalance. The authors also reported the lack of a positivity bias as subjects did not simply maintain their positive attitudes toward sales but attempted to increase sales through the resolution of the imbalanced cognitive states.

Feather (1964) designed a study to investigate the effects of balance upon attitudinal relations between a source, a receiver, and a communication about a controversial issue. Subjects were asked to identify with either the source or the receiver of a communication about a controversial issue and to predict whether the source or the receiver would tend to agree or disagree with the communication. The results from this study provided strong support for the existence of a cognitive balance bias. Subjects' evaluations of a communication depended upon the correspondence of the communication with the subjects' attitude toward the issue. The existence of a positivity bias was not investigated leaving it unclear whether the observed effects were accounted for by a positivity or a cognitive balance bias.

Sampson and Insko (1964) tested the effects of a cognitive balance bias in the autokinetic situation, an experimental procedure in which subjects make judgments about the amount of movement of a light in a darkened room while looking through an apparatus which restricts their vision.

The authors hypothesized that "a person (P) would respond to another person's (O's) judgments of light movement in the autokinetic situation as a function of the attraction relationship between them and the initial similarity in their judgments" (p. 184). The experiment asked the subjects to initially make judgments about the light movement by themselves. They were then exposed to another subject (actually a confederate) and together they worked on two cooperative tasks. The subjects were asked to make empathic predictions about their partner following the task activity. They were then both placed back in the autokinetic situation and took turns estimating the amount of light movement. Through this procedure the experimenter was able to manipulate the subjects' like or dislike for the other person and the discrepancy between their judgments about the amount of light movement. The results produced no effects which could be attributed to a positivity bias as subjects did not change their judgments about the amount of light movement as a function of the initial similarity between themselves and the other person. The experiment did demonstrate support for a cognitive balance bias as subjects accepted or rejected the structuring of the autokinetic situation provided by another person as a function both of the relationship with that person and the correspondence of the other person's structuring with the initial judgments made by the subject.

Burnstein (1967) identified several different sources of a cognitive balance bias using a prediction technique which asked subjects to determine which relations, if any, in various social structures were likely to change over time. Subjects were initially assessed with respect to their affective feelings toward Barry Goldwater as a presidential candidate in the upcoming 1968 presidential campaign. Subjects were then presented with different situations in which two students were living together as roommates in a dorm and had either similar or dissimilar affective feelings toward Barry Goldwater and asked to predict what the relations between these people were most likely to be in the future. The authors found support for both a cognitive balance bias and a positivity bias. In structures which were initially imbalanced a bias toward restoring balance was evident. The authors also reported that there existed a preference for positive relations. In addition, there existed a significant interaction between the positivity bias and the cognitive balance bias. The results noted that in achieving balance in the unbalanced situations the subjects significantly increased the number of positive relations.

Rodrigues (1968) investigated the effects of a cognitive balance bias in situations in which subjects either agreed or disagreed with another person with respect to an object x. Subjects were assessed with respect to their favorability toward a number of issues and then presented with another

person's favorability toward these issues and asked to predict the relationship between themselves and the other person. The subjects' level of ego-involvement was also manipulated through the significance the subjects attached to the different issues. The results showed clear support for an "agreement bias" which interacted with a cognitive balance bias, in that subjects were more likely to predict the unknown relation according to the principle of balance when agreement between the two people was called for by the principle than when disagreement between the two people was appropriate. However, the authors noted that the forces toward balance were stronger than those of agreement as subjects tended to choose balance over agreement when the two biases were matched against one another. The authors reported that no effects due to a positivity bias were found, but the experiment did not control for its effects and the observed agreement effects may be partially explained by subjects' use of a positivity bias.

Aronson and Cope (1968) investigated the effects of a cognitive balance bias in situations in which two people discover that they share a common enemy. The experiment attempted "to explore the generality of the proposition that people like those who punish their enemies and reward their friends" (p. 8). Subjects were placed in a situation in which they were treated either harshly or pleasantly by an experimenter and then overheard the experimenter being

treated either harshly or pleasantly by the experimenter's supervisor. The subjects were then asked to rate the experimenter's supervisor along a number of evaluative dimensions and to predict the number of telephone calls they would be willing to make to help the supervisor complete his research. The results were not analyzed with respect to the influence of a positivity bias but the results did provide empirical support for a cognitive balance bias in that subjects liked their enemy's enemy more than their enemy's friend and liked their friend's friend more than their friend's enemy.

McNeel and Messick (1970) investigated subjects' predictions about the likelihood of several interpersonal relationships within hypothetical two- and three-person groups. Subjects were presented with hypothetical social structures and asked to predict the existence of certain relationships between individuals within those social structures. As in DeSoto and Kuethe's (1959) study, a positivity bias was discovered as subjects predicted that positive affective interpersonal relationships were most likely to occur and negative affective interpersonal relationships were least likely to occur. The data was analyzed through the use of the Bayesian likelihood ratio which measures the impact of information upon subjects' prediction. This procedure produced empirical support for a cognitive balance bias as subjects perceived symmetric relations as transitive

in nature. The likelihood ratio was thus able to serve as a precise quantitative measure of subjects' tendencies to perceive interpersonal relationships in a balanced manner.

Wyer and Lyon (1970) asked subjects to predict the existence of positive, neutral, and negative relationships between people within triads "both in the absence of prior information about other relations involving these elements and in the context of various information combinations differing in their affective quality" (p. 598). The authors argued that much of the previous research which supported the existence of a cognitive balance bias could be explained with reference to a positivity bias. As Wyer and Lyon (1970) state, "This tendency (positivity) would produce results similar to those predicted by balance theory when the context consists of either two positive relations or two negative relations" (p. 600). In order to test for the effects of a balance bias, "inferences made in the context of known relations among elements involved must therefore be compared to similar inferences made without knowledge of these relations" (p. 600). Subjects were either given information about the affective relationship between two people and asked to predict the affective nature of a third unknown relation or they were given no prior information and asked to predict the relations among all the people involved. A strong positivity bias was found to exist as there was a significant tendency for people to infer a high probability to the occurrence of positive affective relationships and to infer a

low probability to the occurrence of negative affective interpersonal relationships. The results did not tend to support the existence of a cognitive balance bias. Although balanced sets of relations tended to be inferred more frequently than expected, imbalanced sets of relations did not occur less frequently than expected. The authors concluded that the balance bias which had been found in previous studies may be attributed to the combined effects of two factors which are not taken into account by balance theory: "a positivity bias, which leads to a greater frequency of positive relations than negative ones, and a similarity bias, which leads to the formation of sets of relationships of similar affective quality" (p. 606).

Wellens and Thistlethwaite (1971) reported three experiments in which subjects were asked to predict the nature of unknown relations in triadic social structures. Subjects were presented with an attitude questionnaire which examined the subjects' hypothetical stand on an issue and another person's stand on the same issue. The subjects were then asked to predict the nature of the affective relationship between themselves and the other person. The results were interpreted as supporting the existence of both a positivity bias and a cognitive balance bias. Subjects were found to estimate the existence of positive affective interpersonal relationships as most likely to occur. In addition, subjects rated balanced structures as most likely to occur and unbalanced structures as least likely to occur. Wellens

and Thistlethwaite's (1971) results support the existence of the two cognitive biases of positivity and balance as independent inferential rules which subjects use to predict the nature of unknown interpersonal relationships.

Fuller (1974) tested the empirical predictions from balance theory using two experimental techniques, a prediction task and a ratings task. For the prediction task, subjects were asked to infer the affective relationship between two people given knowledge about each person's stand on an issue. Subjects were asked to make these predictions for two balanced and imbalanced structures. Fuller (1974) reported a significant positivity bias in the data from the ratings task and a significant balance bias in the data from the prediction task. The partial structures were completed so as to achieve balance regardless of whether the response called for a positive or a negative affective relationship.

Granberg and Brent (1974) investigated the effects of balance in subjects' predictions about policy positions taken by candidates in the 1968 presidential election. The authors hypothesized that as a consequence of balance theory, "one would expect that individuals would tend to minimize differences on policy issues with a preferred candidate and to minimize similarities on policy issues with a nonpreferred candidate" (p. 688). Subjects were presented with a scale ranging from "hawkish" to "dovish" with regard to the Vietnam war and asked to place themselves and three

presidential candidates (Hubert Humphrey, Richard Nixon, and George Wallace) along this continuum. The results from this study produced no support for a positivity bias but did produce substantial support for a cognitive balance bias. However, only one end of the balance prediction was supported, that differences on policy issues were minimized with a preferred candidate. Subjects' own position on the issue did not influence their placement of their non-preferred candidate on the issue. This effect is not anticipated by balance theory and thus raises questions about the significance of balance as a cognitive bias in the predictions about unknown relations.

Sussmann and Davis (1975) attempted to investigate the effects of balance theory in situations in which balance could be restored through action on the part of the subjects. Subjects were first given a test of verbal ability at the beginning of the experiment. In the second stage, subjects were introduced to other subjects (actually confederates) and a group task was presented. Confederates controlled the ability of the group to solve the task or to fail in their attempts to solve the task. Subjects were then asked to give their opinions about the usefulness of the experimental tasks for personnel selection in business. The confederates gave their opinions first and the subjects could then either agree or disagree with the confederates. The results showed that subjects' responses were not contingent upon the positive perception of the other people which suggested a lack of a

positivity bias. The results did suggest that a cognitive balance bias accounted for most of the results. However, the results from this study are not conclusive as the manipulation of the liking variable was ineffective. The results indicated that the cooperativeness of the confederates did not affect the subjects' evaluations of them on the affective scale. The interpretation of a cognitive balance bias from the results of this study is thus highly ambiguous.

The research results discussed above provide support for the existence of a number of different inferential rules which guide subjects' predictions about the nature of unknown interpersonal relations within social groups. For the most part, the existence of a positivity bias and a cognitive balance bias have been found to be evident in the research literature.

While the results from the relevant literature have confirmed the existence of a positivity bias and a cognitive balance bias, research investigations concerning the effects of a source/target generalization bias upon subjects' predictions about unknown interpersonal relations have been rather limited. Only DeSoto and Kueth (1959) and McNeel and Messick (1970), discussed above, have reported significant effects based upon a source/target generalization bias. Additional research is needed to verify the influence of a source/target generalization bias upon subjects' predictions about unknown interpersonal relations.

It appears that the three inferential rules of positivity, source/target generalization, and balance each play a significant role in subjects' predictions about the nature of unknown interpersonal relationships within social structures. However, no experiment to date has attempted to compare the relative strength of each inferential rule in accounting for subjects' responses using the prediction research technique. Only Crockett's (1979) research has investigated the differential effects of these three inferential rules and his study measured subjects' abilities to learn various social structures. Crockett (1979) found that social structures which were balanced were learned more quickly than social structures which were unbalanced. When the balance assumptions of transitivity and anti-transitivity were violated, subjects were able to use the inferential rules of positivity and source/target generalization. In terms of recall, balanced patterns were remembered better than any other pattern of relations, but there was no discernable attempt to balance unbalanced patterns in the recall process. The balance bias was thus seen to dominate in subjects' encoding of the affective relationships which existed among members of hypothetical social structures. When the balance bias was not applicable, subjects were able to use the inferential rules of positivity and source/target generalization.

While Crockett's (1979) study investigated the differen-

tial effects of the three inferential rules upon the learning of simple social structures, additional research is needed in order to understand the conditions under which one inferential rule or another appears to dominate in subjects' judgments about interpersonal relations within social structures. This study investigates the differential effects of the three major inferential rules in accounting for subjects' predictions about unknown interpersonal relationships within simple social structures.

Subjects' involvement in the task activity: The participant versus the observer. In most of the studies to date, subjects have been asked to serve as observers of social structures and to predict the nature of unknown relationships among a group of hypothetical people. The results from these studies have been generalized across subject involvement conditions. It has been assumed that the results reported from studies in which subjects served as observers of hypothetical social structures are equivalent in nature to studies in which subjects served as participants in the hypothetical social structures. However, some experimental studies have attempted to determine the general effects which may be accounted for by the nature of the subjects' involvement in the task activity.

The majority of the research attempts which have used the nature of subjects' involvement in the task activity as an independent variable have taken place using the learning research technique. Thus, Zajonc and Burnstein (1965b)

found that subjects' own attitudes toward the task activity was a significant factor in their ability to learn the interpersonal relationships which characterized social structures, as subjects demonstrated significantly less errors in the learning of social structures in which the topic was important to the subjects. This finding was further supported by the work of Rubin and Zajonc (1969) who found that subjects remembered structures better if they themselves were hypothetical members of the social structures to be learned.

Few studies using the prediction research technique have examined the differential use of the three inferential rules as mediated by the nature of the subjects' involvement in the task activity. The general procedure has been to include subjects as participants in the prediction method by having them role play members of hypothetical social structures and observing the predicted effects. Deutsch and Solomon (1959) assessed subjects' attitudes toward their own performance in a task activity and then observed the effects which occurred when subjects were presented with an evaluation by another person about the subjects' performance. The subjects' own attitudes toward themselves was shown to be a significant factor in the use of a cognitive balance bias as subjects who evaluated their own performance favorably and received negative reinforcement from another person evaluated the other person unfavorably, but evaluated them favorably if they themselves had evaluated their own performance unfavorably. Burnstein (1967) hypothesized that sub-

jects' own attitude toward an issue acted as an additional source of cognitive bias in subjects' predictions about unknown interpersonal relationships within social structures. The results from Burnstein's (1967) study found that the cognitive balance bias interacted significantly with subjects' own attitude toward the issue involved. Subjects predicted that balanced structures and ones which matched their own attitudes, ones they agreed with, would occur to a significantly greater degree than any other type of social structure. Rodrigues (1968) is the only researcher who has attempted to compare the relative effects due to subjects' involvement in the task activity upon the differential use of the inferential rules. Rodrigues (1968) hypothesized that the forces of agreement, which may reflect a positivity bias, and balance would be stronger when the subjects were ego-involved in the attitudinal issue than when they were not ego-involved in the issue. No support for this hypothesis was obtained in the research findings as subjects' degree of ego-involvement in the attitudinal issue was not significantly related to subjects' differential use of the inferential rules.

There has thus been little attempt made to determine if the participant-observer distinction has significant effects upon subjects' predictions about unknown interpersonal relationships within social structures. Additional research is needed to verify if the nature of subjects' involvement in the task activity is a condition under which one inferential rule or another appears to dominate in

subjects' predictions about unknown interpersonal relationships within social structures.

Research Hypotheses

Subjects' predictions about unknown interpersonal relationships. Differences between the inferential rules will be exhibited in subjects' predictions about the unknown interpersonal relationships characterizing the social structures they are presented with. This will provide information concerning the existence of such inferential rules and their relative effectiveness in accounting for the responses which subjects make. Subjects will be presented with social structures in which all of the relationships will be specified except for one relationship which the subjects will be asked to predict based on the information they have about the other relationships which exist within the social groups. The social structures used in this study were developed by Crockett (1979) and are included in Figure 1 (see Chapter Two for a detailed discussion about these social structures).

Figure I presents the predicted differences for subjects' responses based on the three different inferential rules for each social structure. For Structure 1, subjects will be asked to predict the unknown relationship between person A and person B (or between themselves and person B). The inferential rule of positivity assumes that subjects will tend to perceive and form positive

Figure I. Research Hypotheses: The Differential Effects of Positivity, Source/Target Generalization, and Balance Upon Subjects' Predictions About Unknown Relationships Within Simple Social Structures

Principle	(1)	(2)	(3)	(4)
Positivity	+	+	+	+
Source/Target Generalization	No Pred.	No Pred.	DK	-
Balance	-	-	-	No Pred.

Note: No Pred. = No Prediction; DK = "Don't Know" responses.

affective interpersonal relationships. Thus, the inferential rule of positivity predicts that subjects will complete the unknown relationship with a positive sentiment between person A and person B. The inferential rule of source/target generalization assumes that subjects will tend to introduce this property into social structures whenever possible. Since it is possible to introduce this property into Structure 1 by either a positive prediction (establishing source/target generalization for person B, as all group members will then like person B) or by a negative prediction (establishing source/target generalization for person A, as all group members will then dislike person A), the inferential rule of source/target generalization makes no predictions about subjects' responses. The inferential rule of balance assumes that subjects will strive to produce balanced as opposed to unbalanced structures. Thus the inferential rule of balance predicts that subjects will complete the unknown relationship between person A and person B with a negative sentiment, which will produce a balanced structure characterized by an equal number of positive and negative relations. The appropriate null hypothesis states that there will be no significant differences between subjects' use of positive, negative, and "don't know" responses. The predictions made by the inferential rules for Structure 1 contrasts positivity against balance, since the inferential rule of source/target

generalization makes no predictions about subjects' responses. Each inferential rule also predicts that subjects will describe their predictions by using terms which characterize each inferential rule. The appropriate null hypothesis states that there will be no significant differences between subjects' use of the inferential rules as reflected in their explanations about their predictions. It will thus be possible to observe whether subjects' predictions are accounted for by the inferential rules of positivity, source/target generalization, or balance.

For Structure 2, subjects will be asked to predict the unknown relationship between person E and person F (or between themselves and person F). The inferential rule of positivity predicts that subjects will complete the unknown relationship with a positive sentiment. The inferential rule of source/target generalization makes no predictions about subjects' responses as it is possible to introduce this property into this structure by either a positive prediction (establishing source/target generalization for person E) or by a negative prediction (establishing source/target generalization for person F). The inferential rule of balance predicts a negative relationship between person E and person F so as to balance all of the triplets in the social structure which involve these two members. The appropriate null hypothesis states that there will be no significant differences between subjects' use of positive, negative, and "don't know"

responses. The predictions made by the inferential rules for Structure 2 contrasts positivity against balance, since the inferential rule of source/target generalization makes no predictions about subjects' responses. Through an analysis of subjects' explanations about their predictions it will be possible to observe whether subjects' predictions are accounted for by the inferential rules of positivity, source/target generalization, or balance. The appropriate null hypothesis states that there will be no significant differences between subjects' use of the inferential rules as reflected in their essay responses.

For Structure 3, subjects will be asked to predict the unknown relationship between person I and person J (or between themselves and person J). The inferential rule of positivity predicts that subjects will complete the unknown relationship with a positive sentiment. Since it is not possible to introduce the property of source/target generalization into Structure 3 via the prediction of the unknown I-J relationship, the inferential rule of source/target generalization predicts that subjects will respond with a significant number of "don't know" responses. The inferential rule of balance predicts that subjects will infer a negative relationship between person I and person J since this will result in balanced triplets for both members (i.e., IJK, IJL, JIK,

and JLK will all be balanced by a negative prediction). The appropriate null hypothesis states that there will be no significant differences between subjects' use of positive, negative, and "don't know" responses. Thus, predictions about the unknown relationship for Structure 3 contrasts positivity against balance to observe the relative strength of the two inferential rules in accounting for subjects' responses. In addition, each inferential rule also predicts that subjects will explain their predictions by using terms which characterize each inferential rule. The appropriate null hypothesis states that there will be no significant differences between subjects' use of the inferential rules as reflected in their explanations about their predictions.

For Structure 4, subjects will be asked to predict the unknown relationship between person M and person N (or between themselves and person N). The inferential rule of positivity predicts that subjects will complete the unknown relationship with a positive sentiment. The inferential rule of source/target generalization predicts a negative relationship between person M and person N so as to introduce this property into the structure for person M, as person M will then be disliked by everyone in the social group. The inferential rule of balance makes no predictions about subjects' responses since predictions of either a positive or a negative relation-

ship result in a similar number of total balanced triplets involving all members of the social group (with the added assumption that three negative relations may be balanced). The appropriate null hypothesis states that there will be no significant differences between subjects' use of positive, negative, and "don't know" responses. The predictions made by the inferential rules for Structure 4 contrasts positivity against source/target generalization. In addition, each inferential rule also predicts that subjects will explain their predictions by using terms which characterize each rule. The appropriate null hypothesis states that there will be no significant differences between subjects' use of the inferential rules as reflected in their explanations about their predictions.

In each of the social structures above, different relations characterize each structure. Therefore, each inferential rule makes different assumptions about the nature of subjects' responses about the unknown interpersonal relationships. It has been shown that the inferential rules can be compared to one another in an attempt to determine the relative effectiveness of each inferential rule in accounting for subjects' predictions and their explanations about their predictions. From this analysis, it will be possible to determine which inferential rule appears to dominate in subjects' pre-

dictions about unknown relationships within simple social structures.

Research hypotheses: Subjects' involvement--the observer versus the participant. Subjects will be asked to complete an essay after predicting the unknown relationship within each social structure (see Methodology chapter) which answers the question, "For what reason(s) did you give the response that you did?" These essay responses will be content analyzed to determine differences between the Observer and the Participant conditions with respect to the differential use of the three inferential rules. The differential use of the inferential rules should be reflected in the terms subjects use to explain their predictions. The following hypotheses specify the differences which are expected between the involvement conditions with respect to subjects' use of the inferential rules.

Figure II presents the expected effects due to the involvement conditions, the differences between the two involvement conditions with respect to the terms which subjects use in describing their predictions. For Structure 1, (a) there will be a significantly greater use of the inferential rule of positivity in the Participant condition than in the Observer condition. This attests to the hypothesized need for subjects to perceive significantly more positive relationships between themselves

Figure II. Research Hypotheses: The Differential Effects of Subjects' Involvement in the Task Activity Upon the Use of the Inferential Rules

	Structure 1	Structure 2	Structure 3	Structure 4
Positivity	$P > O$	$P > O$	$P > O$	$P > O$
Source/Target Generalization	$O = P$	$O = P$	No. Pred.	$O > P$
Balance	$O > P$	$O > P$	$O > P$	$P = O$

Note: O = Observer Condition; P = Participant Condition.

and other people than between other people per se. Deutsch and Solomon (1950), in their explanations about Homan's basic proposition, assume that an individual likes himself and is attracted to other people who like him/her. They also argue that reinforcement theories assume that social approval and praise, represented by positive affective relationships between an individual and other people in this case, serve as rewards while social disapproval, as in negative affective interpersonal relationships, serve as a lack of reinforcement for the individual. Finally, Rodrigues (1968) argued that the forces of agreement, which may be explained by a positivity bias, would be stronger when the subject was ego-involved in the attitudinal issue. Thus, a significantly greater use of positive predictions should occur as subjects become more involved in the prediction task.

Also, for Structure 1, (b) there will be no significant differences between the two involvement conditions with respect to subjects' use of the inferential rule of source/target generalization. Since the property of source/target generalization can be introduced into this structure by either a positive or a negative prediction, there is no difference expected between the involvement conditions with respect to the overall use of this inferential rule. However, it would be expected that there will

be a significantly greater use of a positive-oriented source/target generalization rule in the Participant condition than in the Observer condition while there will be a significantly greater use of a negative-oriented source/target generalization rule in the Observer condition than in the Participant condition; and (c) there will be a significantly greater use of the inferential rule of balance in the Observer condition than in the Participant condition, since the use of a negative prediction introduces balance into this structure. Traditionally it has been assumed that subjects will use the inferential rule of balance to a significantly greater degree as subjects become more involved in the task activity. Burnstein (1967) argued that when the issue was trivial, structural balance would be of no consequence in its effects. Sampson and Insko (1964) suggested that the use of the inferential rule of balance would increase under conditions of high ego-involvement on the part of the subject. When the task is less involving, "we would suggest that P would feel less pressure from the imbalance and would be less likely to alter his judgments" (p. 192). However, no empirical support has been generated for this proposition in the research literature. It may be that the use of the inferential rule of balance increases for subjects who are ego-involved in the task activity to the extent that the prediction made calls for the use of a positive

response. It is thus hypothesized in this study that when the use of the inferential rule of balance calls for an appropriate negative prediction, the balance rule will be demonstrated to a significantly greater degree in the Observer condition than in the Participant condition, and vice versa.

For Structure 2, (a) there will be a significantly greater use of the inferential rule of positivity in the Participant conditions than in the Observer condition; (b) there will be no significant differences between the involvement conditions with respect to subjects' use of the inferential rule of source/target generalization, since this property can be introduced into this structure by either a positive or a negative prediction. However, it would be expected that there will be a significantly greater use of a positive-oriented source/target generalization rule in the Participant condition than in the Observer condition while there will be a significantly greater use of a negative-oriented source/target generalization rule in the Observer condition than in the Participant condition; and (c) there will be a significantly greater use of the inferential rule of balance in the Observer condition than in the Participant condition, since a negative prediction introduces balance into this structure.

For Structure 3, (a) there will be a significantly greater use of the inferential rule of positivity in the

Participant condition than in the Observer condition; (b) there will be no significant use of the inferential rule of source/target generalization in either involvement condition, since it is not possible to introduce this property into this structure through the prediction method; and (c) there will be a significantly greater use of the inferential rule of balance in the Observer condition than in the Participant condition, since a negative prediction introduces balance into this structure.

For Structure 4, (a) there will be a significantly greater use of the inferential rule of positivity in the Participant condition than in the Observer condition; (b) there will be a significantly greater use of the inferential rule of source/target generalization in the Observer condition than in the Participant condition, since the introduction of this property into this structure requires a negative prediction; and (c) there will be no significant differences between involvement conditions with respect to subjects' use of the inferential rule of balance, since it is possible to introduce this property into this structure by either a positive or a negative prediction.

The hypotheses outlined above allow for the investigation of whether these inferential rules can be recognized and used by subjects in this type of experimental study and whether there are significant differences between subjects in their explanations about their predictions as

mediated by their level of involvement in the prediction task. The research hypotheses for this experimental study are summarized below.

Summary of Hypotheses

I. Prediction Method: Differences between the inferential rules will be exhibited in subjects' predictions and explanations about unknown interpersonal relationships within given social structures.

A. Structural effects:

1. Structure 1: Subjects will predict the unknown A-B or You-B relationship.
 - (A) Positivity predicts a significant positive relationship and a significant use of its rule in subjects' responses.
 - (B) Source/target generalization makes no prediction about the unknown relationship but predicts that there will be a significant use of its rule in subjects' responses.
 - (C) Balance predicts a significant negative relationship and a significant use of its rule in subjects' responses.
2. Structure 2: Subjects will predict the unknown E-F or You-F relationship.
 - (A) Positivity predicts a significant positive relationship and a significant use of its rule in subjects' responses.
 - (B) Source/target generalization makes no prediction about the unknown relationship but predicts there will be a significant use of its rule in subjects' responses.
 - (C) Balance predicts a significant negative relationship and a significant use of its rule in subjects' responses.
3. Structure 3: Subjects will predict the unknown I-J or You-J relationship.
 - (A) Positivity predicts a significant positive relationship and a significant use of its rule in subjects' responses.

- (B) Source/target generalization predicts a significant "Don't Know" response and no significant use of its rule in subjects' responses.
 - (C) Balance predicts a significant negative relationship and a significant use of its rule in subjects' responses.
4. Structure 4: Subjects will predict the unknown M-N or You-N relationship.
- (A) Positivity predicts a significant positive relationship and a significant use of its rule in subjects' responses.
 - (B) Source/target generalization predicts a significant negative relationship and a significant use of its rule in subjects' responses.
 - (C) Balance makes no prediction about the unknown relationship but predicts there will be a significant use of its rule in subjects' responses.

II. Subjects' Involvement in the Task Activity--The Observer Versus the Participant: Differences between the use of the inferential rules as affected by subjects' involvement in the prediction task.

A. Structural effects:

1. Structure 1:

- (A) There will be a significantly greater use of the inferential rule of positivity in the Participant condition than in the Observer condition.
- (B) There will be an equivalent use of the inferential rule of source/target generalization in the two involvement conditions.
- (C) There will be a significantly greater use of the inferential rule of balance in the Observer condition than in the Participant condition.

2. Structure 2:

- (A) There will be a significantly greater use of the inferential rule of positivity in the Participant condition than in the Observer condition.

- (B) There will be an equivalent use of the inferential rule of source/target generalization in the two involvement conditions.
- (C) There will be a significantly greater use of the inferential rule of balance in the Observer condition than in the Participant condition.

3. Structure 3:

- (A) There will be a significantly greater use of the inferential rule of positivity in the Participant condition than in the Observer condition.
- (B) There will be no significant use of the inferential rule of source/target generalization in the two involvement conditions.
- (C) There will be a significantly greater use of the inferential rule of balance in the Observer condition than in the Participant condition.

4. Structure 4:

- (A) There will be a significantly greater use of the inferential rule of positivity in the Participant condition than in the Observer condition.
- (B) There will be a significantly greater use of the inferential rule of source/target generalization in the Observer condition than in the Participant condition.
- (C) There will be an equivalent use of the inferential rule of balance in the two involvement conditions.

Review of Subsequent Chapters

Chapter One has outlined the basic assumptions for the research project, the previous research literature, and the present study's hypotheses. The research literature, the relevant variables, and the proposed hypotheses have been given a detailed consideration in this chapter in order to provide the reader with a clear understanding about the nature of this experimental study. Chapter Two

will outline the experimental procedures and the methodology that was used in the design of the study. Chapter Three will present the statistical results which correspond to the hypotheses that have been advanced in this experimental study, and Chapter Four will interpret and discuss the statistical results in terms of their implications for the hypothesized effects and for future research endeavors.

CHAPTER TWO

PROCEDURES AND METHODOLOGY

Introduction

The design of the experiment called for specific procedures which were capable of investigating the differential effects of the three inferential rules upon an individual's predictions about the nature of unknown interpersonal relationships within social groups. A pilot study had been conducted in the summer of 1979 to determine the feasibility of the basic assumptions of this project as well as to refine the actual design of the experiment (see Appendix A for a discussion of the results from this pilot study). The pilot study confirmed that the experimental procedures were satisfactory for the measurement of an individual's differential use of the three major inferential rules. It was found in the pilot study that individuals tended to use the inferential rule of balance to a significantly greater degree than was expected and tended not to use the inferential rule of positivity in their predictions about the unknown interpersonal relationships. Based upon the suggestions from this pilot study--(a) that subjects would be run through the experimental procedures in groups rather than individually; (b) that two separate information sheets, rather than one sheet, would be used to introduce subjects to the two involvement conditions; and (c) that three judges, rather than one, would be

used in the content analysis procedure--the design of the experiment was as follows.

Selection of Subjects

Subjects were recruited from the basic speech program at the University of Kansas during the fall semester of 1979. Subjects were able to fulfill a basic speech program requirement through their participation in the experimental study. Table 1 presents the characteristics of the subject pool that was used in this study. In all, one hundred and twenty subjects took part in the study. These subjects were recruited from three different types of basic speech courses which were taught by eleven different instructors. Instructors A, B, and H taught Speech 130: Fundamentals of Speech--Speaker-Audience Communication; Instructors A, D, E, G, I, J, and K taught Speech 140: Fundamentals of Speech--Interpersonal Communication; and Instructors C and F taught Speech 150: Fundamentals of Speech--Personal Communication. Table 1 presents an analysis of the number of basic speech classes that were used in the study, the number of subjects from each class who took part in the study, and the number of "casualties." A "casualty" was defined as an individual who was deleted from the experimental results due to one of two problems: either they were not involved in experimental groups which met the size requirement for this study (ten people in each group) or they were dismissed from the experimental session because the groups were full. Thus, the

Table 1
Nature of Subject Pool

Instructor	Nature of Class	Number of Classes	Number of Subjects	Number of Casualties
A	Speech 130	2	26	6
	Speech 140	1	12	4
B	Speech 130	1	22	6
C	Speech 150	1	13	8
D	Speech 140	1	9	0
E	Speech 140	1	9	5
F	Speech 150	1	8	4
G	Speech 140	1	6	0
H	Speech 130	1	5	0
I	Speech 140	1	4	1
J	Speech 140	2	3	0
K	Speech 140	1	3	7
TOTALS		15	120	41

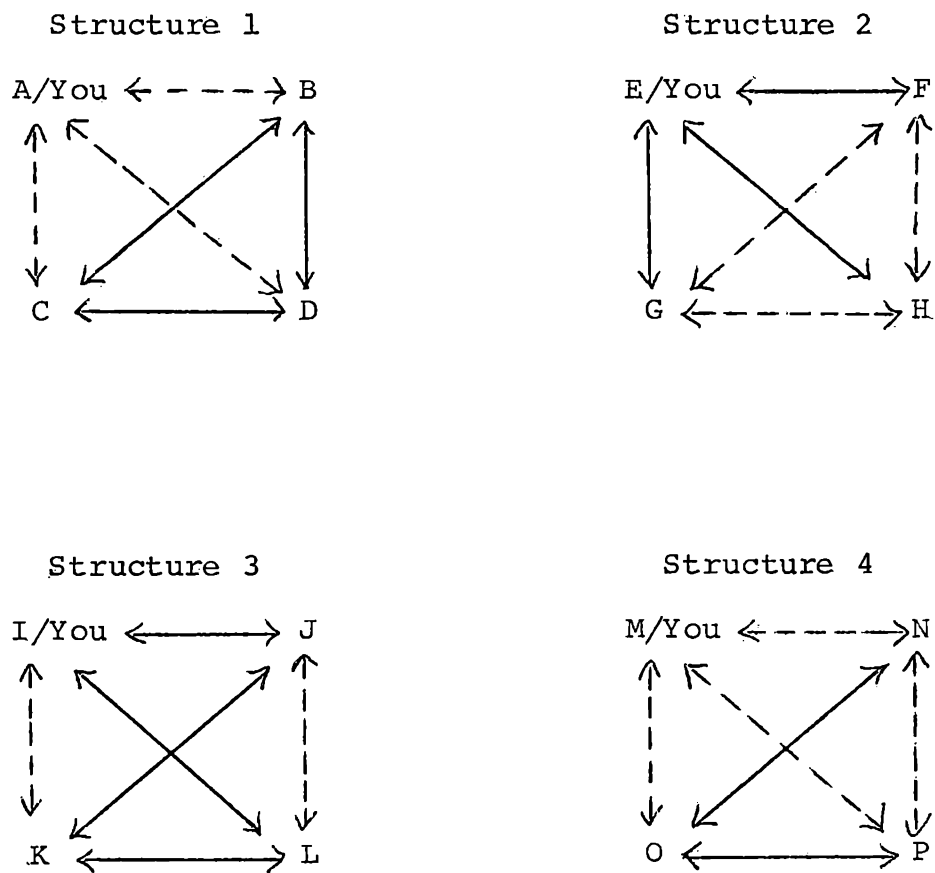
study eventually consisted of eleven instructors, fifteen classes, one hundred and twenty subjects, and forty-one casualties.

Structures Employed in the Study

Subjects were presented with the four social structures shown in Figure 2. These four social structures were developed by Crockett (1979) and were used to investigate the differential effects of the inferential rules upon an individual's predictions about unknown interpersonal relations because they had been found to be effective in determining differences between subjects in their ability to learn social structures. For the purposes of this study, the relationships between the first and the second person were left undefined and subjects were asked to predict the nature of the unknown interpersonal relationships. Crockett's (1979) structures differ in terms of: (a) the degree of balance characterizing each structure; (b) the nature of source and target generalization for individuals within each structure; and (c) the ratio of like to dislike relations within each structure. The following discussion will outline the major differences between Crockett's (1979) social structures.

Structure 1 is completely balanced, "in that transitivity and anti-transitivity hold for all four of the triplets. Persons B, C, and D all like each other and they all dislike A. Source/target generalization also holds for person A" (Crockett, 1979, p. 6). Thus, if one knew the

Figure III. Structures Employed (Crockett, 1979) in Experimental Study



relationship between person A and any other member of the social group, relations between all of the other members of the structure could be inferred. In addition, since Structure 1 is balanced, there are an equal number of like and dislike relations characterizing the social structure.

Structures 2 and 3 are both unbalanced because, as Crockett (1979) explains:

...the relations in all four triplets violate either transitivity or anti-transitivity. Structure 2 is the obverse of Structure 1, in that person F, G, and H all dislike each other, and all like E; source/target generalization holds for E. Structure 3 has more like relations than dislike (p. 6, author's italics).

Structure 4 is partially balanced because, as Crockett (1979) explains:

Two triplets (MNO and MPO) are balanced, the other two are not; in particular MNP violates anti-transitivity and NOP violates transitivity. To make Structure 4 isomorphic to Structure 1, the relations between N and P need only be reversed from negative to positive. Source/target generalization holds for M. Finally, this structure has more dislike than like relations (p. 6, author's italics).

Methodology of the Study

Three different methods have been used to investigate the effects of the three inferential rules upon an individual's judgments about the nature of the interpersonal relationship which exist within simple social structures:

(a) an individual's affective responses to hypothetical social structures; (b) the ease with which an individual learns different hypothetical social structures; and (c)

an individual's predictions about unknown interpersonal relationships between two members of hypothetical social structures given information about the relationships these members have with other members of the social structures (Zajonc & Sherman, 1966; Pickek, Sherman & Shiffrin, 1975). The prediction method was used in this study to investigate the differential use of the three inferential rules in the construction of an individual's "social schema."

The experiment was conducted as a 4 x 2 factorial design. The two factors were the four social structures which were used in the prediction task and the two involvement conditions. Subjects were presented with the four social structures shown in Figure 2, with the interpersonal relationships between the first and the second person left undefined, in one of the following four orders of presentation: (a) 1234, (b) 2341, (c) 3412, and (d) 4123. Subjects were then asked to predict the affective nature of the unknown interpersonal relationships. Half of the subjects were presented with social structures in which they were not involved as members (the Observer condition) and half of the subjects were presented with social structures in which they were hypothetical members of the social groups (the Participant condition). Subjects were assigned to one of the eight experimental conditions and to one of the four order of presentations on a random basis.

Subjects were brought into the experimental sessions

in groups consisting of ten people. Subjects were first given an information sheet (see Appendix C) which introduced them to the experiment and its purpose. Subjects were told that the purpose of the experiment was to investigate the ways people determine the nature of unknown interpersonal relationships within social groups based on the available information about the known interpersonal relationships which characterized those social groups. There was an attempt made to encourage the subjects' cooperation with full knowledge about the purpose of the experiment. Two different information sheets were used which corresponded to the subjects' placement in the two involvement conditions. Only one information sheet had been used in the pilot study and it was discovered that subjects in the Participant conditions did not always perceive themselves as being part of the social groups. The information sheets used in this study were identical for the two involvement conditions except that the information sheet for the Participant condition stressed that the subjects were to imagine themselves as actual members of the hypothetical social groups. Subjects were then presented with the four structures shown in Figure 2 in which all of the relationships between members were specified except for the relationships between the first two members. In the Observer condition (see Appendix D) the social structures consisted of four hypothetical people, while in the Participant condition (see Appendix E)

the social structures consisted of the subject him/herself and three other hypothetical people. The names used in the social structures were: Al, Bill, Charlie, Dave, Ed, Fred, Gary, Harry, Irwin, Jim, Ken, Larry, Mike, Ned, Oscar, and Paul, respectively. Subjects were presented with a social structure visually, informed about each known relationship which existed between pairs of the members within the social structure, and then asked to predict the unknown relationship. Following this prediction, subjects were asked to write a short essay about their reason(s) for the answer they gave. Subjects were asked to be as specific as possible in their explanations about their predictions and to go into as much depth as they could in their answer. After completing one social structure, subjects were asked to turn the page and complete the next social structure until all four structures had been completed. Subjects were then debriefed about the design of the experiment and dismissed.

Data Treatment

The experimental procedures yielded nominal level frequency data with respect to subjects' responses to the experimental manipulations. The appropriate analysis of frequency data calls for the use of Chi-Square nonparametric significance tests which compare the observed effects against the expected, or theoretical, effects. The Chi-Square significance tests were used for the analysis of all single-group data as well as for all group comparisons on

the relevant dependent variables. The research data consisted of the predictions which subjects made about the unknown relationships and their explanations about their predictions.

Subjects' predictions about unknown interpersonal relationships. Subjects made one of three possible predictions about the affective nature of the unknown interpersonal relationships they were presented with: positive, negative, and "don't know" responses. These predictions were analyzed by the use of Chi-Square significance tests to determine the deviation from the expected effects. Since the relevant null hypotheses state that there will be no significant differences between subjects' predictions, these predictions would be expected to be evenly distributed across the three possible responses.

Subjects' explanations about their predictions. Subjects' essay answers about their predictions were content analyzed by three judges working independently to observe the subjects' use of the three inferential rules. All three of the judges were graduate students at the University of Kansas in the Department of Speech Communication and Human Relations, and one of the judges was the principle investigator for this research project. The judges were asked to sort the subjects' essay responses into one of four different categories: positivity statements, source/target generalization statements, balance statements, and

source/target generalization/balance statements. There was a 79.7% agreement between the three judges with respect to the nature of subjects' responses. There was an 85.5% agreement between judges one and two, an 86% agreement between judges one and three, and an 85.4% agreement between judges one and three.

From the content analysis procedure, it was possible to place all of the subjects' responses into one of the following three categories: positivity statements, source/target generalization statements, and balance statements. One subjects' responses were deleted from the results because the judges could not discern the nature of his/her explanations with respect to the three categories. All responses were agreed upon by at least two judges, except for one response which produced different interpretations by the three judges. This response was determined by the experimenter's decision. Subjects also provided explanations about their "don't know" responses which were content analyzed by this experimenter.

The fourth category of source/target generalization/balance statements was used by all three judges in the content analysis procedure. However, there was never an agreement between at least two judges with respect to a specific response made by a subject in terms of this fourth category of source/target generalization/balance statements.

Table 2 provides an analysis of the type of statements

Table 2

Statements Characterizing the Inferential Rules of
Positivity, Source/Target Generalization, and Balance

Positivity Statements

"Bill and I would probably like each other...The liking relationship between me and Bill is what could hold together the relationship with You and Charlie and You and Dave."

"You must like someone in the group to be in the group at all."

"In order for me to be a member of a particular social group--I would assume that I would have some type of relationship (positive) with a member of the group. Since the structure of the group indicates I dislike Charlie and Dave, it must be Bill that I have a positive relationship with."

"Since I dislike Oscar and Paul, I must like Ned or I wouldn't be involved in the group socially."

"If they like each other then they will only dislike one person each in the group."

"like each other...with a structure like this it would seem to me that the people could work out the demeaning conflicts."

Source/Target Generalization Statements

"Ed seems to like a variety of people who don't necessarily like each other."

"Mike and Ned dislike each other because Mike dislikes the other two."

"It seems that Ed is a very enjoyable person because he's liked by Gary and Harry even though Gary and Harry dislike each other."

"Mike doesn't seem to like anyone and I don't think anyone likes Mike."

"Because Mike doesn't seem to get along with anyone in this group at all."

(Table 2 continued)

Table 2 (continued)

Source/Target Generalization Statements (continued)

"I reached this decision by process of elimination. If I feel badly about both Oscar and Paul, then I have no basis to like Ned."

"Everyone else likes Bill..."

Balance Statements

"Ned likes Oscar whom I dislike..."

"Gary doesn't like Fred and Gary and Ed and friends, so they wouldn't like each other."

"I don't like Charlie, and Bill likes him, so I won't like Bill and he won't like me."

"I think they dislike each other, because they have completely different attitudes towards Charley and Dave."

"They dislike each other, because Irwin likes Larry who Jim dislikes and Jim likes Ken who Irwin dislikes."

"Since Al doesn't like Charlie and Dave and they both like Bill, I don't believe Bill has much of a chance with Al."

"Since Ned likes Oscar, but Oscar dislikes Mike, then Ned would dislike Mike. Since Mike dislikes Paul, and Ned dislikes Paul, then Mike should dislike Ned, they all dislike each other."

which subjects gave and their relationship to one of the three inferential rules. Statements which characterized the inferential rule of positivity stressed that people needed to have positive interpersonal relationships in order to be members of the social groups. Statements which characterized the inferential rule of source/target generalizations stressed the general characteristics of a particular person in the social groups. Statements which characterized the inferential rule of balance were ones which logically deduced the unknown relationships between the two people based on the known relationships within the social structures. Once these statements had been content analyzed into the respective categories which characterized each inferential rule, it was possible to analyze the nature of subjects' responses using Chi-Square significance tests to determine the deviation from the expected effects. Since the relevant null hypotheses state that there will be no significant differences between subjects' use of the three inferential rules and "don't know" responses in their explanations about their predictions, these responses would be expected to be evenly distributed across the four possible categories.

CHAPTER THREE

RESULTS

This chapter presents the statistical results for this experimental study with respect to the research hypotheses that have been formulated. The influence of each inferential rule is discussed in terms of its effect upon subjects' predictions and upon subjects' explanations about their predictions. A .05 level of significance was used as the basis for rejecting the relevant null hypotheses. The research hypotheses and an analysis of their significance as reflected in the data is presented below.

Research Hypotheses: Subjects' Predictions About Unknown Interpersonal Relationships

The research hypotheses for subjects' predictions were based on the assumption that subjects' differential use of the three inferential rules of positivity, source/target generalization, and balance would be reflected in the predictions that they made about the unknown relationships and in their explanations about their predictions.

Table 3 contrasts the observed frequencies of subjects' predictions across involvement conditions against the theoretical frequencies with respect to Structure 1. The Chi-Square value of 123.3 yields a probability figure of less than .001 with two degrees of freedom. The null

Table 3

Subjects' Observed and Expected Predictions
Across Involvement Conditions for Structure 1

	<u>Positive</u>	<u>Negative</u>	<u>Don't Know</u>
Observed	6	97	17
Expected	40	40	40
Percentage	5	80.8	14.2

$\chi^2 = 123.3$ $p < .001$ (w/ 2df)

hypothesis can be rejected with respect to differences between subjects' use of the three possible predictions with regard to Structure 1. Inspection of the data indicates that the significance of the Chi-Square value can be attributed to the lack of a positivity effect, as subjects gave significantly fewer positive predictions than was theoretically expected and gave significantly more negative predictions than was theoretically expected. Only 5% of the subjects gave positive predictions, 14.2% of the subjects gave "don't know" responses, and 80.8% of the subjects gave negative predictions. The inferential rule of positivity does not seem to account for the nature of the predictions which subjects gave regarding the unknown relationship for Structure 1. Since subjects appear not to use the inferential rule of positivity, and since subjects gave negative predictions to a significantly greater degree than was theoretically expected, either the inferential rule of source/target generalization or the inferential rule of balance must account for subjects' predictions. This will be verified through an analysis of the subjects' explanations about their predictions.

Table 4 contrasts the observed frequencies of subjects' predictions across involvement conditions against the theoretical frequencies with respect to Structure 2. The Chi-Square value of 6.425 yields a probability figure of less than .05 with two degrees of freedom. The null

Table 4

Subjects' Observed and Expected Predictions
Across Involvement Conditions for Structure 2

	<u>Positive</u>	<u>Negative</u>	<u>Don't Know</u>
Observed	35	53	32
Expected	40	40	40
Percentage	29.1	44.2	26.7

$\chi^2 = 6.425$ $p < .05$ (w/ 2df)

hypothesis can be rejected with respect to differences between subjects' use of the three possible predictions with regard to Structure 2. Inspection of the data indicates that the significance of the Chi-Square value can be attributed to the dominant use of negative predictions by subjects. While 26.7% of the subjects gave "don't know" responses and 29.1% of the subjects gave positive predictions, 44.2% of the subjects gave negative predictions. While the inferential rule of positivity is not used to a significantly greater degree than would be theoretically expected, it is also not used to a significantly less degree than would be theoretically expected. Since subjects gave negative predictions to a significantly greater degree than was theoretically expected, either the inferential rule of source/target generalization or the inferential rule of balance must account for subjects' predictions. This will be verified through an analysis of the subjects' explanations about their predictions.

Table 5 contrasts the observed frequencies of subjects' predictions across involvement conditions against the theoretical frequencies with respect to Structure 3. The Chi-Square value of 29.9 yields a probability figure of less than .001 with two degrees of freedom. The null hypothesis can be rejected with respect to differences between subjects' use of the three possible predictions with regard to Structure 3. Inspection of the data indicates

Table 5

Subjects' Observed and Expected Predictions
Across Involvement Conditions for Structure 3

	<u>Positive</u>	<u>Negative</u>	<u>Don't Know</u>
Observed	18	66	36
Expected	40	40	40
Percentage	15	55	30

$\chi^2 = 29.9$ $p < .001$ (w/ 2df)

that the significance of the Chi-Square value can be attributed to the lack of a positivity effect, as subjects gave significantly fewer positive predictions than was theoretically expected and gave significantly more negative predictions than was theoretically expected. Only 15% of the subjects gave positive predictions, 30% of the subjects gave "don't know" responses, and 55% of the subjects gave negative predictions. The inferential rule of positivity does not seem to account for the nature of the predictions which subjects gave regarding the unknown relationship for Structure 3. Since subjects appear not to use the inferential rule of positivity, and since subjects gave negative predictions to a significantly greater degree than was theoretically expected, the inferential rule of balance, which asserts a negative prediction, must account for subjects' responses. The inferential rule of balance is the only rule which asserts a negative prediction, and subjects' use of this rule will be verified through an analysis of the subjects' explanations about their predictions.

Table 6 contrasts the observed frequencies of subjects' predictions across involvement conditions against the theoretical frequencies with respect to Structure 4. The Chi-Square value of 6.95 yields a probability figure of less than .05 with two degrees of freedom. The null hypothesis can be rejected with respect to differences

Table 6

Subjects' Observed and Expected Predictions
Across Involvement Conditions for Structure 4

	<u>Positive</u>	<u>Negative</u>	<u>Don't Know</u>
Observed	27	50	43
Expected	40	40	40
Percentage	22.5	41.7	35.8

$\chi^2 = 6.95$ $p < .05$ (w/ 2df)

between subjects' use of the three possible predictions with regard to Structure 4. Inspection of the data indicates that the significance of the Chi-Square value can be attributed to the lack of a positivity effect, as subjects gave significantly fewer positive predictions than was theoretically expected and gave significantly more negative predictions than was theoretically expected. Only 22.5% of the subjects gave positive predictions, 35.8% of the subjects gave "don't know" responses, and 41.7% of the subjects gave negative predictions. The inferential rule of positivity does not seem to account for the nature of the predictions which subjects gave regarding the unknown relationship for Structure 4. Since subjects appear not to use the inferential rule of positivity, and since subjects gave negative predictions to a significantly greater degree than was expected, the inferential rule of balance or the inferential rule of source/target generalization must account for subjects' responses. However, the inferential rule of source/target generalization is the only rule which asserts a negative prediction, and subjects' use of this rule will be verified through an analysis of the subjects' explanations about their predictions.

The three inferential rules predicted that subjects would demonstrate significant use of the rules in their explanations about the predictions which they made.* The

*While there is evidence to suggest that subjects' explanations about their responses to experimental manipulations are not always related to their behavior, it is assumed for the purposes of this study that subjects' explanations about their predictions are related to their behaviors in the prediction task.

inferential rules predicted that the type of terms and statements which subjects used in their explanations would be characteristic of the inferential rules of positivity, source/target generalization, or balance.

Table 7 contrasts the observed frequencies of subjects' use of the three inferential rules as reflected in their essay responses across involvement conditions against the theoretical frequencies for Structure 1. The Chi-Square value of 111.621 yields a probability figure of less than .001 with three degrees of freedom. The null hypothesis can be rejected with respect to differences between subjects' use of the three inferential rules in their explanations about their predictions with regard to Structure 1. Inspection of the data indicates that the significance of the Chi-Square value can be attributed to two factors: (a) subjects' significant lack of using the inferential rule of positivity, and (b) subjects' significant use of the inferential rule of balance. Only 1.7% of the subjects demonstrated a use of the inferential rule of positivity, 14.3% of the subjects gave "don't know" responses, 18.5% of the subjects demonstrated a use of the inferential rule of source/target generalization, and 65.5% of the subjects demonstrated a use of the inferential rule of balance. Thus, not only did subjects demonstrate a significant use of negative predictions about the unknown interpersonal relationship for Structure 1, but subjects

Table 7

Subjects' Observed and Expected Use of the
Inferential Rules Across Involvement
Conditions for Structure 1

	<u>Positivity</u>	<u>Generalization</u>	<u>Balance</u>	<u>Don't Know</u>
Observed	2	22	78	17
Expected	29.75	29.75	29.75	29.75
Percentage	1.7	18.5	65.5	14.3

$\chi^2 = 111.621$ $p < .001$ (w/ 3df)

used the inferential rule of balance to deduce the negative relationship to a significantly greater degree than was theoretically expected. It is interesting to note that when the "don't know" responses were content analyzed, a significant portion of those responses cited a tendency toward the use of the inferential rule of source/target generalization. Since the property of source/target generalization could be introduced into this structure via a positive or a negative prediction, many subjects were inclined to give "don't know" responses. When the "don't know" responses which tended toward a use of the inferential rule of source/target generalization were included, 25.2% of the subjects demonstrated the use of this rule. In addition, of the subjects who did use the inferential rule of source/target generalization in their predictions, only 18.2% of the subjects gave positive predictions while 81.8% of the subjects gave negative predictions. While the unknown relationship could be completed by the use of either a positive or a negative prediction, those subjects using the inferential rule of source/target generalization chose negative predictions. This finding is significant at less than a .005 level using the Chi-Square significance test. However, while the inferential rule of source/target generalization caused some subjects to vacillate in their predictions (i.e., "don't know" responses), subjects demonstrated a significantly greater use of the inferential rule

of balance than any other inferential rule in their explanations about their predictions.

Table 8 contrasts the observed frequencies of subjects' use of the three inferential rules as reflected in their essay responses across involvement conditions against the theoretical frequencies for Structure 2. The Chi-Square value of 37.334 yields a probability figure of less than .001 with three degrees of freedom. The null hypothesis can be rejected with respect to differences between subjects' use of the three inferential rules in their explanations about their predictions with regard to Structure 2. Inspection of the data indicates that the significance of the Chi-Square value can be attributed to two factors: (a) subjects' significant lack of using the inferential rule of positivity, and (b) subjects' significant use of the inferential rule of balance. Only 4.3% of the subjects demonstrated a use of the inferential rule of positivity, 26% of the subjects gave "don't know" responses, 26% of the subjects demonstrated a use of the inferential rule of source/target generalization, and 43.7% of the subjects demonstrated a use of the inferential rule of balance. Thus, not only did subjects demonstrate a significant use of negative predictions about the unknown interpersonal relationship for Structure 2, but subjects used the inferential rule of balance to deduce the negative relationship to a significantly greater degree than was

Table 8

Subjects' Observed and Expected Use of the
Inferential Rules Across Involvement
Conditions for Structure 2

	<u>Positivity</u>	<u>Generalization</u>	<u>Balance</u>	<u>Don't Know</u>
Observed	5	31	52	31
Expected	29.75	29.75	29.75	29.75
Percentage	4.3	26	43.7	26

$\chi^2 = 37.334$ $p < .001$ (w/ 3df)

theoretically expected. It is interesting to note that there was a significant tendency toward a use of the inferential rule of source/target generalization in subjects' "don't know" responses. Since the property of source/target generalization could be introduced into this structure via a positive or a negative prediction, many subjects were inclined to give "don't know" responses. When the "don't know" responses which tended toward a use of the inferential rule of source/target generalization are included, 37.8% of the subjects demonstrated the use of this rule. In addition, in contrast to the results from Structure 1, of the subjects who did use the inferential rule of source/target generalization in their predictions, only 19.4% of the subjects gave negative predictions while 80.6% of the subjects gave positive predictions. This finding was significant at less than a .001 level using the Chi-Square significance test. This finding suggests that subjects who use the inferential rule of source/target generalization are able to shift in their predictions from positive to negative responses depending upon the social structure they are presented with. While there is some support for subjects' use of source/target generalization in their explanations, subjects demonstrated a significantly greater use of the inferential rule of balance than any other inferential rule in their explanations about their predictions.

Table 9 contrasts the observed frequencies of subjects' use of the three inferential rules as reflected in their essay responses across involvement conditions against the theoretical frequencies for Structure 2. The Chi-Square value of 60.481 yields a probability figure of less than .001 with three degrees of freedom. The null hypothesis can be rejected with respect to differences between subjects' use of the three inferential rules in their explanations about their predictions with regard to Structure 3. Inspection of the data indicates that the significance of the Chi-Square value can be attributed to two factors: (a) subjects' significant lack of using the inferential rule of positivity, and (b) subjects' significant use of the inferential rule of balance. Only 1.7% of the subjects demonstrated a use of the inferential rule of source/target generalization (which is greater than the theoretical frequency because it was thought that it was impossible to introduce this property into this social structure), 5% of the subjects demonstrated a use of the inferential rule of positivity, 30.3% of the subjects gave "don't know" responses, and 63% of the subjects demonstrated a use of the inferential rule of balance. Thus, not only did subjects demonstrate a significant use of negative predictions about the unknown interpersonal relationship for Structure 3, but subjects used the inferential rule of balance to deduce the negative relationship to a significantly

Table 9

Subjects' Observed and Expected Use of the
Inferential Rules Across Involvement
Conditions for Structure 3

	<u>Positivity</u>	<u>Generalization*</u>	<u>Balance</u>	<u>Don't Know</u>
Observed	6	2	75	36
Expected	39.6	0	39.6	39.6
Percentage	5	1.7	63	30.3

$$x^2 = 60.481 \quad p < .001 \quad (\text{w/ } 3\text{df})$$

*The data with respect to the category of source/target generalization for Structure 3 was not included in the Chi-Square analysis procedure as the expected frequency equalled zero.

greater degree than was theoretically expected. This is further supported by the fact that when the "don't know" responses were content analyzed, a significant portion of the responses tended toward a use of the inferential rule of balance. When the "don't know" responses are included, 71.4% of the subjects demonstrated a use of the inferential rule of balance. There is clear support that subjects predicted the nature of the unknown interpersonal relationship for Structure 3 using a cognitive balance bias.

Table 10 contrasts the observed frequencies of subjects' use of the three inferential rules as reflected in their essay responses across involvement conditions against the theoretical frequencies for Structure 4. The Chi-Square value of 46.663 yields a probability figure of less than .001 with three degrees of freedom. The null hypothesis can be rejected with respect to differences between subjects' use of the three inferential rules in their explanations about their predictions with regard to Structure 4. Inspection of the data indicates that the significance of the Chi-Square value can be attributed to three factors: (a) subjects' significant lack of using the inferential rule of positivity, (b) subjects' significant use of the inferential rule of balance, and (c) subjects' significant use of "don't know" responses. Only 6.7% of the subjects demonstrated a use of the inferential rule of positivity, 20.2% of the subjects demonstrated a use of the inferential rule

Table 10

Subjects' Observed and Expected Use of the
Inferential Rules Across Involvement
Conditions for Structure 4

	<u>Positivity</u>	<u>Generalization</u>	<u>Balance</u>	<u>Don't Know</u>
Observed	8	24	44	43
Expected	29.75	29.75	29.75	29.75
Percentage	6.7	20.2	37	36.1

$\chi^2 = 46.663$ $p < .001$ (w/ 3df)

of source/target generalization, 36.1% of the subjects gave "don't know" responses, and 37% of the subjects demonstrated a use of the inferential rule of balance. Thus, not only did subjects demonstrate a significant use of negative predictions about the unknown interpersonal relationship for Structure 4, but subjects used the inferential rule of balance to deduce the negative relationship to a significantly greater degree than was theoretically expected. Since it was possible to introduce the property of balance into this structure via a positive or a negative prediction, many of the subjects gave "don't know" responses. This is validated by the fact that when the "don't know" responses were content analyzed, a significant portion tended toward a use of the inferential rule of balance, but did not know whether to predict a positive or a negative relationship. When the "don't know" responses are included, 59.7% of the subjects demonstrated a use of the inferential rule of balance. Of the subjects who did use the inferential rule of balance in their predictions about the unknown relationship, there was not a significant difference at the .05 level of rejection between the use of positive and negative predictions. There is thus clear support that subjects predicted the nature of the unknown interpersonal relationship for Structure 4 using a cognitive balance bias.

Research Hypotheses: Subjects' Involvement in the Task Activity--The Observer Versus the Participant

The research hypotheses for subjects' involvement in the prediction task were based on the assumption that subjects' differential use of the three inferential rules of positivity, source/target generalization, and balance would be significantly related to the nature of the subjects' involvement in the task activity.

Table 11 contrasts the observed frequencies of subjects' predictions across structures for the two involvement conditions against the theoretical frequencies for Structure 1. The Chi-Square value of 3.702 is not significant at the .05 level of acceptance with two degrees of freedom. The null hypothesis must therefore be accepted with respect to differences between subjects' predictions as mediated by their involvement in the prediction task with regard to Structure 1. While there is a tendency for subjects in the Participant condition to use more positive predictions than subjects in the Observer condition and for subjects in the Observer condition to use more negative predictions than subjects in the Participant condition, the differences are not statistically significant at the accepted .05 level.

Table 12 contrasts the observed frequencies of subjects' predictions across structures for the two involvement conditions against the theoretical frequencies for Structure 2. The Chi-Square value of 5.294 is not significant at the .05

Table 11

Differences Between Involvement Conditions
in Subjects' Predictions for Structure 1

		<u>Positive</u>	<u>Negative</u>	<u>Don't Know</u>
Observer Condition	Observed	1	52	7
	Expected	3	48.5	8.5
	Percentage	1.7	86.7	11.7
Participant Condition	Observed	5	45	10
	Expected	3	48.5	8.5
	Percentage	8.3	75	16.7
$\chi^2 = 3.702$		n.s.	(w/ 2df)	

Table 12

Differences Between Involvement Conditions
in Subjects' Predictions for Structure 2

		<u>Positive</u>	<u>Negative</u>	<u>Don't Know</u>
Observer Condition	Observed	11	31	18
	Expected	17.5	26.5	16
	Percentage	18.3	51.7	30
Participant Condition	Observed	24	22	14
	Expected	17.5	26.5	16
	Percentage	40	36.7	23.3
$\chi^2 = 5.294$		n.s.	(w/ 2df)	

level of acceptance with two degrees of freedom. The null hypothesis must therefore be accepted with respect to differences between subjects' predictions as mediated by their involvement in the prediction task with regard to Structure 2. While there is a tendency in the proposed direction, for subjects in the Participant condition to use more positive predictions than subjects in the Observer condition and for subjects in the Observer condition to use more negative predictions than subjects in the Participant condition, the differences are not statistically significant at the accepted .05 level.

Table 13 contrasts the observed frequencies of subjects' predictions across structures for the two involvement conditions against the theoretical frequencies for Structure 3. The Chi-Square value of 0.485 is not significant at the .05 level of acceptance with two degrees of freedom. The null hypothesis must therefore be accepted with respect to differences between subjects' predictions as mediated by their involvement in the prediction task with regard to Structure 3.

Table 14 contrasts the observed frequencies of subjects' predictions across structures for the two involvement conditions against the theoretical frequencies for Structure 4. The Chi-Square value of 5.208 is not significant at the .05 level of acceptance with two degrees of freedom. The null hypothesis must therefore be accepted with respect to signi-

Table 13

Differences Between Involvement Conditions
in Subjects' Predictions for Structure 3

		<u>Positive</u>	<u>Negative</u>	<u>Don't Know</u>
Observer Condition	Observed	9	31	20
	Expected	9	33	18
	Percentage	15	51.7	33.3
Participant Condition	Observed	9	35	16
	Expected	9	33	18
	Percentage	15	58.3	26.7
$\chi^2 = 0.485$		n.s.	(w/ 2df)	

Table 14

Differences Between Involvement Conditions
in Subjects' Predictions for Structure 4

		<u>Positive</u>	<u>Negative</u>	<u>Don't Know</u>
Observer Condition	Observed	12	30	18
	Expected	13.5	25	21.5
	Percentage	20	50	30
Participant Condition	Observed	15	20	25
	Expected	13.5	25	21.5
	Percentage	25	33.3	41.7
$\chi^2 = 5.208$		n.s.	(w/ 2df)	

ficant differences between subjects' predictions as mediated by their involvement in the prediction task with regard to Structure 4. While there is a tendency in the proposed direction, for subjects in the Participant condition to use more positive predictions than subjects in the Observer condition and for subjects in the Observer condition to use more negative predictions than subjects in the Participant condition, the differences are not statistically significant at the accepted .05 level.

The research hypotheses with respect to subjects' involvement in the prediction task proposed that there would be significant differences between the involvement conditions with respect to the differential use of the three inferential rules in subjects' explanations about their predictions. Table 15 provides the Chi-Square values and their level of significance for each of the four social structures as mediated by the subjects' involvement condition. Inspection of the data indicates that none of the Chi-Square values are significant at the .05 level of acceptance with three degrees of freedom. The null hypotheses must therefore be accepted with respect to differences between subjects' use of the inferential rules in their explanations about their predictions with regard to each of the four social structures. While the findings

Table 15

Summary of Differences Between Involvement Conditions
in Subjects' Use of the Inferential
Rules for Structures 1-4

<u>Structure</u>	<u>Chi-Square</u>	<u>Degrees of Freedom</u>	<u>Significance Level</u>
1	3.569	3	n.s.
2	6.410	3	n.s.
3	3.060	3	n.s.
4	2.170	3	n.s.

are in the proposed directions for each of the social structures, with subjects using the inferential rule of positivity to a greater degree in the Participant condition than subjects in the Observer condition and subjects using the inferential rule of balance to a greater degree in the Observer condition than subjects in the Participant condition, these differences are not statistically significant at the accepted .05 level. There was a significant difference between subjects' use of positive and negative source/target generalization for Structure 2 in the proposed direction, with subjects in the Participant condition using positive source/target generalization to a significantly greater degree (at the .05 level) than subjects in the Observer condition and subjects in the Observer condition using negative source/target generalization to a significantly greater degree than subjects in the Participant condition. However, this finding was limited to Structure 2 as there were no statistically significant differences between subjects' use of positive and negative source/target generalization for Structure 1 and subjects' use of positive and negative balance for Structure 4. Thus, while the involvement conditions did have a significant effect upon the nature of subjects' predictions, there were no significant differences between their use of the three inferential rules in deriving those predictions.

Summary of Results

This experimental study investigated the differential use of the three major inferential rules upon subjects' attributions about unknown interpersonal relationships within social structures. Table 16 presents a summary of the experimental results with respect to the three major research variables: (a) the influence of the inferential rules upon subjects' predictions about unknown interpersonal relationships within social structures; (b) subjects' differential use of the inferential rules in their explanations about their predictions; and (c) the effects due to subjects' involvement in the prediction task upon the differential use of the inferential rules.

The experimental results for subjects' predictions about unknown interpersonal relationships show that there was clear evidence for subjects' to give significantly more negative predictions and significantly fewer positive predictions than was theoretically expected. This finding is in direct opposition to the effects proposed by the inferential rule of positivity. Therefore, a positivity bias did not account for subjects' predictions with respect to any of the four social structures. Since the inferential rule of positivity hypothesized that subjects would assume positive interpersonal relationships between members of a given social structure, subjects' significant use of negative predictions must be accounted for by an inferential rule(s)

Table 16

Summary of Experimental Results

	<u>Structure 1</u>	<u>Structure 2</u>	<u>Structure 3</u>	<u>Structure 4</u>
Subjects' Predictions	Neg = 80.8% DK = 14.2% Pos = 5% (p < .001)	Neg = 44.2% Pos = 29.1% DK = 16.7% (p < .05)	Neg = 55% DK = 30% Pos = 15% (p < .001)	Neg = 41.7% DK = 35.8% Pos = 22.5% (p < .05)
Subjects' Use of Inferential Rules in Explanations	Bal = 65.5% Gen = 18.5% DK = 14.3% Pos = 1.7% (p < .001)	Bal = 43.7% Gen = 26% DK = 26% Pos = 4.3% (p < .001)	Bal = 63% DK = 30.3% Pos = 5% Gen = 1.7% (p < .001)	Bal = 37% DK = 36.1% Gen = 20.2% Pos = 6.7% (p < .001)
Involvement Conditions:				
A) Subjects' Predictions	n.s.	n.s.	n.s.	n.s.
B) Subjects' Use of Inferential Rules in Explanations	n.s.	n.s.	n.s.	n.s.

other than that of positivity. Since the inferential rule of balance hypothesized negative predictions about the unknown relationships for three out of four of the social structures, while the inferential rule of source/target generalization hypothesized negative predictions for only one of the four social structures, it was assumed that the inferential rule of balance must account for subjects' predictions.

The assumption that the inferential rule of balance accounted for subjects' predictions about the unknown relationships could be verified through an analysis of subjects' explanations about their predictions. The results presented in Table 17 show that the inferential rule of balance was used to a significantly greater degree than the inferential rules of positivity and source/target generalization and to a significantly greater degree than was theoretically expected. In addition, subjects tended to use the inferential rule of positivity to a significantly less degree than was theoretically expected. Thus not only did subjects give significant negative predictions about the unknown relationships, but subjects deduced these negative relationships through the use of a cognitive balance bias as proposed by the inferential rule of balance.

The results presented in Table 17 show clearly that subjects' use of the inferential rules of positivity, source/target generalization, and balance in their predictions

about the unknown relationships and their explanations about their predictions was not significantly affected, for the most part, by their involvement in the task activity. Subjects did not show a significant tendency to give more positive predictions in the Participant condition than in the Observer condition and did not give more negative predictions in the Observer condition than in the Participant condition. This was true with respect to all four social structures. Subjects did not form significantly more positive interpersonal relationships between themselves and other members of the social groups than between other members per se. The findings also failed to confirm the proposed effects due to the involvement conditions with respect to subjects' differential use of the three inferential rules. There were no significant differences between subjects' use of the inferential rules of positivity, source/target generalization, and balance as mediated by their involvement in the prediction task.

CHAPTER FOUR

DISCUSSION AND CONCLUSIONS

The discussion about the results from this experimental study is organized in terms of the effects of the differential use of the three major inferential rules of positivity, source/target generalization, and balance upon subjects' predictions and explanations about the affective nature of unknown interpersonal relationships within simple social structures, and as mediated by the nature of subjects' involvement in the prediction task.

Subjects' Predictions and Explanations About Unknown Interpersonal Relationships Within Simple Social Structures

As noted in Chapter Three, subjects demonstrated a significant differential use of the three major inferential rules. First, subjects used a significantly greater number of negative responses than was theoretically expected in their predictions about the unknown interpersonal relationships with respect to each of the four social structures. Consequently, it was found that subjects also demonstrated a significant lack of using positive responses, as compared to what was theoretically expected, in their predictions about the unknown interpersonal relationships with respect to each of the four social structures. This effect is not anticipated by the assumptions embedded in the use of the

inferential rule of positivity. The results from this experiment confirm the lack of a positivity bias which has been found in previous studies using the prediction paradigm (Rosenberg & Abelson, 1960; Sampson & Insko, 1964; Rodrigues, 1968; Fuller, 1974; Granberg & Brent, 1974; Sussman & Davis, 1975). As such, it was proposed that subjects' significant use of negative predictions for the social structures must be accounted for by either the inferential rule of source/target generalization or the inferential rule of balance.

Second, it was possible to test the assumption that subjects' negative predictions were accounted for by either the inferential rule of source/target generalization or balance through an investigation of the subjects' explanations about their predictions. It was found that subjects deduced the nature of the unknown interpersonal relationships within each social structure through the significant use of a cognitive balance bias to a significantly greater degree than was theoretically expected. There was evidence for subjects' use of a source/target generalization bias but the use of this cognitive bias in subjects' explanations about their predictions was not significantly greater than what was theoretically expected. In addition, it was found that subjects did not use the inferential rule of positivity to a significant degree. In fact, subjects used the inferential rule of positivity to a significantly less degree than was

theoretically expected. Thus, the results from this experiment confirm the significant influence of a cognitive balance bias which has been found in previous studies using the prediction paradigm (Rosenberg & Abelson, 1960; Feather, 1964; Sampson & Insko, 1964; Burnstein, 1967; Rodrigues, 1967; Aronson & Cope, 1968; McNeel & Messick, 1970; Wellens & Thisthethwaite, 1971; Fuller, 1974; Sussman & Davis, 1975).

Subjects' Involvement in the Task Activity

As noted in Chapter Three, subjects did not demonstrate a significant differential use of the three major inferential rules as mediated by the nature of their involvement in the task activity. Subjects did not demonstrate a significant difference in their tendencies to give positive or negative predictions as mediated by their involvement in the prediction task with respect to any of the four social structures. Subjects also did not demonstrate a significant differential use of the three major inferential rules. Thus, the involvement conditions did not produce significant differences with respect to subjects' differential use of the three major inferential rules.

Implications

The significance of this experimental study is reflected in the contributions which are made to our knowledge about

the nature of interpersonal and social perception. This experimental study and the results obtained from it are significant with respect to the implications for theorizing, researching, and teaching the area of interpersonal and social perception.

This study contributes significantly to our knowledge about theory-building in the area of interpersonal and social perception. This study has been able to test some of the propositions and hypotheses which derive from the axioms and postulates implicit in a "theory of social schemas." The concept of a "social schema" is an abstract term which identifies the general interpretive frame an individual uses in making judgments about the nature of interpersonal and social relationships. The concept of a "social schema" is validated through the derivation of research propositions and hypotheses which are able to be empirically tested. Once tested, the legitimacy of the propositions and hypotheses reflect the legitimacy of the general theory. This study was able to point investigators in a direction for theorizing and researching the general nature of "social schemas." When the propositions and hypotheses derived from the theory of "social schemas" were empirically tested, individuals were found to use the inferential rules of positivity, source/target generalization, and balance in their attributions about the nature of unknown interpersonal relationships. This finding reflects the

influence of "social schemas" in individual's attributions about the nature of interpersonal and social relationships. Thus this study provides a focus, or a frame of reference, for understanding how an individual's "social schema" influences his/her attributions about the nature of interpersonal and social relationships.

This study also contributes significantly to our knowledge about the legitimacy of the research methods involved in investigating an individual's use of "social schemas" for interpreting the nature of interpersonal and social relationships. This study points us in the direction which research should take, an investigation of the differential use of the three major inferential rules in an individual's attributions about the nature of interpersonal and social relationships. Previous research, with the exception of Crockett's (1979) study, has been confined to investigating whether these three inferential rules exist. The significance of this study lies in extending the boundaries of our research attempts concerned with investigating the nature of "social schemas" in terms of identifying the conditions under which one inferential rule or another appears to dominate in an individual's attributions about the nature of interpersonal and social relationships. In addition, this study also establishes that the research procedure used in this experiment, the prediction technique, is legitimate for investigating the effects due to the

differential use of the inferential rules of positivity, source/target generalization, and balance. Significant differences were found to exist with respect to individuals' use of the three major inferential rules. The prediction technique was thus shown to be an effective research procedure for investigating the relative strength of the three inferential rules in an individual's construction of "social schemas."

This study also contributes significantly to our knowledge about teaching the area of interpersonal and social perception. The area of perception is a major concern of most introductory speech courses and advanced courses concerned with the nature of human relations. It has been widely recognized in basic speech textbooks that when two or more individuals interact, the individuals' perceptions of the other people and the situation affect the nature of the interpersonal communication which takes place. This study sheds light on the nature of an individual's perceptions and attributions about other people and about the relationships which exist within social groups. As such, this study identifies how individuals form these attributions through an analysis of the conditions under which one inferential rule or another appears to dominate in people's attributions about the nature of interpersonal and social relationships. The significance of this study lies in identifying the biases which affect individuals'

perceptions of interpersonal and social relationships. Furthermore, the results obtained from this study reinforce our belief in the influence of cognitive balance as a bias in people's perceptions of interpersonal and social relationships. Almost all of the introductory interpersonal communication courses examine the theory of cognitive balance as a legitimate bias in people's interactions with others. This study demonstrates that the cognitive balance bias does play a significant role in individuals' attributions and judgments about the nature of interpersonal and social relationships. This increases our confidence in our teaching about the area of interpersonal and social perception in our speech courses.

Concluding Summary

The results from this experimental study demonstrated support for the differential use of the three major inferential rules of positivity, source/target generalization, and balance upon subjects' predictions about unknown interpersonal relationships within simple social structures. The experiment was able to identify conditions under which one inferential rule or another appeared to dominate in subjects' predictions about the unknown interpersonal relationships within the various social structures. The inferential rule of balance was found to dominate in subjects' predictions and suggests that while the inferential rule of balance is

the most complex of the three inferential rules, subjects are able to readily use the balance rule. This finding confirms the results which were reported by Crockett (1979) in his study investigating the differential effects of the three major inferential rules upon subjects' learning of the four social structures. However, in contrast to Crockett's (1979) research findings, subjects did not use the inferential rule of positivity to any significant degree. When the inferential rule of balance made no prediction about subjects' responses, such as for the unknown interpersonal relationship within Structure 4, subjects were still able to use the inferential rule of balance through the use of a first-order balance rule rather than through the use of a second-order balance rule. That is, rather than using a second-order balance rule which takes into account the nature of the relationships the two people involved have with the other members of the social structure, subjects were able to use a first-order balance rule which takes into account the nature of the two people's relationship with only one other member of the four-person social structure. While there was evidence for the use of a source/target generalization bias in subjects' predictions, the findings from this study confirm the significant influence of the inferential rule of balance in an individual's construction of his/her "social schemas."

The results from this study suggest that the experimental

situations in which subjects served as observers of social structures were equivalent in nature to the situations in which subjects served as participants in the social structures. There were no significant differences between subjects' use of the three inferential rules as mediated by their involvement in the prediction task, and there were no significant differences due to the involvement conditions with respect to subjects' predictions about the unknown interpersonal relationships. Thus, the results from this study confirm the lack of an effect for a differential use of the three inferential rules as mediated by subjects' involvement in the task as found in previous studies using the prediction paradigm (Rodrigues, 1968; Sampson & Insko, 1964). It must be concluded that the involvement of the subject in experiments using the prediction technique is not a condition under which subjects demonstrate a differential use of the three inferential rules. Future research will verify the validity of this finding.

Future Research Suggestions

The results from this study suggest several different approaches which may be used in future studies which investigate the differential effects of the three major inferential rules of positivity, source/target generalization, and balance upon subjects' attributions about interpersonal relations within social structures. First, the

next step in investigating the differential effects of the three inferential rules might involve the subject more directly in the content analysis procedure used in this type of study. It would be possible to conduct the experiment in the same way as has been done here, to then debrief the subjects with respect to the nature of the three major inferential rules and have the subjects themselves place their responses in the respective categories. Since the cooperation of the subjects was desired in this experiment, it would seem logical to extend the subjects' involvement in the project by having them analyze the nature of their responses to the experimental manipulations.

Second, while this research project investigated the effects due to the differential use of the three inferential rules upon each individual social structure, it might be possible to examine the relative strength of these inferential rules by contrasting the different social structures against one another. This could be done by combining two of the three research techniques used to investigate the nature of "social schemas," the prediction method and the ratings method. Thus, subjects could be asked to give responses about their degree of confidence in their predictions about the unknown interpersonal relationships for each social structure. By contrasting the degree of confidence with which subjects judge each unknown relationship, evidence would be provided for the relative strength of the inferential

rules when structures are compared to one another. Such a method, for instance, would indicate whether positive or negative source/target generalization, or balance had stronger effects. Third, since the differential effects of the inferential rules have been investigated using the prediction technique in this study and using the learning approach in Crockett's (1979) study, it would be possible to combine these two approaches to see if this has a significant effect upon subjects' responses. Thus, subjects could be asked to predict the affective nature of the unknown interpersonal relationship within each social structure and could then be asked to learn the relationships which characterize each social structure. It would be hypothesized, based on the findings from this study and Crockett's (1979) study, that balanced structures would be predicted more often than imbalanced structures and balanced structures would be learned more quickly than imbalanced structures. It would also be expected that structures which corresponded to the inferential rule subjects had initially used in their predictions would be learned more quickly than structures which had not matched subjects' initial predictions. An analysis of this kind would provide support for the relative strength of the three inferential rules in accounting for subjects' responses.

In general, future research efforts should be conducted which increase our understanding about the conditions under

which one inferential rule or another appears to dominate in subjects' attributions about the nature of interpersonal relationships within social structures. Studies directed toward this goal will provide information about the differential use of the three major inferential rules in individual's construction of "social schemas."

BIBLIOGRAPHY

- Aderman, D. Effects of anticipating future interaction on the preference for balanced states. Journal of Personality and Social Psychology, 1969, 11.
- Aronson, E. & Cope, V. My enemy's enemy is my friend. Journal of Personality and Social Psychology, 1968, 8.
- Bourne, L. E. Human conceptual behavior. Boston: Allyn & Bacon, 1966. Reported in Cottrell, Nickolas. Heider's structural balance principle as a conceptual rule. Journal of Personality and Social Psychology, 1973, 31.
- Brehm, J., & Cohen, A. Explorations in cognitive dissonance. New York: Wiley, 1962.
- Burdick, H. A. & Burnes, A. J. A test of "strain toward symmetry" theories. Journal of Abnormal and Social Psychology, 1958, 57.
- Burnstein, E. Sources of cognitive bias in the representation of simple social structures: balance, minimal change, positivity, reciprocity, and the respondent's own attitude. Journal of Personality and Social Psychology, 1967, 7.
- Cohen, B. I. Factors affecting the balanced completion of triads. Unpublished manuscript, Yale University, 1970. Reported in Wyer, Robert, and Lyon, John. A test of cognitive balance theory implications for social inference processes. Journal of Personality and Social Psychology, 1970, 16.
- Cottrell, N. Heider's structural balance principle as a conceptual rule. Journal of Personality and Social Psychology, 1975, 31.
- Cottrell, N., Ingraham, L. & Monfort, F. The retention of balanced and unbalanced cognitive structures. Journal of Personality, 1971, 39.
- Crockett, W. Inferential rules in the learning and recall of patterns of sentiment. Journal of Personality, 1979 (in press).
- Delia, J. & Crockett, W. Social schemas, cognitive complexity, and the learning of social structures. Journal of Personality, 1973, 41.

- DeSoto, C. Learning a social structure. Journal of Abnormal and Social Psychology, 1960, 60.
- DeSoto, C., Henley, N. & London, M. Balance and the grouping schema. Journal of Personality and Social Psychology, 1968, 8.
- DeSoto, C. & Kueth, J. Subjective probabilities of interpersonal relationships. Journal of Abnormal and Social Psychology, 1959, 59.
- Deutsch, M. & Solomon, L. Reactions to evaluations by others as influenced by self-evaluations. Sociometry, 1959, 22.
- Feather, N. T. Acceptance and rejection of arguments in relation to attitude strength, critical ability, and intolerance of inconsistency. Journal of Abnormal and Social Psychology, 1964. Reported in Feather, N. T. A structural balance model of communication effects. Psychological Review, 1964, 71.
- Fuller, C. Comparison of two experimental paradigms as tests of Heider's balance theory. Journal of Personality and Social Psychology, 1974, 30.
- Gerard, H. & Fleischer, L. Recall and pleasantness of balanced and unbalanced cognitive structures. Journal of Personality and Social Psychology, 1967, 7.
- Granberg, D. & Brent, E. Dove-hawk placements in the 1968 election: application of social judgment and balance theories. Journal of Personality and Social Psychology, 1974, 29.
- Gutman, G. & Knox, R. Balance, agreement, and attraction in pleasantness, tension, and consistency ratings of hypothetical social situations. Journal of Personality and Social Psychology, 1972, 24.
- Heider, F. The psychology of interpersonal relations. New York: Wiley, 1958.
- Homans, G. C. The human group. New York: Harcourt Brace, 1950.
- Horowitz, M. W., Lyons, J., & Perlmutter, H. V. Induction of forces in discussion groups. Human Relations, 1951, 6.
- Jordan, N. Behavioral forces that are a function of attitudes and of cognitive organization. Human Relations, 1953, 6.

- Kogan, N. & Tagiuri, R. Interpersonal preference and cognitive organization. Journal of Abnormal and Social Psychology, 1958, 56.
- Kuethé, J. Social schemas. Journal of Abnormal and Social Psychology, 1962a, 64.
- Kuethé, J. Social schemas and the reconstruction of social object displays from memory. Journal of Abnormal and Social Psychology, 1962b, 65.
- Kuethé, J. Pervasive influence of social schemata. Journal of Abnormal and Social Psychology, 1964, 68.
- McNeel, S. & Messick, D. A bayesian analysis of subjective probabilities of interpersonal relationships. Acta Psychologica, 1970, 34.
- Morrisette, J. An experimental study of the theory of structural balance. Human Relations, 1958, 11.
- Mosher, D. The learning of congruent and noncongruent social structures. The Journal of Social Psychology, 1967, 73.
- Newcomb, T. M. An approach to the study of communicative acts. Psychological Review, 1953, 60.
- Newcomb, T. M. The acquaintance process. New York: Holt, Rinehart & Winston, 1961.
- Osgood, C. E. Cognitive dynamics in the conduct of human affairs. Public Opinion Quarterly, 1960, 24.
- Picek, J., Sherman, S. & Shiffrin, R. Cognitive organization and coding of social structures. Journal of Personality and Social Psychology, 1975, 37.
- Press, A., Crockett, W., & Rosenkrantz, P. Cognitive complexity and the learning of balanced and unbalanced social structures. Journal of Personality, 1969, 37.
- Price, K., Harburg, E. & McLeod, J. Positive and negative affects as a function of perceived discrepancy in ABX situations. Human Relations, 1965, 18.
- Price, K., Harburg, E. & Newcomb, T. Psychological balance in situations of negative interpersonal attitudes. Journal of Personality and Social Psychology, 1966, 3.

- Rodrigues, A. The psycho-logic of interpersonal relations. (Doctoral dissertation, University of California, Los Angeles) Ann Arbor, Michigan: University Microfilms, 1966. Results reported in Rodrigues, Aroldo. Effects of balance, positivity, and agreement in triadic social relations. Journal of Personality and Social Psychology, 1967, 5.
- Rodrigues, A. Effects of balance, positivity, and agreement in triadic social relations. Journal of Personality and Social Psychology, 1967, 5.
- Rodrigues, A. The biasing effect of agreement in balanced and imbalanced triads. Journal of Personality, 1968, 36.
- Rosenberg, M. J., & Abelson, R. P. An analysis of cognitive balancing. In M. J. Rosenberg, C. I. Hoveland, N. J. McGuire, R. P. Abelson, and J. W. Brehm (Eds.), Attitude organization and change. New Haven, Conn.: Yale University Press, 1960.
- Rosenberg, M. J., Hoveland, C. I., McGuire, N. J., Abelson, R. P., & Brehm, J. W. (Eds.), Attitude organization and change. New Haven, Conn.: Yale University Press, 1960.
- Rubin, Z. & Zajonc, R. Structural bias and generalization in the learning of social structures. Journal of Personality, 1969, 37.
- Runkel, P. J. Equilibrium and "pleasantness" in interpersonal situations. Human Relations, 1956, 9.
- Sampson, E. & Insko, C. Cognitive consistency and performance in the autokinetic situation. Journal of Abnormal and Social Psychology, 1964, 68.
- Sussmann, M. & Davis, J. Balance theory and the negative interpersonal relationship: attraction and agreement in dyads and triads. Journal of Personality, 1975, 43.
- Van Kreveld, D. & Zajonc, R. The learning of influence structures. Journal of Personality, 1966, 34.
- Weist, W. A quantitative extension of Heider's theory of cognitive balance applied to interpersonal perception and self-esteem. Psychological Monographs, 1965, 79.
- Wellens, A. R. & Thistlethwaite, D. Comparison of three theories of cognitive balance. Journal of Personality and Social Psychology, 1971, 20.

- Wyer, R. & Lyon, J. A test of cognitive balance theory implications for social inference processes. Journal of Personality and Social Psychology, 1970, 16.
- Zajonc, R. B. The concepts of balance, congruity, and dissonance. Public Opinion Quarterly, 1960, 24.
- Zajonc, R. B. Cognitive theories in social psychology. In G. Lindzey and E. Aronson (Eds.), Handbook of social psychology. (2nd ed.) Vol. 1. Reading, Mass.: Addison-Wesley, 1968.
- Zajonc, R. B. & Burnstein, E. The learning of balanced and unbalanced social structures. Journal of Personality, 1965a, 33.
- Zajonc, R. B., & Burnstein, E. Structural balance, reciprocity, and positivity as sources of cognitive bias. Journal of Personality, 1965b, 33.
- Zajonc, R. B. & Sherman, S. J. Structural balance and the induction of relations. Journal of Personality, 1967, 35.

APPENDIX A
PILOT STUDY

Introduction

A pilot study was conducted during the summer of 1979 to determine the feasibility of the basic assumptions and hypotheses for this research project as well as to refine the actual design of the experimental procedures if necessary. The design of the pilot study and a discussion of the results from this study are presented below.

Selection of Subjects

Subjects were members of the general population from the Lawrence, Kansas community during the summer of 1979. In general, members of the University of Kansas' general student body were recruited. In all, twenty-four subjects took part in the pilot study. Of the twenty-four subjects, all but four were members of the University of Kansas' general student population.

Methodology of the Pilot Study

The prediction technique was used in this study to investigate the differential use of the three inferential rules of positivity, source/target generalization, and balance in the construction of an individual's "social schema." The prediction technique asks subjects to make predictions about the nature of the affective relationships between two members of hypothetical social structures given information about the relationships these members have with other members of the social structures (Zajonc &

Sherman, 1966; Picek, Sherman, & Shiffrin).

The experiment was conducted as a 4 x 2 factorial design. The two factors were the four social structures which were used in the prediction task and the two involvement conditions. Subjects were presented with the four social structures shown in Figure II, with the interpersonal relationships between the first and the second person left undefined, in one of the following four orders of presentation: (a) 1234, (b) 2341, (c) 3421, or (d) 4123. Subjects were then asked to predict the affective nature of the unknown interpersonal relationships. Half of the subjects were presented with social structures in which they were not involved as members (the Observer condition) and half of the subjects were presented with social structures (the Participant condition). Subjects were assigned to one of the eight experimental conditions and to one of the four order of presentations on a random basis.

Subjects were first given an information sheet (see Appendix B) which introduced them to the experiment and its purpose. Subjects were told that the purpose of the experiment was to investigate the ways people determine the nature of unknown interpersonal relationships within social groups based upon the available information about the known interpersonal relationships which characterized those social groups. Subjects were then presented with the four social structures shown in Figure II in which all of the

relationships between members were specified except for the relationships between the first two members. In the Observer conditions (see Appendix D) the social structures consisted of four hypothetical people, while in the Participant conditions (see Appendix E) the social structures consisted of the subject him/herself and three other hypothetical people. The names used in the social structures were: Al, Bill, Charlie, Dave, Ed, Fred, Gary, Harry, Irwin, Jim, Ken, Larry, Mike, Ned, Oscar, and Paul respectively. Subjects were presented with a social structure visually, then informed of each known relationships which existed between pairs of the members of the social structure, and then asked to predict the nature of the unknown relationship. Following this prediction, subjects were asked to write a short essay about their reason(s) for the response they gave. Subjects were asked to be as specific as possible in their explanations about their predictions and to go into as much depth as they could in their answer. After completing one social structure, subjects were asked to turn the page and complete the next social structure until all four social structures had been completed. Subjects were given the information sheet and the four social structures to take home with them and asked to return the package when they were finished. There was thus a wide discrepancy between subjects in terms of the time allowed to complete the questionnaires.

Data Treatment

The experimental procedures yielded nominal level frequency data with respect to subjects' responses to the experimental manipulations. The appropriate analysis of frequency data calls for the use of Chi-Square nonparametric significance tests which compare the observed effects against the expected, or theoretical, effects. The research data from the pilot study consisted of the predictions which subjects made about the nature of the unknown relationships and their explanations about their predictions. Subjects' explanations were content analyzed by this researcher into three categories which reflected the use of positivity, source/target generalization, and balance.

Discussion of Results

This pilot study sought to investigate the differential use of the three major inferential rules of positivity, source/target generalization, and balance upon subjects' attributions about unknown relationships within social structures. The influence of each inferential rule was analyzed in terms of its significant effects upon subjects' predictions and upon subjects' explanations about their predictions. A .05 level of significance was used as the basis for either accepting or rejecting the null hypotheses. Table 17 presents a summary of the experimental results from the pilot study with respect to the three major research variables: (a) the influence of the inferential rules

TABLE 17

Summary of Experimental Results from Pilot Study

	<u>Structure 1</u>	<u>Structure 2</u>	<u>Structure 3</u>	<u>Structure 4</u>
Subjects' Predictions	Neg = 66.7% Pos = 16.7% DK = 16.7% (p < .005)	n.s.	Neg = 62.5% DK = 25% Pos = 12.5% (p < .01)	Neg = 54.2% DK = 33.3% Pos = 12.5% (p < .05)
Subjects' Use of Inferential Rules in Explanations	Bal = 54.2% Gen = 20.8% DK = 16.7% Pos = 8.3% (p < .01)	Gen = 41.7% Bal = 37.5% DK = 12.5% Pos = 8.3% (p < .05)	Bal = 62.5% DK = 25% Pos = 12.5% Gen = 0% (p < .01)	n.s.
Involvement Conditions:				
A) Subjects' Predictions	n.s.	n.s.	n.s.	n.s.
B) Subjects' Use of Inferential Rules in Explanations	n.s.	n.s.	n.s.	n.s.

upon subjects' predictions about unknown interpersonal relationships within social structures; (b) subjects' differential use of the inferential rules in their explanation about their predictions; and (c) the effects due to subjects' involvement in the prediction task upon subjects' differential use of the three inferential rules.

The experimental results for subjects' predictions about unknown relationships show that there was a clear tendency for subjects' to give significantly more negative predictions and significant fewer positive predictions than was theoretically expected. This finding was true with respect to subjects' predictions for each individual social structure except for Structure 3 in which no significant differences existed between subjects' use of positive and negative predictions. This finding is in direct opposition to the effects proposed by the inferential rule of positivity. Since the inferential rule of positivity hypothesized that subjects would assume positive interpersonal relationships between members of a given social structure, subjects' significant use of negative predictions must be accounted for either by the inferential rule of source/target generalization or the inferential rule of balance. This assumption can be verified through an analysis of subjects' explanations about their predictions.

It is clear from the results presented in Table that the inferential rule of balance was used to a significantly greater degree than the inferential rules of

positivity and source/target generalization and to a significantly greater degree than was theoretically expected. This effect was true with respect to subjects' responses (their explanations about their predictions) for Structure 1 and Structure 2. There were no significant differences between subjects' use of the three inferential rules for Structure 4. For Structure 3, the inferential rule of source/target generalization was used to a significantly greater degree than was theoretically expected. However, even for Structure 3 there was a significant use of the inferential rule of balance. In addition, the inferential rule of source/target generalization was not used to a significantly greater degree than the inferential rule of balance for Structure 3. While subjects demonstrated a significant use of the inferential rules of source/target generalization and balance, the inferential rule of positivity was used to a significantly less degree than was theoretically expected. Thus not only did subjects give significant negative predictions about the unknown relationships, but subjects deduced these negative relationships through the use of a cognitive balance bias for the majority of the social structures and through the use of a source/target generalization bias for Structure 3.

The results presented in Table 17 show clearly that subjects' use of the inferential rules of positivity, source/target generalization, and balance in their predictions about the unknown relationships and their explanations about their

predictions was not significantly affected by their involvement in the task activity. There were no statistically significant differences which could be attributed to the influence of the involvement conditions. The findings thus failed to confirm the research hypotheses for this variable.

Suggestions

The pilot study demonstrated that the experimental procedures which were used were satisfactory for the investigation of subjects' differential use of the three major inferential rules of positivity, source/target generalization, and balance. The results from the pilot study demonstrated that conditions could be identified under which one of the three inferential rules appeared to dominate in subjects' predictions and explanations about the affective nature of unknown interpersonal relationships within social groups given information about the other interpersonal relationships which characterized those social groups. Based on the procedures used in the pilot study, the following alternative procedures were incorporated into the experimental design of the research project:

1. Rather than running the subjects individually through the experimental manipulation, subjects would be run in experimental groups consisting of ten people.

2. Some subjects did not completely understand the instructions given to them. In particular, subjects in the Participant conditions did not always realize that they were to perceive themselves as members of the hypothetical social structures. Subjects in the two involvement conditions would be given different information sheets which would stress the involvement of the subject as a member of the social group for the Participant conditions.
3. Since the research project utilized the procedure of content analysis for describing and categorizing subjects' explanations about their predictions, three judges would be used in order to enhance the reliability of the research findings.

APPENDIX B
INSTRUCTIONS TO SUBJECTS IN PILOT STUDY

In the following pages, you will be asked to determine an unknown relationship which exists between two people based on the available information about the nature of their relationships with other people in a given social group. A social structure will be presented to you with all of the relationships given except for one, which you will determine. Please look at each social structure carefully and try to determine the nature of the unknown relationship. Assume that the people in each group know each other fairly well and are not strangers to one another. An unbroken line between two people (\longleftrightarrow) represents a positive liking relationship, while a broken line between two people ($\leftarrow\text{---}\rightarrow$) represents a negative disliking relationship. After you have given your response, please write a short paragraph which gives your reason(s) for the answer that you gave. When you have finished one page, please proceed to the next until you have completed all of the pages. Thank you.

APPENDIX C
INSTRUCTIONS TO SUBJECTS IN STUDY

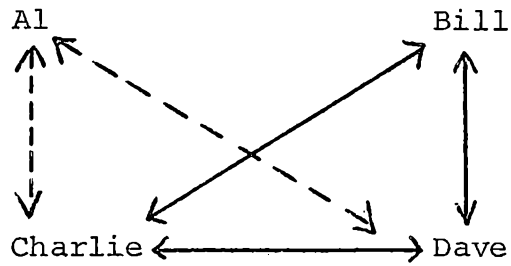
OBSERVER CONDITION

In the following pages, you will be asked to determine an unknown relationship which exists between two people based on the available information about the nature of their relationships with other people in a hypothetical social group. A social structure will be presented to you with all of the relationships given except for one, which you will determine. Please look at each social structure carefully and try to determine the nature of the unknown relationship. Assume that all relationships are reciprocal (e.g., if Al likes Bill, then Bill likes Al; if Al dislikes Bill, then Bill dislikes Al). Also assume that the people in each group know each other fairly well and are not strangers to one another. An unbroken line between two people (\longleftrightarrow) represents a positive liking relationship, while a broken line between two people ($\leftarrow\text{---}\rightarrow$) represents a negative disliking relationship. After you have given your response, please write a short paragraph which gives your reason(s) for the answer that you gave. When you have finished one page, please proceed to the next until you have completed all of the pages. Thank you.

PARTICIPANT CONDITION

In the following pages, you will be asked to determine an unknown relationship which exists between yourself and another person based on the available information about the nature of both your relationships with other people in a hypothetical social group. A social structure will be presented to you with all of the relationships given except for one, which you will determine. Please look at each social structure carefully and try to determine the nature of the unknown relationship between yourself and the other person. Assume that all relationships are reciprocal (e.g., if you like Bill, then Bill likes you; if you dislike Bill, then Bill dislikes you). Also assume that the people in each group know each other fairly well and are not strangers to one another. An unbroken line between two people (\longleftrightarrow) represents a positive liking relationship, while a broken line between two people ($\leftarrow\text{-----}\rightarrow$) represents a negative disliking relationship. After you have given your response, please write a short paragraph which gives your reason(s) for the answer that you gave. When you have finished one page, please proceed to the next until you have completed all of the pages. Thank you.

APPENDIX D
SOCIAL STRUCTURES IN OBSERVER CONDITION



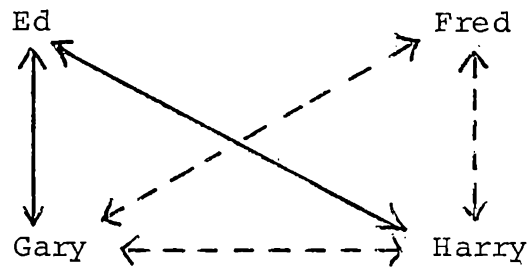
In this social group, you know that:

- 1) Al and Charlie dislike each other
- 2) Al and Dave dislike each other
- 3) Bill and Charlie like each other
- 4) Bill and Dave like each other
- 5) Charlie and Dave like each other

How do Al and Bill feel about each other?

___ like each other ___ dislike each other ___ don't know

Please write a short paragraph which gives your reason(s) for the answer that you gave. Please try to be as specific and go into as much depth as you can in your answer. Please continue your answer on the back of this page if necessary.



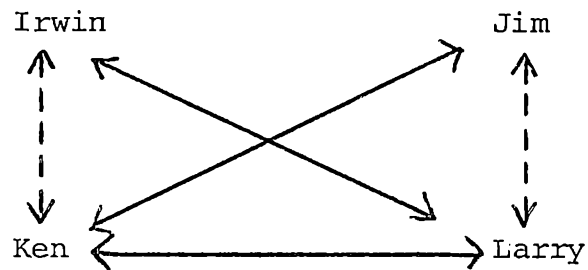
In this social group, you know that:

- 1) Ed and Gary like each other
- 2) Ed and Harry like each other
- 3) Fred and Gary dislike each other
- 4) Fred and Harry dislike each other
- 5) Gary and Harry dislike each other

How do Ed and Fred feel about each other?

_____ like each other _____ dislike each other _____ don't know

Please write a short paragraph which gives your reason(s) for the answer that you gave. Please try to be as specific and go into as much depth as you can in your answer. Please continue your answer on the back of this page if necessary.



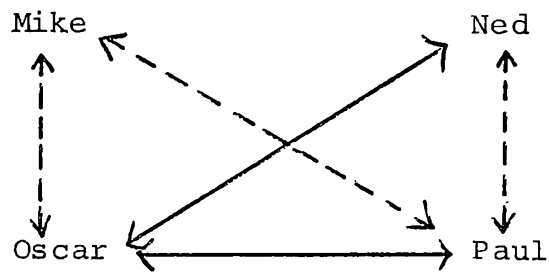
In this social group, you know that:

- 1) Irwin and Ken dislike each other
- 2) Irwin and Larry like each other
- 3) Jim and Ken like each other
- 4) Jim and Larry dislike each other
- 5) Ken and Larry like each other

How do Irwin and Jim feel about each other?

___ like each other ___ dislike each other ___ don't know

Please write a short paragraph which gives your reason(s) for the answer that you gave. Please try to be as specific and go into as much depth as you can in your answer. Please continue your answer on the back of this page if necessary.



In this social group, you know that:

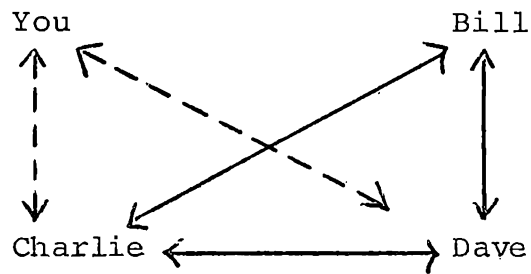
- 1) Mike and Oscar dislike each other
- 2) Mike and Paul dislike each other
- 3) Ned and Oscar like each other
- 4) Ned and Paul dislike each other
- 5) Oscar and Paul like each other

How do Mike and Ned feel about each other?

_____ like each other _____ dislike each other _____ don't know

Please write a short paragraph which gives your reason(s) for the answer that you gave. Please try to be as specific and go into as much depth as you can in your answer. Please continue your answer on the back of this page if necessary.

APPENDIX E
SOCIAL STRUCTURES IN PARTICIPANT CONDITION



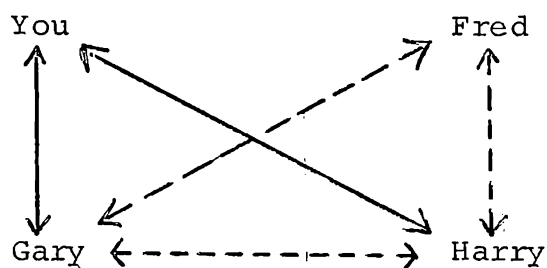
In this social group, you know that:

- 1) You and Charlie dislike each other
- 2) You and Dave dislike each other
- 3) Bill and Charlie like each other
- 4) Bill and Dave like each other
- 5) Charlie and Dave like each other

How do you and Bill feel about each other?

___ like each other ___ dislike each other ___ don't know

Please write a short paragraph which gives you reason(s) for the answer that you gave. Please try to be as specific and go into as much depth as you can in your answer. Please continue your answer on the back of this page if necessary.



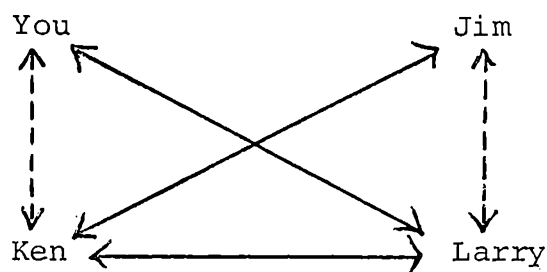
In this social group, you know that:

- 1) You and Gary like each other
- 2) You and Harry like each other
- 3) Fred and Gary dislike each other
- 4) Fred and Harry dislike each other
- 5) Gary and Harry dislike each other

How do you and Fred feel about each other?

_____ like each other _____ dislike each other _____ don't know

Please write a short paragraph which gives your reason(s) for the answer that you gave. Please try to be as specific and go into as much depth as you can in your answer. Please continue your answer on the back of this page if necessary.



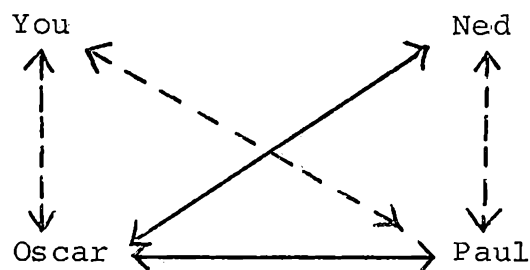
In this social group, you know that:

- 1) You and Ken dislike each other
- 2) You and Larry like each other
- 3) Jim and Ken like each other
- 4) Jim and Larry dislike each other
- 5) Ken and Larry like each other

How do you and Jim feel about each other?

___ like each other ___ dislike each other ___ don't know

Please write a short paragraph which gives your reason(s) for the answer that you gave. Please try to be as specific and go into as much depth as you can in your answer. Please continue your answer on the back of this page if necessary.



In this social group, you know that:

- 1) You and Oscar dislike each other
- 2) You and Paul dislike each other
- 3) Ned and Oscar like each other
- 4) Ned and Paul dislike each other
- 5) Oscar and Paul like each other

How do you and Ned feel about each other?

___ like each other ___ dislike each other ___ don't know

Please write a short paragraph which gives your reason(s) for the answer that you gave. Please try to be as specific and go into as much depth as you can in your answer. Please continue your answer on the back of this page if necessary.