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PERCEPTIONS AND BEHAVIOR IN THE DEVELOPMENT
OF SOCIAL POWER RELATIONSHIPS

by
George K. Levinger

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Abstract

PERCEPTIONS AND BEHAVIOR IN THE DEVELOPMENT OF SOCIAL POWER RELATIONSHIPS

by
George K¹ Levinger

This study was initiated in order to investigate an individual's perceptions and behavior regarding the development of his power relations with another person. This development was considered to be the product of a social feedback process. In other words, over the course of a relationship, interpersonal perceptions and behavior continually modify one another.

The following theory was outlined to account for the determinants of the development of social power or influence: A group member's power is based upon his ability to satisfy or to deprive the needs of the other members. Within the context of social groups, need satisfaction is contingent on the availability of various kinds of resources. A member's social power therefore depends on his potentiality for providing or withholding important resources which are relevant for the group's functioning. The information at the group's disposal about each member's resource potential gives rise to perceptions concerning the members' relative power.

In consequence of this theory, a number of hypotheses were presented concerning the development of social power perceptions and behavior. One general hypothesis was that perceptions of own power and behavior relevant to power (i.e., influence attempts, resistances, and degree of assertiveness) will vary together during an individual's participation in a group. It was also hypothesized that an individual's power perceptions and behavior are determined by the information he has concerning his own resources relative to those of other members.

In a laboratory experiment, sixty-four subjects, each paired with a trained assistant, participated in a series of decision-making episodes. The behavior of the assistant was carefully prearranged and the outcomes of the decision-making trials were controlled. Data were gathered concerning the trial-to-trial changes in the subjects' perceptions and behavior and it was possible to trace the various fluctuations.

Subjects were exposed to three experimental manipulations in the information regarding the partner's relative resources: (a) the initial information about the partner's potential task ability, (b) the degree to which the partner accepted or rejected a subject's influence attempts, and (c) the favorableness of an observer's evaluation of the subject's relative task performance, given after the first half of the session.

Significant correspondences were found between the subjects' power perceptions and behavior. Subjects' perceptions of their relative power and their power behavior toward their partner varied together over the length of the experimental session. Fluctuations in the subjects' power perceptions stabilized over time. Also, while each of the experimental manipulations exerted a significant effect, the information conveyed by the variations in the partner's influence behavior had the greatest effect for changing the subjects' perceptions. Finally, the feedback of information concerning their influence on decisions produced more immediate changes in subjects' perceptions of own power than it produced in their behavior.

It is concluded that it is useful to consider the development of social interaction as a feedback process. The evidence also supports the validity of a conception of social power in terms of interpersonal resources.

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TABLE OF CONTENTS

	Page
LIST OF TABLES	vi
LIST OF ILLUSTRATIONS.	viii
 Chapter	
I. THEORETICAL BACKGROUND.	1
Introduction	
Social Interaction and Feedback	
Feedback in Historical Perspective	
Recent Uses of the Feedback Concept	
The Present Frame of Reference	
Power and Social Influence	
A Definition of Power	
The Concomitants of Power	
The Bases of Power	
The Actualization of Social Power	
Sources and Resources	
Actualization and Utilization	
Consequences of This Formulation	
II. STATEMENT OF THE HYPOTHESES	25
Relative Power in a Two-Person Group	
The Individual's Perceived Relative Power	
The Hypotheses	
Effects of Information on Behavior	
Correspondence between Perception and Behavior	
Stabilization of Perception and Behavior	
Personality Determinants	
III. METHODS	40
Subjects	
Chronology of the Experiment	
Experimental Instructions	
Experimental Manipulations	
First Experimental Manipulation	
Second Experimental Manipulation	
The Standardization of B's Behavior	
Third Experimental Manipulation	

TABLE OF CONTENTS--Continued

Chapter	Page
Experimental Design	
Measurement of Dependent Variables	
Measurement of Perception	
Measurement of Behavior	
Post-Experimental Questionnaire	
Personality Inventory	
IV. RESULTS AND DISCUSSION.	62
Testing the Hypotheses	
Initial Information and Subsequent Per- ception	
The Effects of the Partner's Behavior	
Half-Time Evaluation and Subsequent Behavior	
Initial Information and Subsequent Be- havior	
Half-Time Evaluation and Subsequent Behavior	
Correspondence between Perception and Behavior	
Stabilization of Perception	
Summary of Results	
Discussion	
Intercorrelation of Behavioral and Per- ceptual Indices	
Correspondence between Perception and Behavior	
Stabilization of Developing Social Per- ceptions	
Determinants of Interpersonal Perception and Behavior	
V. SUMMARY AND CONCLUSIONS	
Some Implications of the Study	
Conceptual Implications	
Methodological Implications	
Problems for Future Research	
Effects of Personality Determinants	
Resource Balances in Social Groups	
APPENDIX A	120
APPENDIX B	122
APPENDIX C	123
BIBLIOGRAPHY	124

LIST OF TABLES

Table	Page
1. Cells Showing Experimental Conditions (Number of Subjects Shown in Parentheses).	54
2. Effects of Initial Superior and Inferior Information on Subjects' Average Perceived Relative Power (48 Reject Subjects)	64
3. Effects of Partner's Accept or Reject Behavior on Subjects' Perceptions of Own Greater, Equal, or Lesser Power (64 Subjects).	67
4. Changes in Perceived Relative Power after "Agree" Trials with Reference to Point of Equality	70
5. Effects of Half-Time Information on Subjects' Subsequent Perceived Relative Power (48 Reject Subjects).	73
6. Effects of Superior and Inferior Information on Number of Influence Attempts Initiated (48 Reject Subjects)	75
7. Effects of Superior and Inferior Information on Number of Resistances to Partner (48 Reject Subjects).	76
8. Effects of Superior and Inferior Information on Degree of Assertiveness (48 Reject Subjects) . .	77
9. Summary of Analysis of Variance of the Effects of Half-Time Information on Initiation of Influence Attempts (48 Reject Subjects).	79
10. Effects of Half-Time Information on Initiation of Influence Attempts (48 Reject Subjects) . . .	79
11. Summary of Analysis of Variance of the Effects of Half-Time Information on Number of Resistances to Partner (48 Reject Subjects)	80
12. Effects of Half-Time Information on Directional Changes in Number of Resistances to Partner (48 Reject Subjects)	81

LIST OF TABLES--Continued

Table	Page
13. Summary of Analysis of Variance of the Effects of Half-Time Information on Degree of Assertiveness (48 Reject Subjects).	82
14. Effects of Half-Time Information on Directional Changes in Degree of Assertiveness (48 Reject Subjects).	83
15. Relation between Perceived Relative Power and Behavioral Output.	84
16. Relation Between Perceptual and Behavioral Changes (Changes in Number of Influence Attempts) (48 Reject Subjects)	86
17. Relation between Perceptual and Behavioral Changes (Changes in Number of Resistances) (48 Reject Subjects)	87
18. Relation between Perceptual and Behavioral Changes (Changes in Degree of Assertiveness) (48 Reject Subjects)	87
19. Perceptual Changes as They Were Followed by Immediate Behavioral Changes (48 Reject Subjects)	90
20. Behavioral Changes as They Were Followed by Immediate Perceptual Changes (48 Reject Subjects)	91
21. Comparative Size of Perceptual Fluctuations During First and Second Halves of Interaction Period	95
22. Comparative Number of Perceptual Changes During First and Second Halves of Interaction Period. .	95

LIST OF ILLUSTRATIONS

Figure		Page
1.	Effects of Initial Superior and Inferior Information (64 Subjects)	65
2.	Changes in Perceived Relative Power of Subjects in Accept and Reject Conditions (64 Subjects)	68
3.	Changes in Perceived Relative Power after Different Kinds of Trials	69
4.	Perceived Relative Power after Varying Kinds of Half-Time Information.	74

CHAPTER I

THEORETICAL BACKGROUND

Introduction

This study was initiated as part of a larger program of research on social power in informal groups (24, 25, 32). The focus of the study will be on the development of interpersonal perceptions and behavior in newly formed groups, with an emphasis on the development of the power relations among members of such groups.

An important characteristic of social groups is the distribution of power among the members. All group members have some opportunity for influencing the actions of others, but members of groups may differ widely in their respective abilities for exerting such influence.

Social power, or the ability to influence others, may be derived in different ways. In formally structured groups, social power is distributed among the members according to the established rules of organization. In informal groups, however, the distribution of social power arises out of the interaction among the members.

Throughout this presentation we shall concern ourselves with a hypothetical individual who will be considered in interaction with other persons in his social environment.

His perceptions and his behavior, regarding his power relations with other persons, will be considered as they develop during his contact with other persons.

The development of the individual's perceptions and behavior in social interaction with others is a function of a number of different factors. Not only are his perceptions and behavior colored by the content of the interaction, but they in turn are likely to affect the course of the interaction. His perceptions and behavior may also be determined by his initial comparison regarding himself in relation to others made before interaction occurs. And after he has engaged in interaction for some time, the further development of his perceptions and behavior may be altered by the introduction of hitherto unavailable information. The problem of this study, then, is to describe the impact such factors have upon the evolvement of the individual's perceptions and behavior during his establishment of a social power relationship.

The remainder of this chapter will be devoted to a review of a general feedback approach toward the phenomena of social interaction, and to a discussion of some of the theoretical and empirical implications of the concept of power. The following four chapters will present the hypotheses, the methods, the findings, and the conclusions of this study.

Social Interaction and Feedback

It was stated above that the individual's perceptions and behavior develop during his interaction with other per-

sons in his environment. By social interaction is meant a process in which the participants have some mutual influence upon each other. The modification of the participants' perceptions and behavior that occurs during social interaction has recently been conceived in terms of the concept of feedback. Since the word "feedback" has found varied usage in such diverse fields as group dynamics, communication theory, and psychiatry, it is first necessary to define its more general meaning.

The word feedback originates in electrical engineering, where it refers to a necessary function in self-adjusting mechanisms. For the engineer, feedback denotes the return of some fraction of the energy output to the input of the source, for the purpose of controlling subsequent output. This definition may be translated for the social scientist. Consider the individual to be the source of actions or messages which are directed toward other persons. Such actions or messages convey information to these other persons. During any feedback process the individual who originates such actions will in turn receive information from the other persons, and the information thus returned will modify the individual's subsequent actions.

If social interaction is to be conceived as a feedback process, three variables should be defined. These variables are information, channels, and screening devices. Information is the meaning conveyed by the behavior that people exhibit to each other. Channels are the physical or psychological

connections between people over which information may be transmitted. Such channels are subject to obstructions, which have the effect of reducing the amount or kind of information that can be transmitted among the persons. Screening devices are located within the personalities of each of the interacting individuals. They are those psychological functions within the person responsible for the perception and assimilation of incoming information, and for the use of the information for determining the person's next output of behavior.

Feedback in Historical Perspective

A feedback orientation toward the actions of the social individual can be traced to a number of important streams of thought in psychology and sociology. The notion of feedback is implicit in the formulations of the social interactionists since G. H. Mead (29); of the functional psychologists, notably Woodworth (40); of the field theorists, as represented by Lewin (20); and most recently in the dyadic stimulus-response ideas suggested by Sears (37).

In describing the establishment of the social self, Mead lectured about the effects of socially transmitted symbols in their formation of the "me," and he spoke about the development of the individual's behavioral repertoire. Translated into feedback terminology, Mead described how the social screening devices in the individual's personality are formed, and he told about the nature of the channels and the information through which this occurs.

Woodworth's S-O-R psychology stood for an emphasis on the combined investigation of stimulus, organism, and response. It followed as a reaction to the dominant trend of the time of attempting to predict to the organism's responses from a knowledge of stimulus variables alone. Woodworth, while also concerned with stimuli and responses, stressed the importance of the intervening organismic processes. In other words, he stressed the importance of the screening processes, by which stimulus input is converted into response output. A quote from Brunswik gives the feedback concept further perspective:

...The psychological reader will easily recognize the similarity between the idea of feedback and the pivotal concept of American functionalism, that of adjustment through the setting of causes which in their aftereffects reflect upon the organism as correctives of its initial conditions (2, p. 86).

Lewin was one of the first social scientists to use the concept of feedback. For many years he conceived of behavior as the function of the person and of the environment -- $B = f(P, E)$. This behavioral equation is consistent with the feedback approach, which considers behavioral output as a function of the person's screening devices and the information input he receives from the environment. After hearing of this term feedback, Lewin used it to illustrate how individuals or groups steer themselves along some path of social action (21).

Finally, one should note the more recent writings of Sears on dyadic action sequences. Sears conceives of two persons in interaction, where the instrumental acts of one serve

as the environmental events for the other. The behavior of each person is essential to the other's successful completion of his goal-directed actions. In such a case, there must be a feedback between one individual's responses and the responses of the other person.

Recent Uses of the Feedback Concept

The term feedback has been put to a variety of usage by different social scientists.

Group dynamicists obtained the term from Kurt Lewin and applied it to a procedure they invented for improving group functioning. During the normal course of a group's discussion and decision making, the members are usually aware of only a part of the information that flows among them. Some of the information signified by their behavior toward each other tends to be lost. In order to increase the effectiveness of the information flow, the special role of "feedbacker" was invented for a group member (13, 23). This member is assigned to be alert for certain kinds of information susceptible to loss and has the job of periodically returning it into the group process. The effects on group functioning of "feeding back" or "not feeding back" different kinds of information are being investigated in studies presently in progress (26). In large scale organizations also, information tends to be lost in ways similar to those in small groups. Members of such organizations are frequently unaware of much of the meaning of the behavior of their superiors and their

subordinates. Researchers have noted this fact, and they report that "feeding back" supplementary information to the members can have a beneficial impact on organizational functioning (3, 28).

Communication theorists have employed the term feedback with particular reference to the channels by which information is transmitted. One study has been reported in which an instructor communicated information to an audience with the purpose of helping the listeners solve a series of problems (18). The channel over which audience members could feed back information to the instructor was obstructed to varying degrees, and the effects of different degrees of obstruction were measured. It was found that the greater the feedback from the audience to the instructor, the more efficient was the solving of the series of problems.

Psychiatrists, finally, have used feedback with still a different referent. With a primary focus upon the interaction between the respective occupants of the couch and the chair, they have alluded to the term in conceiving of the series of patient-therapist contacts as a continuous process of correction (36). The psychiatrist feeds back information concerning the patient's maladaptive feelings and responses with the ultimate objective of correcting the patient's behavioral output.

The Present Frame of Reference

It is the thesis of this study that social power in

informal groups arises out of the feedback process exemplified by social interaction.

Consider the hypothetical individual as he enters a new group. It is assumed that he begins his contact with the other members after having already formed some initial perceptions of his relationship with them. His initial perceptions will, it is conceived, determine his first action toward the other members of the group. Such an action is likely to modify the others' perceptions of the individual, and they in turn will shape their behavior to him according to their modified perceptions. When the first individual sees the others' behavior toward him, he is likely to make some adjustment in his initial perceptions. His newly adjusted perceptions will once more modify his next output of behavior, in turn modifying the others' perceptions and their behavior (cf. 19).

In short, it is conceived that interpersonal perceptions and behavior develop as both the products and producers of a circular process. Among these interpersonal perceptions and behaviors associated with the circular process are those concerning social power. The individual continually generates and is fed back information concerning his own and other persons' power. In the next section, we shall define power and discuss its implications.

Power and Social Influence

A Definition of Power

In an important paper in which he explored the significance of power as a construct in social psychology, Cartwright (8) recently revived the use of Lewin's conceptual definition of power (22). Lewin's definition was stated symbolically as follows:

$$\text{Power B/A} = \frac{f_{A,X}^{B,\max}}{f_{A,X}^{\max}}$$

Let us consider the meaning of this definition. Lewin is describing the relationship between two persons, A and B. He says that the power of B over A is equal to the maximum force that B can induce on A toward region X, divided by the maximum force that A can mobilize in the opposite direction. In this definition, we may think of region X as being some activity, such as agreeing or not agreeing to a decision. A force is a hypothetical construct representing the psychological or physical energy by which a person's behavior is propelled. To illustrate the definition by an example, if B should try to induce A to vote for B's candidate for governor, then his power over A is the maximum influence that he can bring on A to do so, relative to the maximum resistance that A can offer in return.

Cartwright goes on to say that if we adopt this definition, we must accept the following implications. First,

power is relational. It is a type of relation among social entities, who may be persons, groups, or political states. Second, the power of B must be specified separately for particular A's. The power of B over A may differ widely from his power over C or D. Third, the power of B over A must be specified separately for each activity that A may potentially engage in. One might expect that B's ability to get A to vote for a candidate would be different from his ability to get A to go to the movies. Fourth, power is potential. B's power over A is the result of the maximum forces that A and B have at their respective commands. Fifth, it is necessary to specify separately the power of B over A and the power of A over B. If B's power over A has some given magnitude, it is conceptually possible for A's power over B to vary from very high to very low.

Although the logic of Lewin's definition had important consequences for the initiation of this study, the definition itself is not entirely suitable for the approach employed here. The present focus is on the temporal development of power relationships among interacting persons. This will require a large number of successive measurements over time, which makes it imperative that the definition used shall be one which offers the greatest operational convenience.

The fifth implication of Lewin's definition noted above is that B's power over A and A's power over B should be specified separately. In the present study this specification could not be followed. We shall employ the concept of 'rela-

tive power,' which is conceived as the resultant of A's power over B minus B's power over A.

Let us return to a consideration of the hypothetical individual, who will henceforth be called A. Let us accept that A is mutually engaged with another person, B, in the performance of some activity, X. Then, by definition, A's relative power is A's potentiality for influencing B as compared to B's potentiality for influencing A, concerning their mutual performance of X.

According to this definition, A's relative power is the result of the balance between A's power over B and B's power over A. A's relative power is the complement of B's relative power. When A's relative power is high, B's relative power is low, and vice versa.

For the purpose of studying the development of social power in groups, it will also be necessary to consider the members' perceptions of the power distribution. With this aim in mind, the concept of 'perceived relative power' is introduced here.

A's perceived relative power is his estimate of his relative power.

Such an estimate of his relative power is the result of A's appraisal of his ability to influence B in comparison with his appraisal of B's ability to influence him, all with respect to X. For operational purposes, we shall have to make the assumption that A is capable at any given moment to make such appraisals and to resolve such comparisons.

The Concomitants of Power

It is popularly believed in our culture that those persons who possess high power initiate events, direct others, receive obedience from them, and are likely to resist other persons' influence on them. Findings from several different studies conducted at the Research Center for Group Dynamics, dealing with the three rather dissimilar populations of professionals in mental hygiene, enlisted men in the Air Force, and children in summer camps, tend to corroborate such beliefs.

Hurwitz, Zander, and Hymovitch (11) found during a series of conferences that high power professionals talked significantly more often than did those with low power. Snyder and French (38) discovered that enlisted men with high authority -- or power -- tended to initiate more frequent, stronger, and more effective influence attempts than did those in low authority. Lippitt, Polansky, and Rosen (24) report that high power children put forth more successful, more directive, and also a larger number of influence attempts; and that these same children are more likely than the average to obtain deference from others and to be imitated by them. It appears, therefore, that when we examine the phenomena of developing social relationships we can consider these behavioral categories as indices of differences in power.

The Bases of Power

From where does an individual obtain his ability to influence or to resist other persons? One element left un-

specified by our definition concerns the bases from which power is derived.

Since the concept of power has a rather short history for social psychologists, little has been written on this topic in our field. If we look at the writings of sociological theorists, we find, for example, that Hobbes stressed that coercive force is a source of power; Marx emphasized the economic bases of power; and Weber was much concerned with power grounded on various kinds of legal sanctions. Political scientists appear somewhat less inclined to interest themselves with the wider bases of social power. They seem to prefer to deal with the more specific instruments of social control. A notable exception is Lasswell, who writes at length concerning power based on three important values -- deference, income, and safety:

...An elite preserves its ascendancy by manipulating symbols, controlling supplies, and applying violence. Less formally expressed, politics is the study of who gets what, when and how (17, p. 3).

Returning to our own field of social psychology, we may note that Polansky, Lippitt, and Redl (32) found that in boys' and girls' camping groups prestige is a direct function of such factors as ability in athletics, independence of adults, strength, having ideas for fun, sex sophistication, and independence of social pressure. In a follow-up study two years later in a similar setting, Lippitt, Polansky, and Rosen (24) report that camp children's power is highly correlated with fighting ability, campcraft skill, and personal

liking.

In a recent manuscript yet to be published (33), Raven and French also have written about the sources of power. They conceive of personal liking, coercion, reward, expertness, and legitimacy as each having somewhat different implications as bases of social influence.

We can see, therefore, that various authors have ascribed many different bases to the existence of power. In the following section, it will be proposed that the sources of an individual's power in informal groups lie in his capacity for making available or withholding important resources for satisfying the needs of the other members.

The Actualization of Social Power

Sources and Resources

Before considering the development of power relationships in face-to-face groups, it is necessary to set down a number of assumptions about the individual and others as members of a social group.

Assumption 1. Every individual is continually attempting to satisfy his needs, to reduce his tensions, to maintain an equilibrium with respect to both his inner and his outer environment.

Assumption 2. Most of the individual's needs are satisfied in the context of a social en-

vironment through relationships with
other persons or groups of persons.

It follows that the individual's membership in a group is an opportunity for need satisfaction by means of his interaction with other members, and that it offers other group members a reciprocal opportunity. Since all the actors in the social environment are similarly engaged in actively and continually satisfying their needs, a prime requisite of any extended interactive relationship is some degree of mutual need satisfaction for all the participants. In social groups such need satisfaction is achieved through the conversion of personal properties into interpersonal resources. Let us define 'properties' and 'resources.'

An individual's properties are those of his attributes which remain with him as he moves from situation to situation. They can be classified under five headings: (1) personal attributes; (2) learned knowledge, information, and skills; (3) material possessions; (4) status distinctions; and (5) social-emotional capacities.¹ Although the properties that fall

¹Although such a classification may prove troublesome, it seems worthwhile to elaborate on the nature of personal properties. Personal attributes are genetically derived characteristics, such as mere physical presence, personal appearance, strength, or intelligence. Knowledge, information, and skills are cognitive and behavioral potentialities that have been internalized through interaction and experience with the environment, such as knowledge of a language, information about recent events, or skill at operating a machine. Material possessions are non-social objects which are either owned or controlled by the individual, such as money, food, or tools. Status distinctions are rights or privileges obtained by virtue of the individual's legitimate occupancy of an office, which permit him in some situations to engage in certain

under the different headings may be interrelated in cause or substance, it appears worthwhile to distinguish them in this way. We can now define resources.

Whereas his properties may not be socially manifested by the individual, his resources are those of his properties which are available to other persons in his environment as instrumental for their positive or negative need satisfaction. For example, an individual's good looks are defined as a personal property. In some social situations this property will function as a positive resource, and the handsome individual may obtain status, admiring glances, or the largest slice of the hostess' pumpkin pie. In other situations this property will not be positively valued, and it is even possible to think of situations where his good looks may be considered to be a negative resource. At any rate, while properties may pertain to the individual in isolation from other people, resources as here defined are inevitably tied to both the individual who is their source, and to the other persons to whom they are instrumental.

Assumption 3. During social interaction there takes place an implicit and explicit exchange of resources between the participants which is responsible for their experience of need satisfaction.

kinds of behavior, such as giving orders to, or rewarding and punishing other group members. Social-emotional capacities are hardest to define; they are evidenced by emotional stability, by an ability to give and receive love or aggression, and so forth.

From Assumptions 1 and 2, which implied that the process of social interaction leads to some degree of need satisfaction for the participants, it follows that these persons are continually trading their own resources in exchange for others' resources. By far the major part of this trading process is implicit rather than explicit. It is relatively rare that the interactors make a calculated or contractual agreement about the kind or the amount of the resources which they supply to one another.

Neither is the social process confined to the exchange of positively valued resources. To the extent that there exists the potential for satisfaction, there also exists the potential for deprivation. The trade is often one where either or both of the interactors threaten to engage in behavior which either will withhold positive, or will grant negative satisfaction for the other person. His potentiality for depriving, as well as his potentiality for satisfying other persons, must be regarded as an essential component of an individual's social power.

The important point is that in social interaction there is a continual give-and-take among the actors. Both potentially and actually, there is a perennial making-available and having-made-available of resources. Before considering this give-and-take process any further, let us introduce the term resource potential.

Resource potential is the totality of personal properties that the individual is capable of eventually convert-

ing into interpersonally manifest resources. In any given social relationship, only some of this potential will become actual and a large part will remain potential. It is unlikely that in any single situation all the individual's properties will either be relevant or readily available for the need satisfaction or deprivation of other persons.

One can easily notice that the concept of resource potential bears a close relationship to that of power. Since resource potential is the individual's means of ultimately satisfying or depriving other persons, it is the basis of his power. But before his power can really become manifest socially, several important conditions must be fulfilled.

1. There must be a fundamental existence of the properties which are to be converted into interpersonal resources. Although for some time the individual may be able to bluff other persons into believing that he has certain attributes or possessions, over the long term he must be able to demonstrate that his power rests on a valid foundation. For example, the property of physical strength is not validated by padded shoulders or bulging biceps. Ultimately the individual must show its existence by putting it to actual use.

2. There must be a need by other persons for the resources that can be made available or withheld. In any given situation, the intensity of others' needs will determine the

centrality or peripherality of a given resource. Depending upon how acutely, by whom, and by how many persons it is needed, the identical personal property has a vastly different effect on his social power. Depending on whether the social activity is furniture moving or card playing, for example, the individual's weight lifting ability will vary in importance for others' needs.

3. There must be perception by other persons of the resources that are to be made available. Accurate perception cannot be taken for granted, since frequently an individual's resource potential is perceived to be much larger or much smaller than is objectively true. The individual's physical strength, for example, may be accurately or inaccurately appraised by other persons.

Other persons' perceptions of the individual's resource potential is largely a function of the social process wherein his supplies are evidenced. Perception is also closely related to need, and the more a given resource is needed -- or feared -- the more likely it is to be perceived.

4. Finally, resource potential must have accessibility for others. The individual's properties may exist, may be needed, and may be perceived; yet if he either cannot or will not make them socially available, they will not add substantially to his power. The individual may be unable or unwilling, for example, to use his strength for the purpose of physically defending other members of the group.

Instances also occur where an individual has, and is perceived to have, control over a greatly needed resource. Yet his manner of making it available, or his ensuing demands upon those who wish to use it, may arouse more tension than his grant of the resource relieves. In such instances, the power of the individual is not usually enhanced by the resource he controls, for the other persons are likely either to forego its use or to turn in search for alternate potential suppliers.

Actualization and Utilization

So far we have discussed the individual's resource potential, without saying much about how he evidences it. Let us take another look at the exchange process posited in Assumption 3. If we consider that the give and the take parts of this process are separate functions, we can identify them by the concepts of actualization and utilization.

Actualization means giving other persons access to one's resources in a way which is either positively or negatively instrumental to their need satisfaction. The individual's resource potential does not have social significance until he has given evidence of being able to actualize his personal properties. Unless he can activate his resources with respect to other persons' or the group's needs, the individual will be ineffective in obtaining what he in turn desires from them.

The concept of utilization is complementary to that of

actualization. Utilization is the drawing on others for necessary resources. Thus we imply a reciprocal relationship: in general, the more satisfactorily an individual actualizes his own resource potential, the more he will be able to utilize others' resources.

It may happen that over a long period of time an individual will utilize far more resources than he actualizes. The relationship between the human infant and his mother seems to be a good example of this. However, we may note two things about this relationship. Firstly, in a certain sense the infant does actualize resources for his mother, since he satisfies many of her needs. Secondly, by his dependency on the mother, the infant is in fact placed in an inferior power position. It is unnecessary to dwell further on this example.

Having defined the twin concepts of actualization and utilization, we may define an individual's actualization-utilization balance (AUB). The AUB is the difference between the amount of resources an individual makes available to others and the amount of these same other persons' resources that he uses. The individual who makes more resources available than he uses has a positive AUB, whereas the person who puts forth less than he uses has a negative AUB.¹

¹We may note that people tend to vary widely with respect to their AUB's, both as compared to other persons and as compared among different situations. Some persons may characteristically operate with a credit balance to their account, whereas others regularly provide their ledger with a surplus of debit entries. Situations also entail differences in AUB's; for example, the AUB of a college professor is greater when he is conducting a class than when he is listening to a band concert.

A person's AUB in the past is considered usually to have significant consequences for his probable AUB in the future. A person who has shown an ability to actualize a large number of resources is seen by others as probably able to satisfy them with, or to deprive them of, similar resources in the future. Thus persons who have a history of positive AUB's tend to be seen as higher in power than those who have had predominantly negative AUB's.

Before we develop the consequences of this formulation as it applies to the distribution of social power in informal groups, let us examine one implication of positive and negative AUB's a little more closely. How does a person build himself a positive AUB? It appears that he can do so in either or both of two ways. Either he can emphasize making available to others a huge amount of resources or, on the other hand, he can try to resist utilizing their resources. Although these two courses of action have rather different implications for the individual's behavior, they are both means of ensuring that his AUB will be positive rather than negative.

We need not belabor the ramifications of AUB any further, but in passing we may observe one additional feature. When interacting individuals are willing and able both to actualize for and to utilize from each other a large amount of resources, then they have an interdependent relationship. When none or few of the interactors show evidence of either actualizing or utilizing resources, there tends to be a state

of independence among them. Finally, when the AUB's of interacting persons are clearly unequal, then some of these persons have an unreciprocated dependency upon the others.

Consequences of This Formulation

Several domains of social psychology can help us to explore the consequences of formulating power in terms of resource potential and actualization-utilization.

The existence of resource potential is frequently the result of social learning processes. An individual develops a large part of his personal properties by acquiring knowledge or skills from his environment.

Both the accessibility of the individual's resources and other persons' need for them may be considered with reference to our knowledge of motivation theory. For example, motivational explanations may help us understand the whys and the hows of an individual's seeking out a social environment, or selecting social roles, in which his personal properties are both available and needed.

Finally, social perception theory has relevance for comprehending the individual's perception of his own and others' resource potential. It may help us to understand the cues which are instrumental for shaping the individual's perceptions of the socially available resources.

The present study is most concerned with the perceptual consequences of the formulation. How do his socially developing perceptions affect, and how are they affected by,

the actualization of his and other persons' resources? Since interpersonal perceptions are more quickly changed by environmental occurrences than either the learning or the motivational processes, they are the most suitable object of study for a feedback approach to growing social relationships. Our principal focus will be upon the sources from which an individual develops his perceptions of power, and on the relations between these perceptions and his social behavior.

CHAPTER II

STATEMENT OF THE HYPOTHESES

Relative Power in a Two-Person Group

For the sake of convenience the following hypotheses will be confined to the interaction of a two-person group. This limitation is imposed for conceptual and operational simplicity, and not because it is doubted that the hypotheses have ultimate generalizability to three-, four-, or n-person group.¹

Let us accept as given a group composed of two members, A and B. Also given that the purpose of the formation of the group is to achieve some goal, G, through the pursuit of some activity, X. In other words, A and B may be engaged in the activity of discussing a series of problems with the aim of coming to common solutions.

It may be noted that whenever A or B actualizes some resource in order to make a contribution to the group's locomotion toward G, he not only adds to his AUB, but he also

¹In making such generalizations, however, some difficulty may be anticipated. There is an important difference between groups of two persons and groups of more than two persons. Whereas in the former all interaction must proceed between the first and second persons, in the latter it is possible for second and third persons to transmit information to each other which is wholly or partly inaccessible to the first person.

exerts some influence attempt on the group. If the movement of the group depends on the interpersonal influence among the members, any effective contribution to the group's movement by a member will be a successful influence attempt on the other member. It can be conceived, therefore, that a member's share of the total contributions to the group's locomotion or lack of locomotion toward its goal is equivalent to his relative influence.

We may note here a distinction between A and B as group members and the individual and other as persons (cf. Barnard, 2). We shall consider A and B only via their group-relevant relationship within the context of activity X. When we say that A's relative power is greater than B's, this refers to the relative potentialities that A and B possess for influencing each other only with respect to activity X, directed toward goal G. It does not refer to their relative influence concerning activities Y or Z, which these two persons may engage in for the attainment of goals H, I, or J.

The Individual's Perceived Relative Power

In a two-person group, the individual's relative power is the complement of his partner's relative power. The individual's perceived relative power is his estimate of his share of the total influence that can be exerted by each group member. To the degree that his perception is reality based, he derives such an estimate by interpreting the information which he receives about his own and his partner's potential and ac-

tual contribution to the group.

Assumption 4. The individual's perceived relative power is based on the information he has concerning his and the other person's resource potential.

Let us consider that A and B have formed a group to enable them to reach a series of decisions or to solve a series of problems. It may be conceived that A and B will receive information relevant to their perceptions of relative power from a number of different sources. Some of the information will be provided by sources inside the group, i.e., from behavior originated by either A or B. Other information may come from sources outside the group, i.e., from other persons who do not participate in the group's interaction.

Most of the hypotheses to be stated will concern the effects of three kinds of information. Two of these kinds of information are considered to arise from inside the group, while the third kind of information arises outside the group:

1. Source inside the group: information provided at the beginning of interaction regarding A's as compared to B's resource potential.

Such information may refer to each group member's previous experience with the activity, his competence in the skill area relevant to the activity, or his confidence in his ability to contribute to the group task.

2. Source inside the group: information about A's and B's relative actualization of resources provided dur-

ing their period of mutual interaction.

Such information is obtained from A's and B's respective behavior while they engage in their common activity. Their relative actualization of resources is a function of the extent to which each of them contributes to the group's locomotion.

3. Source outside the group: information, furnished to the participants by an outside observer, regarding the respective worth of the resources that have been actualized by A and B.

The more that this observer is considered neutral, and the more that A and B consider him expert in evaluating their resources, the more important will be the receipt of such information for A and B. An evaluation from a neutral expert will be particularly useful for A and B, in trying to estimate their relative power, when they find that their activity has somewhat ambiguous criteria for goodness of performance.

The general hypothesis is, therefore, that information emanating from any of the above-mentioned sources will exert an effect on the group members' perceptions of their relative power.

The Hypotheses

Effects of Information on Perception

In stating the following hypotheses, let us adopt the frame of reference of A as he looks at his relationship with B.

Hypothesis 1. Information about his relative resource potential, available to A when he starts his interaction with B, will influence his perceived relative power throughout the subsequent period.

Thus, if A hears initially that he has greater competence than B, he will most likely continue to perceive his power as being higher. Regardless of the subsequent information received by A, his initial orientation to his relative resource potential will prolong its influence on his perceived relative power during his later interaction with B. The hypothesis finds support from the experimental evidence on the effects of prior impressions upon subsequent perceptions, as presented in studies by Asch (1), Luchins (27), Kelley (15), and Haire and Grunes (10). These authors report that prior impressions exert a persisting effect on subsequent perceptions.

Hypothesis 2. A's perceived relative power is a function of the relative success of A's and B's influence attempts on each other.

Aside from A's information about B at the beginning of their interaction, B's behavioral actualization of resources during the group's performance of the task is the best evidence that A can obtain about their relative social power.

Hypothesis 2a. B's acceptance of A's influence attempts will lead to an increase of A's perceived relative power, whereas his rejection of A's influence attempts will

lead to a decrease in A's perceived relative power.¹

Hypothesis 2a is a testable derivation from Hypothesis 2. When A's and B's influence are in the opposite direction and when B accepts A's attempts, it is implied in that instance A's resource actualization has contributed more than B's to the group's movement toward its goal. Such an instance will tend to add to A's, and to detract from B's AUB. Thus, when B bows to A's influence attempts, it can be expected that A's perceived relative power will tend to increase.

When B rejects A's influence attempts, it gives A the information that B is capable of resisting him and also that A has been prevented from contributing to the group. When, in the same instance, A concedes to B's influence attempts, his perceived relative power is likely to decrease.

In an instance where B rejects A's influence attempts, it is also possible for A to resist B's attempts. We may note that in groups where B evidences a predominance of rejections toward A, the frequency of A's resistances toward B will act as a "conditioner variable" to B's acceptance of A's influence attempts (cf. Pelz, 31). This means that we should expect a high correlation between B's frequency of accepting A's influ-

¹It may be noted that there are two parts of Hypothesis 2a, which may be confirmed or infirmed separately. Although stating the hypothesis in this way has the disadvantage of inviting its possible partial infirmation, it was decided that in view of the operations to be employed, it is most satisfactorily stated in this manner.

ence attempts and the latter's perceived relative power, but only when A does not resist B.

It is necessary here to introduce one additional concept -- the point of equality. Point of equality refers to that point where A sees his relative power as equal to B's relative power. When A and B meet as peer members of a problem-solving group, certain cultural standards exist for them. For example, our culture promotes the standard that peers shall share power equally. This leads us to hypothesize that, other things being held constant, the perceptions of own power by members of a peer group will find their equilibrium at the point of equality. When A and B are engaged in attempts to influence each other during a series of successive episodes, the following may be hypothesized:

Hypothesis 2b. After any interaction episode in which A and B had the same amount of influence, A's perceived relative power will tend to change in the direction of the point of equality.

The next hypothesis considers the effects of information fed into the group by an outside source.

Hypothesis 3. If a neutral expert introduces information about the relative worth of members' contributions to the group activity, positive information concerning A's actualization will raise, and negative information concerning A's actualization

will lower his subsequent perceived relative power.

For example, if A is told he has made relatively better contributions than B, he is likely to raise his perceptions of his power. The more credible the outside source, the stronger will be the effect of its information on A's power perceptions. When the outside source appears to have some expert knowledge, positive information is likely to encourage A, while negative information is likely to discourage A. Such encouragement or discouragement will tend to have important consequences for A's later behavior, to which we shall now turn.

Effects of Information on Behavior

All behavior which yields information concerning the power relations between the members of a group can be designated power-relevant behavior. In this study, four dimensions of behavior were considered power-relevant: frequency of influence attempts, degree of assertiveness, and degree of deference¹ shown toward self and others (see operational definitions in Chapter III).

Hypothesis 4. Information initially available, concerning his relative resource potential, will exert a significant influence on

¹Although it was later found that the hypotheses concerning deference behavior could not adequately be tested (see Chapter III), they will be stated here along with the other hypotheses.

A's subsequent behavior during the interaction period.

This is a general hypothesis. If, before his interaction with B, A should be informed that his own resource potential is superior, we should expect him to show more influence attempts, more resistances, greater assertiveness, and less deference toward B, than if at the start it were indicated that his resource potential is inferior. The operational hypotheses follow.

Hypothesis 4a. A's number of influence attempts initiated will be directly related to initial information about his relative resource potential.

Hypothesis 4b. A's number of resistances to B's influence attempts will be directly related to initial information about his relative resource potential.

Hypothesis 4c. A's degree of assertiveness will be directly related to initial information about his relative resource potential.

Hypothesis 4d. A's degree of deference toward B will be inversely related to initial information about his relative resource potential.

The following hypotheses refer to the effects on the individual's behavior of information from a neutral expert.

Hypothesis 5. Information emanating from a neutral expert, concerning A's relative resource actualization, will exert a significant effect on A's behavior.

Hypothesis 5a. Positive information will lead to an increase, and negative information will lead to a decrease, in A's subsequent frequency of influence attempts.

Hypothesis 5b. Positive information will lead to an increase, and negative information will lead to a decrease, in A's subsequent resistances toward B.

Hypothesis 5c. Positive information will lead to an increase, and negative information will lead to a decrease, in A's subsequent degree of assertiveness.

Hypothesis 5d. Positive information will lead to a decrease, and negative information will lead to an increase, in A's degree of deference toward B.

Correspondence between Perception and Behavior

Another area to be considered refers to the degree of correspondence that exists between an individual's interpersonal perception and his manifestation of behavior in the social arena. In this section several hypotheses will be framed to sharpen our focus on the feedback processes.

The individual's perceptions of his power relations are formed like all his other perceptions. They are continually subject to modification from the information he receives from his environment. Much of this information is derived from the behavior of the other persons who are significant for the activity he is engaged in. These other persons will accept or reject the individual's influence attempts, they will express themselves assertively or unassertively, they will show the individual many or few expressions of deference.

On the other hand, the individual expresses himself to the other persons in return, shaping his behavior in accordance with his interpretation of his environment. The more influential he perceives himself to be, the more confidence he will have in the contribution he can make to the group. Such confidence in his own resource potential will be manifested by his behavior.

Hypothesis 6. A's manifestations of high power behavior will vary directly with his perceived relative power.

Hypothesis 6 is a general hypothesis which restates the probable correspondence that exists between the individual's perception and behavior concerning his social relationships. The following are subsidiary hypotheses that serve to specify the general hypothesis.

Hypothesis 6a. The frequency of A's influence attempts on B will vary directly with A's perceived relative power.

An individual is more likely to initiate an influence attempt if he thinks it will meet success than if he thinks it will meet with failure. Since power implies in part the ability to influence successfully, it follows that an individual who perceives his power as high will tend to make more influence attempts than the individual who regards his power as low.

Hypothesis 6b. The frequency of A's resistance to B's influence attempts will vary directly with A's perceived relative power.

This hypothesis is derived from the definition of relative power, which is partly defined in terms of ability to resist others.

Hypothesis 6c. A's degree of assertiveness toward B will vary directly with A's perceived relative power.

Assertiveness in his actions would seem to be one manifestation of self confidence, and would be expected to vary accordingly.

Hypothesis 6d. A's expressions of deference will vary inversely with A's perceived relative power.

As stated earlier, the power relationship between A and B is a complementary one. Therefore, when A perceives his relative power to be relatively high, he will perceive B's power to be correspondingly low, and it follows that he will defer less frequently to B.

A feedback orientation to developing social relationships leads us to ask about the relation between the sequential changes that occur in A's perception and those that occur in his behavior. If it is true that behavior tends to correspond to perception, what happens when A's perception is modified during his interaction with B? Do changes in A's behavior immediately follow changes in his perception of his relative power? And, are his perceptions immediately affected by variations in his behavioral output?

In the framework of the present experimental design, to be described in the next chapter, it at least begins to be possible to examine the relation between relatively minute changes in the individual's perceived relative power and the fluctuations in his power-relevant behavior.

Hypothesis 7. Changes in A's perceived relative power will more often precede, than be preceded by changes in his power behavior.

One of the major hypotheses in the present study is that perceptual changes determine behavioral changes. The confirmation or infirmation of Hypothesis 7 may provide some evidence about the direction of the relationship between perceptual and behavioral changes in social interaction.

Stabilization of Perception and Behavior

In Assumption 1, it was stated that the individual strives to maintain an equilibrium with his social environ-

ment. From this statement we can draw the implication that he will strive to obtain a stable perception of his relationships with other persons.

In thinking about the way in which the individual forms his interpersonal perceptions, we can borrow from Bruner's conception of the social individual (5). Bruner characterizes the individual as holding one or more hypotheses whenever he enters a situation. Subsequent to his entrance into a situation, he uses all relevant information to help him either confirm or infirm such hypotheses. When he receives information that supports a given hypothesis, the hypothesis becomes more strongly held. When he receives contradictory information, the hypothesis is weakened or infirmed and new hypotheses need to be formed. This conception is significant for the present study, since it can help us explain why prior information has precedence over later information. Once a hypothesis receives some partial confirmation, the individual is likely to resist the intake of subsequent information that would call for its revision.

We have, therefore, an explanation for the priority of earlier exposure to information over later exposure to information. Whereas the individual may subject his perceptual hypotheses to considerable revision during the beginning stages of social interaction, the input remaining relatively stable, we may hypothesize that he is less likely to change his perceptions as time goes on.

Hypothesis 8. There will be greater fluctuations in A's perception of own power during the early stages of an interaction period than during the later stages of the period.

The confirmation of this hypothesis would appear to depend to a large extent on the stability of the information that A and B are exposed to from outside their mutual group.

Personality Determinants

It is recognized that individual differences in personality may be of great importance for determining both a person's interpretation of incoming information and his transformation of his perceptions into overt behavior. However, since the major emphasis here is on those perceptual and behavioral phenomena which are directly traceable to situational variations, no theory nor any hypothesis is stated concerning the effects of personality determinants.

CHAPTER III

METHODS

The hypotheses stated in the previous chapter were investigated in a laboratory experiment, conducted in the laboratories of the Research Center for Group Dynamics.

The general design of the experiment involved the setting up of a controlled interaction sequence between pairs of persons. In each instance, one of these persons was the experimental subject while the other person was a paid experimental assistant, who was the partner of every subject. The purpose of pairing each subject with the same other person was twofold. First, it ensured that all subjects were exposed to a partner with the identical visible characteristics. Second, it made it possible to control the partner's behavior toward the subject along the crucial experimental dimensions.

The experimental task was chosen so as to provide a setting for periodically measuring the changes in the subject's perception and behavior with respect to his partner. The task required the partners to influence each other actively during a series of episodes in which they were to reach decisions concerning a number of city planning problems.

Data were gathered via the subject's responses to a

paper-and-pencil personality test, from his periodic estimates of his relationship to his partner, through observations of the behavioral interaction between the partners, and from the subject's responses to a post-experimental questionnaire.

Subjects

The sixty-four subjects were freshmen and sophomores at the University of Michigan, recruited from classes in elementary political science and botany. Only males were recruited since it was expected that males would become more involved in the experimental task than females. Since none of the subjects admitted ever having had any direct acquaintance with city or town planning, it was assumed that possible differences in previously acquired knowledge had no bearing on the subjects' experimental performance.

Appointments were made with each of the subjects individually over the telephone, at which time they were informed that they would be members of two-person groups and that they would participate in an interesting project of the Research Center for Group Dynamics. The scheduling of the subjects and the scheduling of the various experimental conditions were completely independent. Therefore, the assignment of subjects to particular conditions was entirely according to chance.

Chronology of the Experiment

When a subject arrived at the laboratory, the experimenter introduced himself and asked the subject to sit down in a chair at a table facing him. Unless the subject was more

than ten minutes late -- in which case his partner would already be seated and reading a magazine -- the assistant would enter the room about a minute later, would be introduced as the second subject, and would seat himself in the vacant chair next to the subject. The table at which the two partners sat was empty except for a cardboard screen and a pencil in front of each of them.

The two partners first completed an adaptation of the Krout Personality Preference Scale which took from five to ten minutes. Then they were given the experimenter's instructions which took about ten minutes. After that they performed the experimental task, which lasted about forty-five minutes. At the end of the task, each partner was asked to state his reactions to the session on a post-experimental questionnaire -- the assistant being directed to fill out his questionnaire in the adjoining room. When the subject had completed his questionnaire, the experimenter interviewed him, first checking his understanding of the perceptual measure,¹ and then discussing with him the purpose of the experiment.

Experimental Instructions

After the subject and his partner had seated themselves, the experimenter sat down in a chair facing them and said:

You'll be doing some city planning today. I'll explain that to you later. But before we start, I'd like

¹In several cases it was found that the subject had not understood how to estimate his relative power. The data on such subjects were discarded.

each of you to fill out one of these forms. It's a personal preference inventory which some people over at the Center are developing. I give one to everyone who comes here, in order to help them develop it.

Just write in your name on the front page. Then go through it as fast as you can. It shouldn't take you more than four or five minutes.

While the subject completed his personality test, the assistant gave the impression that he too was filling out his form. In reality, behind the cover of the cardboard screen he merely scratched its pages, pacing himself by the speed of the subject. He was instructed to "finish" ten seconds after the subject. When subject and partner had finished, the experimenter took up their forms and resumed giving his instructions:

That's fine. Let's get started now.

You may know that city and town planning has become one of the more important fields of public service in the United States. Many universities have started to offer courses in city planning. And more and more people have become interested in taking such courses and in entering the field.

Some years ago a national foundation became concerned about the crucial role that professional city planners play in our society. In order to help cut down on probable failures and to ensure that the best men would be selected as candidates, the foundation decided to sponsor an aptitude test. They made up a test and gave it to people who were then in school.

Recently they checked back to find out how good their test had been. They gauged the actual job performance of all those persons who had taken the original test. Unfortunately, they found that their test hadn't done a very good job. It didn't predict at all well to the most important qualities of city planners.

The foundation people went back to see why their test had failed. It all seemed to boil down to one major neglect: they had ignored the social setting in which the city planner operates, the day-to-day decisions he makes

with other people. He not only has to have good ideas, but he's got to be able to put them across to people in the towns where he works.

So they came to us at the Research Center for Group Dynamics, because they figured we know something about the social settings in which people operate and about the ways people arrive at decisions together. They asked us to try to revise their test and to put into it some of the social factors which they had ignored. They told us to include three factors in the new test:

1. The first is a knack for knowing where good building sites are.
2. The second is the ability to maintain effective discussions with other persons.
3. And the third is an accuracy for understanding one's relationship with other persons.

We decided to go ahead and to devise a test to meet their specifications. We have now developed such a test and we're trying it out on a large number of people. It's a situational test, which means that you will actually be in the situation of two city planners working in each one of the following towns.

(Experimenter walks over to an adjacent table, lifts a stack of twenty-five town maps crayonned on large pieces of beaverboard, and puts the stack of maps on the table between the two partners.)

Let me tell you about these towns. These are all maps of fictitious towns, small towns of about 20,000 inhabitants. This is Town Zero, merely an example of what is to follow. Here is a business district marked in red; an industrial district, marked in purple; residential areas, in yellow; open space, in green; water in light blue, in this case you can see a river flowing south in the direction of these arrows. Note the north arrow down there. Notice wind direction. Here are the railroads. And finally these are the main roads; there are other roads, of course, but these are the main roads. If you forget any of these things, you can refer to the wall chart up there.

As will be the case in all the other towns, you can see that there is a construction activity or building to be planned. It will always be shown up here in the upper left hand corner. In this example it happens to be an

airfield; in the following towns you may be asked to plan for a school, or a hospital, or whatever. Each time you must pick one site from three possible ones that are marked -- either number 1, or number 2, or number 3. The possible sites will always be located right underneath the red numbers. Remember that as city planners you should plan these sites for the best interests of the people living in the town. Incidentally, you may sometimes think that none of the three possible sites is ideal. You will have to remember that this may be the case for the real city planner too: He doesn't always have the ideal sites available. Just like the real city planner, you may not always have as much free choice as you may want.

I'll be specific now about your job. The two of you will act as a team. Your aim will be to pick the best site for a building in each of these towns, and each time to come to a joint decision about your selection.

In every town you will first have 15 seconds during which you can look at the map and then write down your personal preference of a site. Write down number 1, 2, or 3 on the slip of paper in front of you. Then hand your slip of paper to me, so that I can look at it before you have your discussions.

After I'm ready and have started the stopwatch, you will tell each other your preferences and decide together which is the best of the three sites. You will have exactly $1\frac{1}{2}$ minutes to reach your decision. You must come to a joint decision or else you will lose points. Remember that coming to a joint decision often means trying to see the other guy's point of view. Remember also that $1\frac{1}{2}$ minutes is a short time so that you'll have to be prompt if you're going to finish each decision on time.

The third part of your job has to do with your accuracy in understanding your relationship with the other guy. You will indicate this by making estimates of your relative influence as a team member. Let's assume that your team has available 100% of the influence over what your decisions will be. Then each of you, as a team member, has some share of that influence. If you should think you have exactly the same amount of influence as your partner then you would write down 50%, but, of course, it happens very rarely that you both have identical influence. If you think your share of influence is greater, then you would put down some number between 51% and 100%; if you think you have less influence, then your estimate would be some number from 0% to 49%.

Of course, as time goes on and as you get to know each other better, you may want to change your estimates. So, you will make these estimates of your relative influence not only once or twice, but each time before you pick the next building site. Base your estimates on your total relationship with your partner. Each time when you make your estimate, think of everything that has happened between the two of you in the past and of all the information you have about yourself and your partner. Then make your estimate of the amount of influence you have at that moment as a team member. For example, before you look at Town Eleven you will make your estimate of influence: to do so you will need to think of everything that has occurred in the previous ten decisions, not just what happened the immediately previous time.

Do you understand this? Do you have any questions?

Let me quickly go through the whole procedure once more. Each time, before you look at a new town, you will first indicate your relative influence at that time. Then you will have 15 seconds to look at the town map, write down the site you prefer, and hand your slip of paper to me. Then you'll have 1½ minutes to discuss your preferences with your partner and to come up with a decision. Then, again before the next town, you write down another estimate of your relative influence, pick a site, discuss with your partner, and so on.

These instructions introduced a task that was designed to have the following characteristics:¹

1. Behavioral Aspects

- a. The situation required that subject (A) and partner (B) engage in a large amount of interaction, with an exchange of influence attempts which eventually required either acceptance or rejection.
- b. A and B were engaged on a total task which

¹The writer is indebted to Dr. Ezra Stotland, who furnished a detailed report covering his experience with the experimental use of a similar city planning task.

consisted of sub-tasks which were equal units; so that it was possible to consider acceptance or rejection by the B on trial₁ to be equivalent in importance to acceptance or rejection on say trial₁₁, trial₂₁, or trial₂₄.

- c. There was time pressure on A and B to complete each trial in a certain length of time, so that there was time for a sufficiently long sequence of trials.

2. Perceptual-Motivational Aspects

- d. There was enough ambiguity in the task to permit B to offer a psychologically acceptable rationale for his acceptance or rejection of A's influence attempts.
- e. The different episodes were designed to be relatively homogeneous, so that A's apparent influence on any one trial had significance for his perception of probable influence on later trials.
- f. The task was supposed to establish a meaningful relation between B's acceptance or rejection of A's attempts and A's perception of his relationship to B.
- g. The content of the task itself -- i.e., planning building sites for a series of towns -- was interesting and involving enough, so that in the process the great majority of subjects

seemed almost pleased to undergo the experimental indignities which they endured.

- h. By building in "accuracy at understanding one's relationship with other people" as an ostensible criterion for high aptitude in city planning, the task offered a rationale for the necessary measurements of the individual's perceptions.

In the writer's judgment the task managed to accomplish the above objectives. One may ask to what extent the subjects perceived the situation as it was intended. It is true that some subjects suspected part of the cover story which they were asked to believe; that is, they thought that we were merely interested in how people made decisions together. Yet, this suspicion in no instance penetrated more than the outer rim of the cover story, since in no instance did any subject suspect that his co-participant was playing a role or that he was acting according to some pre-arranged signal.

Experimental Manipulations

First Experimental Manipulation

After the instructions had been given, there was a controlled variation of the information the subject received about his partner. The experimenter addressed the following series of questions first to A and then to B:

1. What did you say you are majoring in?
2. Have you ever had any experience with city planning?
3. How did you do at social studies and art in high school?
4. And how do you feel you'll do at this kind of thing?

First A, and then B, was asked these questions. There were variations of B's replies to the series of questions asked him. In one variation A was made to appear superior, and in another variation he was made to appear inferior. The partner's replies were as follows:

"Superior" Variation
(A is superior):

B replies:

1. In English.
2. Frankly, I never even knew there was anything like city planning.
3. I wasn't too interested in social studies, and I didn't do well at art.
4. I don't think I'll do too well.

"Inferior" Variation
(A is inferior):

B replies:

1. In Architecture and Design.
2. Well some. I took a course in which we took up city planning for about three or four weeks.
3. I did pretty well in both.
4. I think I'll do pretty well.

The purpose of this experimental manipulation was to set up variations in the initial information available to A concerning his relative ability, as compared to B's, for contributing to the task performance.

Second Experimental Manipulation

The interaction between A and B consisted of a sequence of episodes during which the two of them attempted to arrive at decisions for selecting particular sites. As mentioned in the previous chapter, four different kinds of outcomes were possible for each episode. These possible outcomes were la-

belled: (a) Agree trial, (b) Bow trial, (c) Concede trial, and (d) Disagree trial.

- (a) When A and B agreed initially in their site selection, the episode was called an Agree trial. In this kind of trial there were almost no influence attempts, since the decision was almost automatic.
- (b) When A and B disagreed initially in their site selection and when B let himself be persuaded to bow to A's choice, the episode was called a Bow trial.
- (c) When A and B disagreed initially and when A conceded to B's choice, the episode was called a Concede trial.
- (d) When A and B disagreed initially and when they still disagreed at the end of their allotted time for a decision, the episode was called a Disagree trial.

During any single episode, B could behave in one of three alternative ways toward A: he could agree initially, he could bow eventually, or he could continue to exert persuasion on A until the end of the episode. The last of these alternatives could end in either a Concede or a Disagree outcome.

In the actual experimental conditions the pattern of B's agreeing, bowing, and persuasive kinds of behavior was controlled. There were two variations in B's overall behavior pattern toward the A.

1. Accept Pattern. In this variation there were 8 Agree trials, 14 Bow trials, and 2 trials that could end in either Concede outcomes or Disagree outcomes.
2. Reject Pattern. In this variation there were 8 Agree trials, 2 Bow trials, and 14 trials that could end in either Concede or Disagree outcomes.

The sequence of trials in each pattern was identical for all subjects (see appendix.) Also, to make the first and second

halves of the sequence comparable, the order was identical for the first twelve and the second twelve episodes.

It may be noted that there was a considerable difference between the Accept and the Reject Pattern. Whereas in the former pattern B was supposed to yield overwhelmingly to A's influence attempts; in the latter series of decisions B was supposed to display great firmness in adhering to his initial site preferences. Thus, in the first condition A was permitted to be successful in persuading B to his point of view on 87.5% of the disagreements. In the second condition A was unable to obtain concurrence from B in more than 12.5% of the disagreements.

The Standardization of B's Behavior

The experimental assistant was trained to standardize his behavior during the pre-tests, where he performed as a partner to about twenty subjects. His manner toward the subject was neutral, more friendly than unfriendly, both before and during their partnership on the common task.

B's behavior during the interaction sequence could not be entirely constant in all its aspects, since he had to be sufficiently flexible to adjust to fluctuations in the subject's behavior. However, two dimensions were carefully controlled: (1) the extent to which B pressed for an outcome favorable to him, and (2) B's interspersing of his statements between the subjects' statements.

As mentioned earlier, there was a prearranged se-

quence for B either to agree, to disagree and later bow, or to remain firm and attempt to persuade A on any given trial. Since before each new trial A and B handed the experimenter slips stating their choices of site, the experimenter could signal to B which site A had written on the slip. According to his instructions, B would then either pick the same or a different site. During the entire experiment B made only one mistake in picking the prearranged site, and the affected set of data was discarded.

To ensure that the subject had ample opportunity to express himself, the collaborator on every trial waited for the subject to make the first move, waiting for him to do anything from presenting a full statement of his preference to merely looking expectantly at B. During the discussion, B would limit each single comment to a maximum of 15 seconds, again to ensure that A had time for initiating his own comments.

An independent check was made on the degree to which the partner's behavior toward the different subjects was successfully controlled. Comparing B's behavior toward groups of subjects between the Accept and the Reject conditions, it was found that he made more influence attempts and was more assertive in his manner toward the subjects in the Reject condition ($p < .001$). Comparing B's number of influence attempts and degree of assertiveness toward groups of subjects within either the Accept or the Reject condition, it was found that there were no significant differences in his behavior.

Therefore, except for the intentionally created difference between the Accept and Reject conditions, B's behavior toward A appears to have been satisfactorily controlled.

Third Experimental Manipulation

After A and B had discussed the first twelve towns, the final manipulation was introduced. This manipulation varied the information about A's and B's relative task ability that was introduced after the first half of the interaction by a neutral expert. Its purpose was to vary the effect on A's subsequent perception and behavior. There were three variations in the information introduced:

1. Positive Information. Experimenter said that A had been right 7 out of 8 times and that B had been right 1 out of 8 times, during the 8 times that they had initially disagreed in the first 12 decisions. On the four decisions when they had both agreed initially they had both been right.
2. Zero Information. Experimenter said nothing to A or B about correctness or incorrectness during the first twelve decisions.
3. Negative Information. Experimenter said that A had been right 1 out of 8 times, and that B had been right 7 out of 8 times, during the 8 times that they had initially disagreed in the first 12 decisions. On the four decisions when they had both agreed initially they had both been right.

Experimental Design

Eight subjects were exposed to each of eight different experimental conditions, as represented by cells #1, 2, 3, 4, 6, 8, 10, 12 in Table 1. (For the first half of the

TABLE 1

CELLS SHOWING EXPERIMENTAL CONDITIONS
(Number of Subjects Shown in Parentheses)

Initial Information	Superior		Inferior		
Behavior Pattern	Accept	Reject	Accept	Reject	
<u>Half-time Information:</u>	(8)	(24)	(8)	(24)	First Half of Period
	#1	#2	#3	#4	
	(8)	(8)	(8)	(8)	
Positive	#5	#6	#7	#8	
Zero		(8)		(8)	Second Half of Period
	#9	#10	#11	#12	
Negative		(8)		(8)	

sequence, four different conditions were possible; for the second half, twelve different combinations were possible. (See Table 1 on preceding page.)

Since the number of subjects that could be used was limited, and since in several exploratory runs little difference was found between the effects of the different kinds of half-time information on the Accept patterns, no subjects were exposed to the conditions listed in cells 5, 7, 9, and 11. Also, since the Reject patterns allowed wider variations in A's behavior toward B, it was decided to expose three-fourths of the subjects to the different rejection conditions.

Measurement of Dependent Variables

The two major dependent variables in this study were (1) the individual's perception of his power and (2) the individual's power-relevant behavior toward his partner.

Measurement of Perception

The individual's perception of his power at different moments of his relationship with his partner was measured by obtaining his percentage estimates of his relative influence, as described in the instructions.

Since the purpose of this measure was to discover the changes in the individual's perception over time and to learn about the correspondence between present perception and present behavior, it was necessary to ask the subject to estimate his influence as a group as it appeared to him at the moment: "Each time,...make your estimate of the amount of influence you

have at that moment."¹

One limitation to this particular measure was that it asked the subject to state a percentage when there was no objective criterion for telling him what the percentage was. This fact is true, as is the fact that subjects do not have equal-interval percentage scales in the backs of their heads to which they can refer in making these responses. Nevertheless, the percentage measure did provide several kinds of unquestionably valid data. Firstly, the subjects' estimates informed us when he considered his relative power greater than, equal to, or less than his partner's. Secondly, the measure provided a 101-point scale (from 0 to 100) which was highly sensitive to the subjects' fluctuations in their perceptions.

¹This question was a more satisfactory measure than three other possible questions: (a) what was your influence on the last trial?, (b) what has your share of influence been in the past?, or (c) what is the probability of your success in influencing your partner on the next trial?

The first two alternate questions would be somewhat more easy for the subject to answer because they refer to events that have already occurred. However, they do not refer to his feelings of the present moment or to the situation as he sees it here and now. Perceptions referring to the present moment were considered to have most bearing upon an actor's behavior in the next moment of the future.

One might think that the third alternative would be the best question to show a correspondence with the subject's behavior on the next trial. Yet preliminary testing showed that when this question was used, it affected the phenomena being measured. That is, rather than seeing the probability report as a simple statement of their perception of the present, subjects tended to see it as a prediction of the future. This being so, the subjects felt a certain compulsion to fulfill their 'prediction': for example, after saying their probability of succeeding was greater than 50%, they consciously tried harder; or after stating a probability of less than 50%, they tried less hard to influence their partner to their own opinion.

Thus, a subject could indicate at the same moment not merely whether he felt more or less influential than his partner, but also whether he considered that his influence had increased or decreased since some previous moment. While one need not interpret the percentage estimates as having absolute significance, they do provide a satisfactory index for observing the periodic rises and falls in a subject's perception of his relative power.

Measurement of Behavior

The behavior that occurred between A and B during the interaction sequence was observed by the experimenter. For either behavioral pattern (Accept or Reject), the observations from only the fourteen predominant trials were used for data analysis. The other trials did not provide comparable behavioral data. The following were the categories for observing A's and B's behavior. The categories are similar to those first used by Polansky, Lippitt, and Redl (32).

1. Frequency of influence attempts initiated. An influence attempt was defined as follows:

Any single statement or suggestion advanced by either actor in support of his own site preference. When several statements were made, each separate reason given in support of the actor's opinion was coded as a separate influence attempt, whether or not these reasons were interspersed by interruptions from the other partner.

During a reliability check with another observer¹ two separ-

¹The writer is grateful to Dr. Sidney Rosen for serving as the reliability check observer.

ate reliability coefficients were obtained for A's and B's influence behavior. Product-moment correlation coefficients of .86 and .82 were obtained for A's and for B's frequency of influence attempts. These reliabilities are considered satisfactory.¹

2. Frequency of A's resistances against B's site preferences. A resistance was scored when, at the end of a trial, A still disagreed with B. This category could only be scored for those subjects who were exposed to the Reject Pattern, since in the other pattern, B was supposed to bow to A in almost every trial. There were fourteen trials on which A could either concede or resist, so that the number of possible resistances ranged from 0 to 14.

3. Degree of Assertiveness. Assertiveness referred to the actor's manner of making his statements. Three code categories were used:

- a. Positive: Manner indicates that the initiator has relatively high confidence in the correctness of his statement.
- b. Tentative: Manner indicates that the initiator has moderate confidence, with apparently some inclination to accept correction from the other person.

¹The behavioral observations were made by the experimenter himself. It is possible that a bias may have been introduced in some of the behavioral data, in spite of the relatively high reliabilities obtained during the check. Only the data on 'frequency of influence attempts initiated' and 'degree of assertiveness' were subject to such a possible bias. However, since the data on 'number of resistances' were related as highly to perception and information variables as were the former two variables, it seems unlikely that there was any substantial bias.

- c. Questioning: Manner indicates that the initiator has no necessary confidence in his statement, but is trying to find out the other person's opinions which he is inclined to agree with.

Reliability between the experimenter and the check observer was by product-moment correlation: .63 for A's degree of assertiveness and .81 for B's degree of assertiveness. These reliabilities, while not as good as for the "frequency of influence attempts initiated," were still considered satisfactory.

4. Frequency of deference indicators. Statements were coded as deference indicators when they implied either high (+) or low (-) resource potential either to the initiator or to the other person. There were four categories:

- a. Source +: high potential implied to self
- b. Source -: low potential implied to self
- c. Referent +: high potential implied to other person
- d. Referent -: low potential implied to other person

Although in the pretests it appeared that this observation category would prove to be a useful one, the frequencies for this kind of behavior later were not as large as expected. Since it has also been found during the reliability check that the average correlation between the two observers was only .58, it was decided that "frequency of deference indicators" was an inadequate measure for the purpose of understanding the subjects' behavior.¹

¹Data were also collected for three other categories of behavior, but it was found that there were either low fre-

Post-Experimental Questionnaire

It was believed that after exposing the subject to an experience where he was required to stop every second minute to give a searching appraisal of his relative power, the post-experimental questionnaire should encourage him to express feelings about the task and about his partner.

Several open-ended questions were asked the subject

quencies or low reliability in these categories, so that these will not be included in the presentation of results. These categories were:

5. Time taken by A during Concede trials: Since frequently A conceded to B in less than the maximum of 90 seconds, the number of seconds per Concede trial was recorded as an index of "A's readiness to yield to B's influence."
6. Affect shown by A toward B: An effort was made to code A's behavior toward B along a continuum ranging from positive to negative expression of affect. It was attempted to make frequency tallies for the expression of affect on each trial. It was found, however, that subjects became too task-involved to show very much positive or negative affect. There was insufficient variability to allow accurate coding in this category.
7. Non-task-directed behavior by A: Since some symptoms of frustration were expected to occur in this situation, it was decided to record task-irrelevant behavior. The frequencies of such behavior tended to be extremely low, and operationally difficult to define. The original categories were as follows:
 - a. Withdrawal from task: behavior showing a lack of interest and lack of participation in the task.
 - b. Aggression toward B: aggressive remarks toward B, not part of the problem-solving interaction.
 - c. Appeal to Experimenter: questions of any kind directed to the Experimenter after the commencement of the interaction sequence.

concerning the most salient feature of the task and of his partner. The subject was also asked to estimate his liking for the partner at the beginning and at the end, and to describe his partner by checking a number of adjectives either as appropriate or as inappropriate. Also, he gave one final estimate of his relative power during the period.

Personality Inventory

As mentioned previously, a personality test was administered to all subjects before the start of the experimental instructions. Data concerning personality were gathered for exploratory purposes.

The test was an abridgment of the Krout Personal Preference Scale (16) with additions by Watson and Kallen (39).¹ It was chosen partly because of its brevity of administration, and partly because preliminary evidence was available that scores and patterns derivable from it have relevance for understanding social behavior.

It might be added here that our hopes of confirming some exploratory hypotheses in this way have not as yet been fulfilled, and the results of the data analysis will not be reported here.

¹The writer is grateful to Dr. Jeanne Watson for her assistance in interpreting the data.

CHAPTER IV

RESULTS AND DISCUSSION

In this chapter we shall examine the experimental evidence. Each hypothesis will be restated as presented earlier, together with the relevant research findings.

Testing the Hypotheses

Sixty-four persons served as experimental subjects. Sixteen of these subjects were exposed to predominantly accepting behavior, and forty-eight subjects were confronted by predominantly rejecting behavior from their partner.

For the purpose of testing most of the hypotheses, however, we shall only be able to use the data for the forty-eight Reject subjects. To begin with, the experimental experience was different for the Accept group than for the Reject group. As was mentioned in the previous chapter (page 52), there was a significant difference between the partner's behavior toward the Accept subjects and his behavior toward the Reject subjects. Toward the former he was considerably less initiating and less assertive. According to their responses on the post-experimental questionnaire, the Accept subjects tended to see their partner as "yielding" and "unsure of himself"; whereas the Reject subjects were inclined

to perceive him as "resistant" and "strong." The former subjects, therefore, saw their power as steadily going up, while the latter saw theirs as going down, as will be shown later.

On the basis of these differences between these groups of subjects, one would be disposed to test the hypotheses separately for the two groups. There is no theoretical reason for doubting their applicability to both populations. Yet for demonstrating statistical significance, the number of the Accept subjects is too small for making comparisons within that group. Therefore, except for the testing of Hypotheses 2 and 8, we shall confine ourselves to the data of the forty-eight Reject subjects for checking the majority of the hypotheses.

Initial Information and Subsequent Perception

Hypothesis 1. Information about his relative resource potential, available to A when he starts his interaction with B, will influence his perceived relative power throughout the subsequent period.

It will be remembered that subjects were exposed to one of two kinds of initial information -- labelled Superior and Inferior. In the first condition, the partner indicated at the beginning of the period that he had relatively less, and in the second condition he indicated that he had relatively more experience with and confidence in the performance of the task. Table 2 presents an analysis of the effects of Superior as com-

pared to Inferior information on subjects' perceived relative power at the end of the task.

TABLE 2
EFFECTS OF INITIAL SUPERIOR AND INFERIOR INFORMATION
ON SUBJECTS' AVERAGE PERCEIVED RELATIVE POWER
(48 Reject Subjects)

	Average Perceived Relative Power			
	H1	MedH1	MedLo	Lo
Initial Superior Information	10	6	5	3
Initial Inferior Information	2	6	7	9

$$\chi^2 = 8.69; p < .04$$

Figure 1 shows the contrasting effects throughout the session of the differences in initial information to which the subjects were exposed.

The data in Table 2 and in Figure 1 indicate a significant difference between the power perceptions of the subjects who received the different initial information about their relative resource potential. Table 2 shows, at a fairly high level of confidence,¹ that subjects' average perceptions of

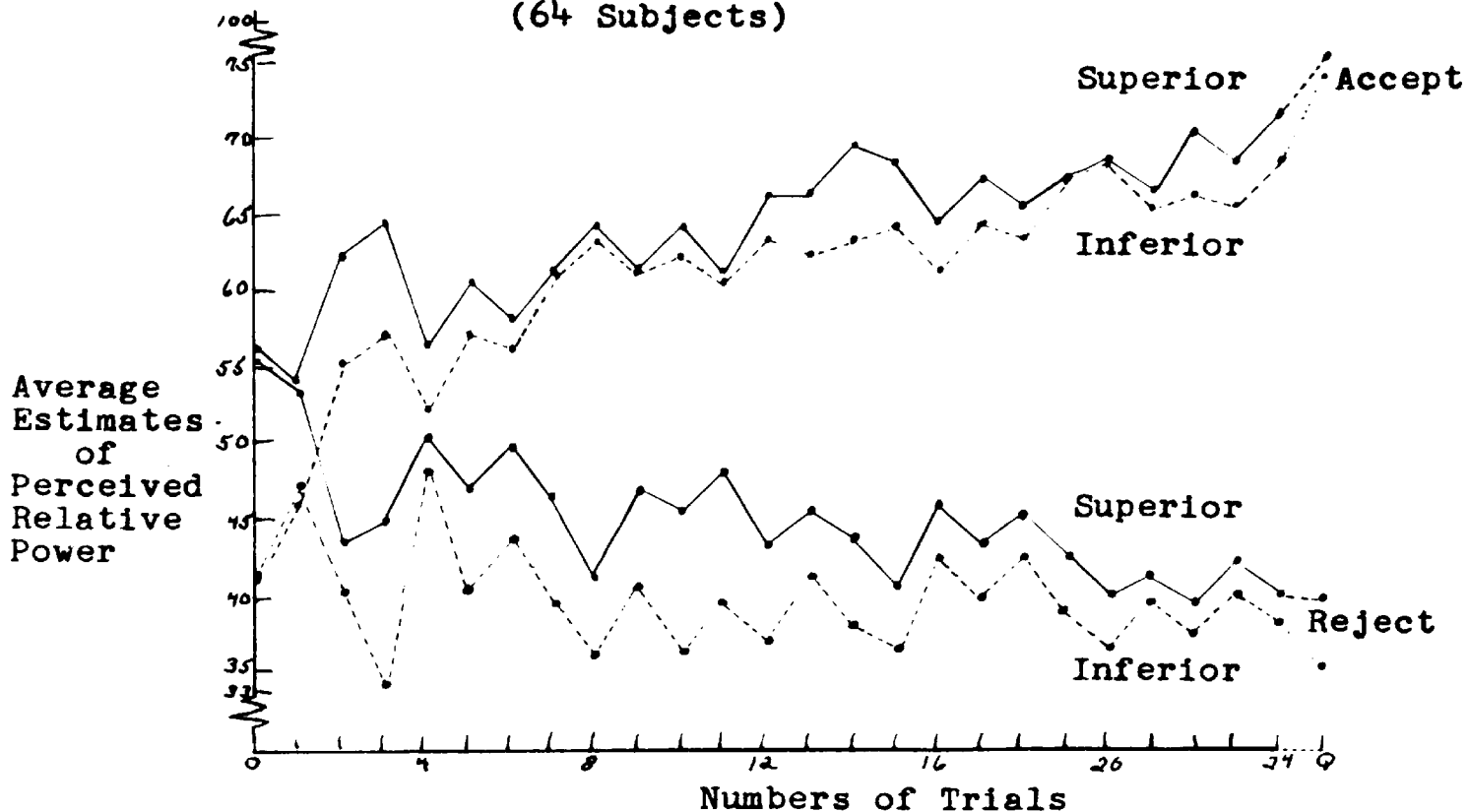
¹It may be useful to inform the reader at this point that the following statistics are used in presenting the data: chi-square, sign test, t-test, analysis of variance, product-moment correlation, and rank-order correlation (corrected for tied ranks). For the first three statistics listed, where it was relevant to choose between one-tail or two-tail tests of significance, only the two-tail test was applied.

In reporting the findings, differences occurring at below the 10% level of confidence are considered to be statistically significant.

their relative power are significantly affected by the early information. From the curves in Figure 1 one can note that although the differential effects of the initial information diminish over time, these effects appear to persist to the end of the experimental period.

FIGURE 1

EFFECTS OF INITIAL SUPERIOR AND INFERIOR INFORMATION
(64 Subjects)



Previous studies of social perception -- particularly the one reported by Kelley (15) -- have shown that prior information about a social stimulus has a considerable effect on structuring a subject's later perceptions. That finding was corroborated in the present experiment. Even though the subjects had ample opportunity to test their perceptions in a free interactive situation, the initial information affected

their subsequent perceptions throughout the entire period.

The Effects of the Partner's Behavior

Hypothesis 2. A's perceived relative power is a function of the relative success of A's and B's influence attempts on each other.

Below we shall examine the variations in A's perceived relative power as determined by B's accepting or rejecting behavior. Next, we shall show the degree to which A's perceptions changed upward or downward after the outcomes of single decision-making trials. And finally we shall look at the effects of trials where no influence was exerted, to see whether A's perceived relative power changed toward the point of equality.

Hypothesis 2a. B's acceptance of A's influence attempts will lead to an increase of A's perceived relative power, whereas his rejection of A's influence attempts will lead to a decrease in A's perceived relative power.

B's two different behavior patterns had strikingly different effects on A's perceptions. All sixteen subjects in the Accept condition perceived their power as relatively greater than B's, after having had a preponderance of their respective influence attempts accepted. On the other hand, almost all the subjects who had most of their influence at-

tempts rejected perceived themselves as having relatively less power than B.

TABLE 3
EFFECTS OF PARTNER'S ACCEPT OR REJECT BEHAVIOR ON
SUBJECTS' PERCEPTIONS OF OWN GREATER, EQUAL,
OR LESSER POWER
(64 Subjects)

	A's Perceived Relative Power (at end of task)		
	A > B	A = B	A < B
Exposed to Accept Behavior	16	0	0
Exposed to Reject Behavior	2	5	41

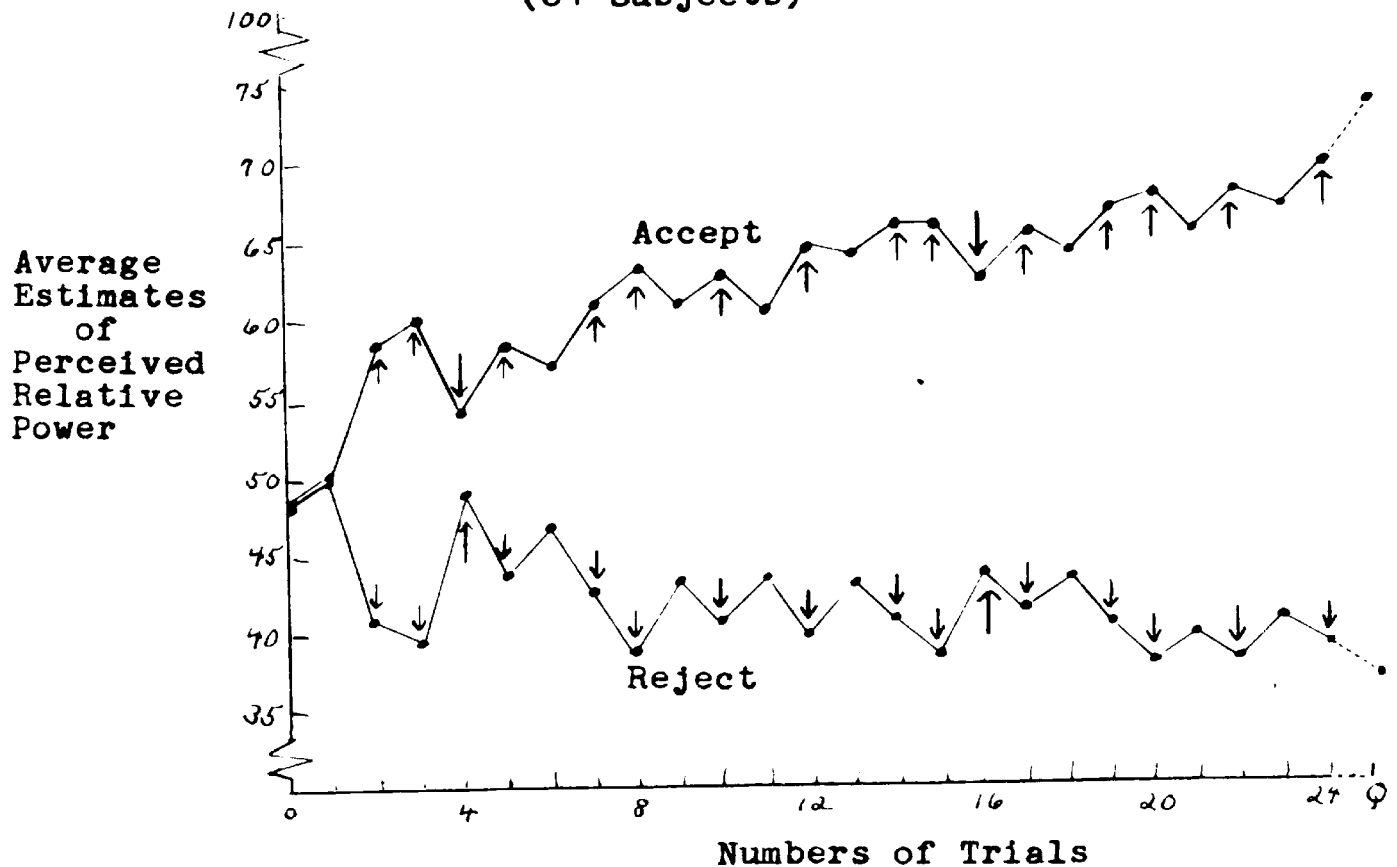
$$\chi^2 = 54.51; p < .001$$

The same data are pointed up in another way by the contrasting composite curves shown in Figure 2. Here we can examine the apparent rapidity with which the subjects' perception of greater or lesser power develop.

It may be noticed that the Accept and the Reject curves separate, first rather steeply and later more gradually. Through the entire session, however, there are noticeable fluctuations. The fourteen arrows, pointing up for the Accept condition and down for the Reject condition, refer to those trials where the prearranged acceptances or rejections by B occurred. The two other arrows, which point down for the former and up for the latter condition, refer to two "filler" trials where B reversed his predominant behavior. It may be noted that on almost every trial B's accepting or rejecting

behavior influenced a corresponding revision in the subjects' average estimates of their perceived relative power. It seems remarkable how much the accepted subjects built up their perceptions of own relative power, whereas the rejected subjects decreased their estimates.

FIGURE 2
CHANGES IN PERCEIVED RELATIVE POWER OF SUBJECTS
IN ACCEPT AND REJECT CONDITIONS
(64 Subjects)

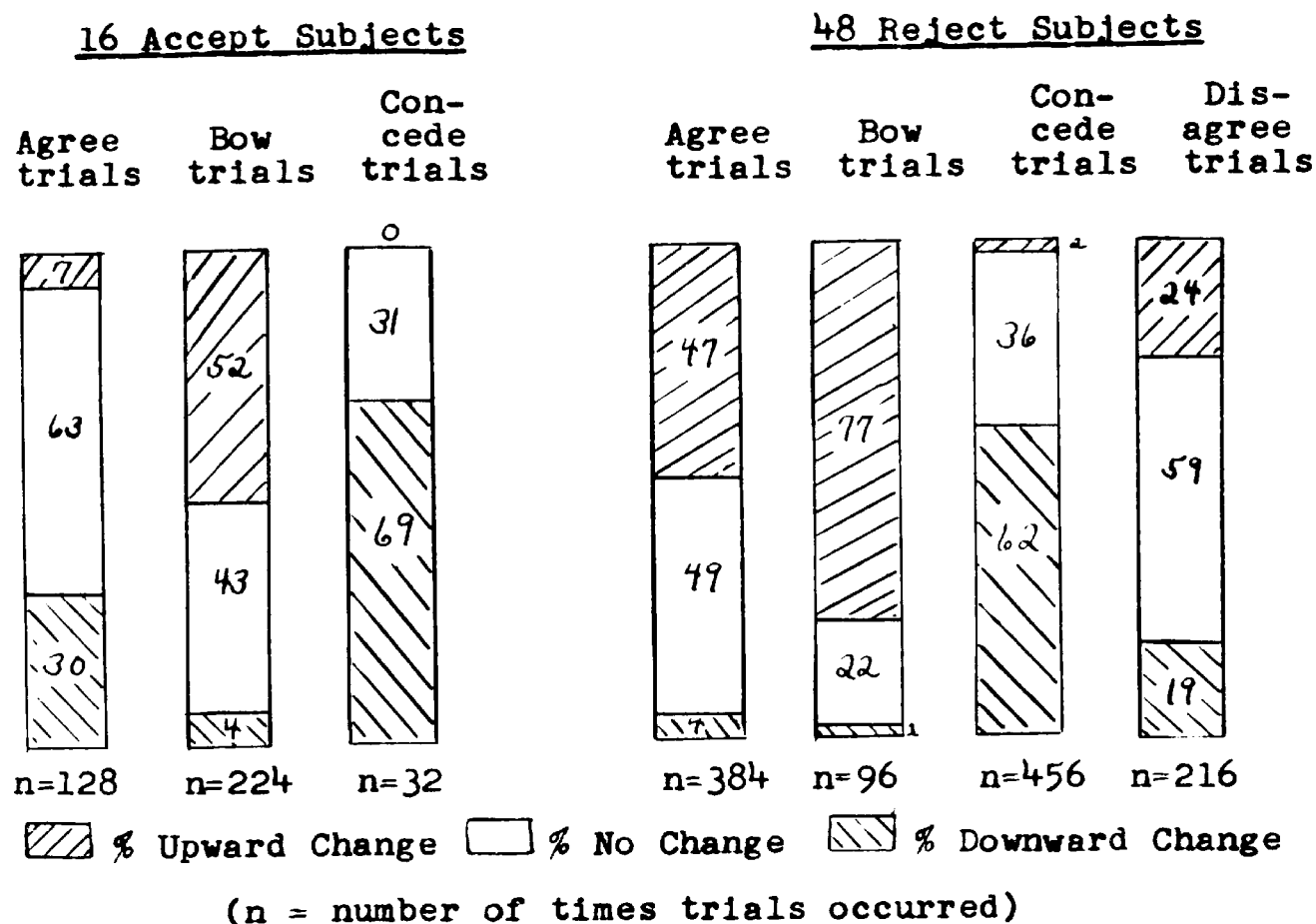


In the previous chapter, it was mentioned that for any given episode it was logically possible to have one of four distinct outcomes: an Agree trial, a Bow trial, a Concede trial, or a Disagree trial. In Figure 3, on the following page, we show the proportions of upward change, no change, and downward changes in subjects' perceived relative power which

occurred after each of the different kinds of trials.

FIGURE 3

CHANGES IN PERCEIVED RELATIVE POWER AFTER
DIFFERENT KINDS OF TRIALS



In Figure 3 we can see the differences in impact that the various trial outcomes had upon the subjects' changes in their estimates of relative power. When B bowed to A, the outcome usually led to an increase in A's perceptual estimates; whereas when A conceded to B on any given trial, it usually changed his perceptions downwards.

In Figure 3 it can be noted that there was a considerable difference between the effects of the Agree trials on the

Accept subjects and their effects on the Reject subjects. Such differences are relevant to the testing of Hypotheses 2b, concerning the tendency for power perceptions to change toward the point of equality after trials whose outcomes favor neither A nor B.

Hypothesis 2b. After any given interaction episode in which A and B have the same amount of influence, A's perceived relative power will tend to change in the direction of the point of equality.

This hypothesis is tested by looking at the data for the Agree trials when the partners mutually accepted each others' influence attempts.

TABLE 4

CHANGES IN PERCEIVED RELATIVE POWER AFTER "AGREE"
TRIALS WITH REFERENCE TO POINT OF EQUALITY

Number of Subjects Whose Perceptions After Agree Trials Changed Pre- dominantly.....				
Toward Equality	Neither Direction	Away from Equality	N	(by sign test) p
51	4	9	64	.01

Agree trials were episodes on which the two partners agreed with one another at the very beginning. Thus the partners did not need to make any influence attempts on each other in order to obtain agreement, and it might be taken for granted

that no new information was provided concerning either A's or B's relative power. In Figure 3, however, we may see that subjects' perceptions of their power often did not remain stationary after Agree trials. And from Table 4 we may note that, when subjects' perceptions did change after an Agree trial, there was a predominant tendency for them to change toward the point of equality.

How do we interpret the finding that after an Agree trial the subjects changed their perceptions toward the point of equality? It seems that, although there were usually no influence attempts, the subjects did obtain some information from an Agree trial. For the Accept subjects, who had been increasing their perceptions of own power steadily, the outcome would mean that during one episode at least they did not gain on their partner. For the Reject subjects, it would imply that at least they had not lost ground any further during that trial. While the finding supports Hypothesis 2b, it does not necessarily indicate that there existed a "pressure" on A toward perceiving his power at the point of equality. However, it does imply that within the different contexts of rising and falling perceptions of power, the Agree outcomes provided significantly different information to the subjects.

Half-Time Evaluation and Subsequent Perception

Hypothesis 3. If a neutral expert introduces information about the relative worth of mem-

bers' contributions to the group activity, positive information concerning A's actualization will raise, and negative information concerning A's actualization will lower A's subsequent perceived relative power.

It will be remembered that after the twelfth trial the experimenter informed sixteen of the Reject subjects that they had been mostly correct when they disagreed with the partner in their initial site selections, sixteen of them that they had been mostly incorrect, and sixteen of them he told nothing at all about their performance during the first twelve trials. Presumably, if the information introduced at half-time had any effect, those subjects who received Positive information should increase, and those subjects who received Negative information should decrease their perceived relative power. Table 5 presents the data.

There was a clear difference between the effects of Positive and Negative information on the perceptions of the subjects. After the introduction of the favorable information, A tended to increase his perceived relative power, and this increase persisted until the end of the period (trial₂₄). On the other hand, when unfavorable information was communicated to A about his performance he was likely to decrease his estimates. (By sign test, these increases and decreases are significant at the .05 level.) The subjects who received no information at half time, though, showed no significant per-

ceptual changes in either direction.

TABLE 5
EFFECTS OF HALF-TIME INFORMATION ON SUBJECTS'
SUBSEQUENT PERCEIVED RELATIVE POWER
(48 Reject Subjects)

	Changes in A's Perceived Relative Power (comparison between trial ₁₂ and trial ₂₄)		
	Increase	No Change	Decrease
Half-time Information:			
Positive	10	6	0
Zero	5	3	8
Negative	2	3	11

$$\chi^2 = 17.49; p < .01$$

By looking at Figure 4 we can obtain a more complete impression of the nature of the changes effected by the half-time information.

From looking at the data presented in Table 5 and in Figure 4 (which appears on the following page), we may have confidence that Hypothesis 3 was confirmed.

Initial Information and Subsequent Behavior

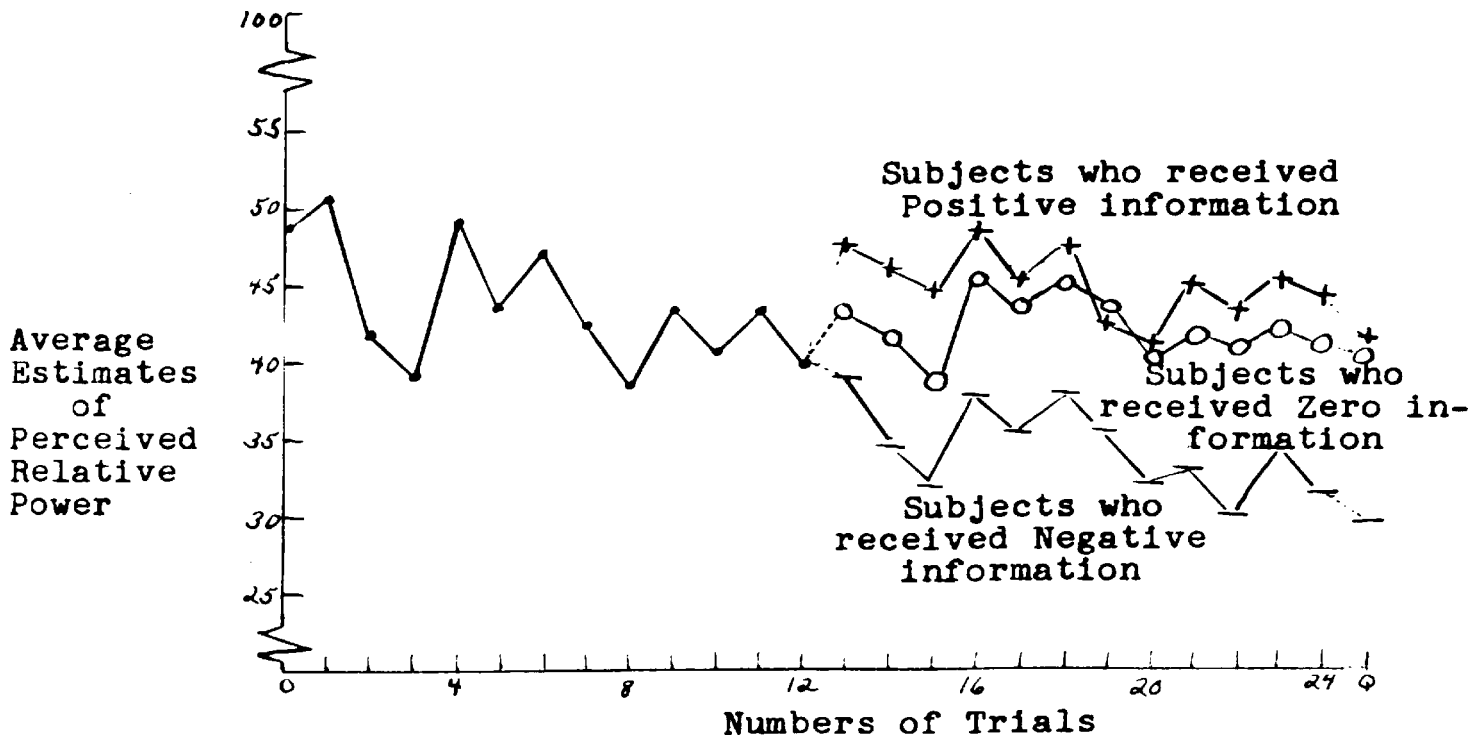
It has been shown that each of the three types of information exerted a significant effect on A's perceptions. We may now examine the effects of such information on A's behavior.

In testing any of the hypotheses which concern A's be-

havior, only the data from the fourteen trials where B rejected his ideas are used. (Seven of these occurred during the first half and the other seven occurred during the second half.) The data for the eight Agree and the two Bow trials are excluded because A's and B's interaction was not consistent with that which occurred on the fourteen critical trials.

FIGURE 4

PERCEIVED RELATIVE POWER AFTER VARYING KINDS OF HALF-TIME INFORMATION



Hypothesis 4. Information initially available, concerning his relative resource potential, will exert a significant effect

on A's subsequent behavior during the interaction period.

To throw light on this hypothesis, the data for the three subsidiary hypotheses are presented below.

Hypothesis 4a. A's number of influence attempts initiated will be directly related to initial information about his relative resource potential.

According to this hypothesis, those A's who received Superior information initially would tend to make more influence attempts toward B than those A's who received the Inferior information.

TABLE 6

EFFECTS OF SUPERIOR AND INFERIOR INFORMATION ON
NUMBER OF INFLUENCE ATTEMPTS INITIATED
(48 Reject Subjects)

	A's Number of Influence Attempts toward B			
	H1	MedHi	MedLo	Lo
Initial Superior Information	10	5	5	4
Initial Inferior Information	2	7	7	8

$$x^2 = 7.33; p < .07$$

The data confirm that the predicted differences in the subjects' behavior occurred. A difference of this size would occur by chance only seven times in a hundred. The initial information, given to A by B's answers to the experimenter's questions at the start, exerted an effect on A's frequency of

initiating influence attempts during the entire period. These results will be discussed later in connection with parallel findings for other kinds of behavior.

Hypothesis 4b. A's number of resistances to B's influence attempts will be directly related to initial information about his relative resource potential.

TABLE 7
EFFECTS OF SUPERIOR AND INFERIOR INFORMATION ON
NUMBER OF RESISTANCES TO PARTNER
(48 Reject Subjects)

	A's Number of Resistances to B			
	H1	MedH1	MedLo	Lo
Initial Superior Information	8	10	2	4
Initial Inferior Information	3	6	6	9

$$x^2 = 7.19; p < .07$$

As Table 7 shows, the number of A's resistances to B's influence attempts were significantly affected by the initial information made available to A. Hypothesis 4b seems adequately confirmed. Let us now turn to the effects of the experimental variation on A's subsequent assertiveness toward B.

Hypothesis 4c. A's degree of assertiveness will be directly related to initial information about his relative resource potential.

Again it is evident that there was a significant difference between the effects of the two kinds of information

upon the subjects' behavior. Most strikingly, of the subjects who initially received the Superior information, only two were among those who were lowest in assertiveness.

TABLE 8
EFFECTS OF SUPERIOR AND INFERIOR INFORMATION
ON DEGREE OF ASSERTIVENESS
(48 Reject subjects)

	A's Assertiveness toward B			
	H1	MedH1	MedLo	Lo
Initial Superior Information	7	8	7	2
Initial Inferior Information	5	4	5	10

$$\chi^2 = 7.33; p < .07$$

If we look at the findings presented in Tables 6 to 8, we may see that all three kinds of behavior measured were rather similarly affected by the variations in the early information. From this fact it would seem that these variables were interdependent indices of the same general behavior. This is not surprising, because each of the variables was selected to be an index of high or low social power. The intercorrelations between (a) number of influence attempts initiated, (b) number of resistances, and (c) degree of assertiveness ranged from .60 to .62.

Half-time Evaluation and Subsequent Behavior

Hypothesis 5. Information emanating from a neutral expert, concerning A's relative resource

actualization, will exert a significant effect on A's behavior.

The subsidiary hypotheses are tested below. Analysis of variance is used for confirming the significance of the differences in the magnitude of the shifts. Chi-square is used for appraising the significance of the difference in directional shifts from the first half to the second half.

Hypothesis 5a. Positive information will lead to an increase, and negative information will lead to a decrease, in A's subsequent frequency of influence attempts.

In order to test this hypothesis, we must examine the differences in A's number of influence attempts between the first half (Half_1) and the second half (Half_2) of the interaction period. If the hypothesis is correct, those subjects who received Positive information showed an increase on the average, those who received Zero information showed no definite change, and those who received Negative information showed a decrease in their initiation of influence attempts.

The data in Tables 9 and 10 can be interpreted as follows. It is clear that there was a significant difference in the effects of the various kinds of half-time information. The analysis of variance confirms that fact. However, from the data on the directional shifts as presented in Table 10, it may be seen that there was little difference between the Positive and the Zero conditions in their change from Half_1 to Half_2 .

TABLE 9

SUMMARY OF ANALYSIS OF VARIANCE OF THE EFFECTS OF
HALF-TIME INFORMATION ON INITIATION OF
INFLUENCE ATTEMPTS
(48 Reject Subjects)

Source of Variation	Sum of Squares	df	Mean Square	F
Between groups	653.04	2	326.52	10.14
Within groups	<u>1448.88</u>	<u>45</u>	32.19	
Total	2101.92	47		

$p < .001$

TABLE 10

EFFECTS OF HALF-TIME INFORMATION ON INITIATION
OF INFLUENCE ATTEMPTS
(48 Reject Subjects)

Changes in A's Number of Influence Attempts (from Half ₁ to Half ₂)			
	Increase	No Change	Decrease
Half-time Information:			
Positive	11	2	3
Zero	12	1	3
Negative	2	0	14

$$\chi^2 = 21.35; p < .01$$

It appears, therefore, that whereas the Negative information acted as a depressant for subjects' frequency of initiating influence attempts, in both other conditions there was a rise in the number of the influence attempts -- perhaps

a gradual "warming up" to the task. Although the Negative half-time information seems to have acted as a discouragement to the subjects' strivings, the positive information did not effect any greater change in their influence attempts than did no information at all.

Hypothesis 5b. Positive information will lead to an increase, and negative information will lead to a decrease, in A's subsequent resistances toward B.

Hypothesis 5b is tested by analysis of variance and by chi-square in the tables below.

TABLE 11

SUMMARY OF ANALYSIS OF VARIANCE OF THE EFFECTS
OF HALF-TIME INFORMATION ON NUMBER
OF RESISTANCES TO PARTNER
(48 Reject Subjects)

Source of Variation	Sum of Squares	df	Mean Square	F
Between groups	29.16	2	14.58	8.84
Within groups	<u>74.32</u>	<u>45</u>	1.65	
Total	103.48	47		

$p < .001$

The evidence in Tables 11 and 12 is similar to that for Hypothesis 5a. However, in contrast to the data in Table 10 (for number of influence attempts), the Zero information subjects fall less close to the Positive information group. Though again there is a significant difference between the

Positive and the Negative groups, this time the behavior of the Zero subjects was significantly different from neither of these extremes.

TABLE 12
EFFECTS OF HALF-TIME INFORMATION ON DIRECTIONAL
CHANGES IN NUMBER OF RESISTANCES TO PARTNER
(48 Reject Subjects)

	Changes in A's Number of of Resistances (from Half ₁ to Half ₂)		
	Increase	No Change	Decrease
Half-time Information:			
Positive	12	4	0
Zero	8	7	1
Negative	5	5	6
$\chi^2 = 12.84; p < .02$			

Hypothesis 5c. Positive information will lead to an increase, and negative information will lead to a decrease, in A's subsequent degree of assertiveness.

This hypothesis is closely parallel to the two previous ones, and the relevant evidence appears in Tables 13 and 14.

Hypothesis 5c is confirmed even more significantly than either of the previous ones. Once more it appears that there was relatively little difference between the effects of

the Positive and the Zero information. However, the manner of A's behavior seems to have been very differently affected by the introduction of the Negative information. While almost all the other subjects gained in assertiveness from the early to the late part of the interaction period, those subjects who received the discouraging news at half-time nearly all became less assertive.

TABLE 13

SUMMARY OF ANALYSIS OF VARIANCE OF THE EFFECTS
OF HALF-TIME INFORMATION ON DEGREE
OF ASSERTIVENESS
(48 Reject Subjects)

Source of Variation	Sum of Squares	df	Mean Square	F
Between groups	1.266	2	.633	11.26
Within groups	<u>2.532</u>	<u>45</u>	.056	
Total	3.798	47		

$p < .001$

What can we conclude from the findings pertaining to Hypothesis 5? First of all, it seems that there was a general trend for the subjects to become more initiating, more resistant and more assertive during the period, as can be seen from the data concerning the Zero information subjects. A likely explanation for this trend is that although the subjects tended to perceive that their relative power was decreasing, their absolute confidence in their task ability tended to increase over time.

TABLE 14

EFFECTS OF HALF-TIME INFORMATION ON DIRECTIONAL
CHANGES IN DEGREE OF ASSERTIVENESS
(48 Reject Subjects)

	Changes in A's Degree of Assertiveness (from Half ₁ to Half ₂)		
	Increase	No Change	Decrease
Half-time Information:			
Positive	15	0	1
Zero	12	1	3
Negative	2	0	14

$$\chi^2 = 28.12; p < .001$$

There was no significant difference between the impact of positive information and the impact of no information. The information which evaluated the subjects' performance negatively, however, made a significant difference. After receiving negative information, the subjects' performance was depressed in each of the three categories of power-relevant behavior. These subjects initiated fewer influence attempts, resisted fewer of their partner's suggestions, and became less assertive in their general manner.

From these data we may conclude that Hypotheses 5a, 5b, and 5c were each partially confirmed and partially infirmed. The subjects who received the unfavorable evaluation did, indeed, depress their behavioral output. Yet the subjects who received the favorable information did not significantly add to theirs. At the end of this chapter, an explanation for

this finding will be offered in terms of the priority of other kinds of information that these subjects were receiving simultaneously.

Correspondence between Perception
and Behavior

Hypothesis 6. A's manifestations of high power behavior will vary directly with his perceived relative power.

A first test of this hypothesis is to examine the correlations between the subjects' perceived relative power and their behavior during the period of interaction. Table 15 presents the average rank-order correlations between the subjects' perceptions of relative power and their respective behavioral output.

TABLE 15
RELATION BETWEEN PERCEIVED RELATIVE POWER
AND BEHAVIORAL OUTPUT

	Average Rho	N	p
Perceived relative power as correlated with:			
Number of influence attempts	.55	48	.01
Number of resistances	.48	48	.01
Degree of assertiveness	.51	48	.01

We can see from Table 15 that on the average there was a moderately high correlation between the subjects' perceived relative power and their corresponding power-relevant behavior.

The correlations in Table 15, however, refer to the power perceptions and behavior as averaged over the entire period. In order to examine each of the subsidiary hypotheses, we shall need to compare the subjects' changes in average perceived relative power from one part to another part of the period. Thus we must ask the following question. When perception changed from one part of the period to another part, did behavior exhibit a corresponding shift?

In order to test the three subsidiary hypotheses about the changes in the subjects' perceptions as related to changes in their various modes of behavior, we can compare the corresponding variations from the second quarter to the fourth quarter of the period. That is, we may see (1) how their average perceived own power changed from trials 7-12 to trials 19-24, and (2) in which direction their behavior changed from trials 7-12 to trials 19-24.

Hypothesis 6a. The frequency of A's influence attempts on B will vary directly with A's perceived relative power.

Considering the relatively small number of subjects, Hypothesis 6a seems adequately confirmed. Only seven times in a hundred could we expect the degree of correspondence shown by the data in Table 16 to occur by chance. If we look at the data in the four corner cells in Table 16, it is evident that there were almost half as many subjects whose behavioral changes varied negatively, as there were subjects whose behavioral changes varied positively with their perceptual changes. It

would appear that a number of other situational and personality factors exert an effect on these changes.

TABLE 16
RELATION BETWEEN PERCEPTUAL AND BEHAVIORAL CHANGES
(Changes in Number of Influence Attempts)
(48 Reject Subjects)

	Changes in Perceived Relative Power (from 2nd to 4th quarter)		
	Increase (n = 17)	No Change (n = 7)	Decrease (n = 24)
Changes in Number of Influence Attempts:			
Increase (n = 21)	10	3	8
No Change (n = 6)	4	1	1
Decrease (n = 21)	3	3	15

$$\chi^2 = 8.91; p < .07$$

Hypothesis 6b. The frequency of A's resistance to B's influence attempts will vary directly with A's perceived relative power.

The data for Hypothesis 6b indicate that the number of subjects' resistances also tended to vary in line with their estimates of their relative power.

Hypothesis 6c. A's degree of assertiveness toward B will vary directly with A's perceived relative power.

TABLE 17

RELATION BETWEEN PERCEPTUAL AND BEHAVIORAL CHANGES
(Changes in Number of Resistances)
(48 Reject Subjects)

	Changes in Perceived Relative Power (from 2nd to 4th quarter)		
	Increase (n = 17)	No Change (n = 7)	Decrease (n = 24)
Changes in Number of Resistances:			
Increase (n = 19)	11	3	5
No Change (n = 12)	4	2	6
Decrease (n = 17)	2	2	13
$\chi^2 = 10.12; p < .05$			

TABLE 18

RELATION BETWEEN PERCEPTUAL AND BEHAVIORAL CHANGES
(Changes in Degree of Assertiveness)
(48 Reject Subjects)

	Changes in Perceived Relative Power (from 2nd to 4th quarter)		
	Increase (n = 17)	No Change (n = 7)	Decrease (n = 24)
Changes in Degree of Assertiveness:			
Increase (n = 28)	17	2	9
No Change (n = 1)	0	1	0
Decrease (n = 19)	0	4	15
$\chi^2 = 20.06; p < .001$			

Hypothesis 6c appears to be more strikingly confirmed than either of the previous two hypotheses. Not a single subject who believed that his relative power had increased between the second and the fourth quarter decreased his respective assertiveness toward his partner. And although there was a general tendency for subjects to become more assertive over time, most of the subjects who saw their relative power as decreasing also decreased their assertiveness.

We may pause for a moment to look at all the data relevant to Hypothesis 6. When we do so, we see that there was a significant correlation between the subjects' perceptions of their average relative power and the extent to which they engaged in behavior indicative of their power. This finding is merely corroborative of the results obtained by previous investigators (24, 25). In addition, however, we may note that over the short interval of about half an hour, subjects varied their output of power-relevant behavior. This finding indicates that, comparing successive twelve-minute time units, over a continuous period of interaction among a number of people one can find a noticeable correspondence between the readjustments in their perceptions and in their behavior toward each other.

The feedback orientation toward social interaction, which was adopted at the beginning of this study, proposed that the individual's perceptions at any given moment will determine his subsequent behavioral output. This feedback approach also implied that such perceptions will themselves be subject to

continuous modification by the input of information received from the social environment. Within the limited framework of this study, it may be attempted to shed further light upon this fundamental proposition. With this effort in mind, Hypothesis 7 was stated previously.

Hypothesis 7. Changes in A's perceived relative power will more often precede, than be preceded by changes in his power behavior.

When this hypothesis was set up, it was not expected that it would be possible to prove an irreversible cause-and-effect relationship between perception and behavior. In any total sense, perception and behavior must be considered to occur simultaneously, and it is therefore unlikely that either will ever be considered the ultimate cause for the other.

It is possible, however, to examine the relatively microscopic fluctuations that took place in a subject's perception and behavior from trial to trial,¹ and to examine their influence upon each other. For any given pair of successive trials, between which a subject's power perception had changed; did the subject's immediately following power behavior change in the same, in neither, or in the opposite direction? For any pair of successive trials during which his power behavior changed upward or downward; did his immediately following perceptions increase, stay the same, or decrease?

No subject's successive reactions to perceptual or be-

¹For these comparisons, as for all others involving behavioral output, only the fourteen critical trials are considered.

havioral changes were independent from one another. In other words, it cannot be assumed that a subject's reactions on one trial were unassociated with his reactions on other trials in the sequence. For statistical purposes, therefore, the data for each subject can only be counted once. No matter how many times a given subject's behavioral reactions corresponded to his perceptual changes -- or vice versa -- he can only be counted as a single case in the sample. Table 19 lists the number of subjects whose perceptual changes from trial to trial were followed either by corresponding, by non-corresponding, or by negatively corresponding changes in their behavior.

TABLE 19
PERCEPTUAL CHANGES AS THEY WERE FOLLOWED
BY IMMEDIATE BEHAVIORAL CHANGES
(48 Reject Subjects)

	Number of Subjects Whose Behavioral Changes Predominantly Followed Their Perceptual Changes from Trial to Trial in....			
	Same direction	Neither direction	Opposite direction	(by sign test) p
Influence attempts	14	10	24	Not signif.
Assertiveness	14	6	28	.25

In Table 20 similar data are presented for the behavioral determination of perceptual changes.

What can be learned from the data in Tables 19 and 20? To begin with, it appears from this test that Hypothesis 7 must be rejected. There is no evidence that perceptual changes

from trial to trial were followed by corresponding behavioral changes. There is even some contrary evidence -- not reaching an adequate level of significance ($p < .25$) -- that perceptual changes from trial to trial tended to be followed by behavioral changes in the opposite direction. (This latter finding might be taken to suggest that when subjects perceived their power as increasing, they were inclined to relax their behavioral output; or that when they saw their power decreasing, they were inclined to increase their output.)

TABLE 20
BEHAVIORAL CHANGES AS THEY WERE FOLLOWED
BY IMMEDIATE PERCEPTUAL CHANGES
(48 Reject Subjects)

	Number of Subjects Whose Perceptual Changes Predominantly Followed Their Behavioral Changes from Trial to Trial.....			
	Same direction	Neither direction	Opposite direction	(by sign test) p
Influence attempts	34	4	10	.01
Assertiveness	32	5	11	.01

The data presented in Table 20 are also contradictory to Hypothesis 7. Whereas perceptual changes seemed to be ineffective for changing behavior, behavioral changes appear to have been highly effective for producing subsequent readjustments in the subjects' perceptions. The subjects' perceptual estimates of their relative power seem to have been rather sensitive to relatively microscopic changes in their behavior.

How should we interpret the refutation of Hypothesis 7? First of all, it should be clear that Hypothesis 7 was refuted only with respect to the relatively small trial-to-trial fluctuations that occurred in the perceptual estimates. Perceptual changes other than those measured may still have actively influenced the changes in the subjects' trial-to-trial behavior.

One explanation for the falsity of Hypothesis 7 might be that the indices for the behavioral changes were not sufficiently sensitive for recording the "real" changes in behavior that occurred. This explanation is probably incorrect, because the subjects' behavioral changes themselves were effective for determining the perceptual changes (as shown in Table 20).

A second explanation might be suggested for the finding. It could be proposed that the perceptual changes were in fact much less important than certain social environmental changes for determining the behavioral fluctuations. Could not the behavior of the other group member be an important variable for changing the subjects' behavior? Such an explanation, however, would be inadequate for the present experiment. The partner's behavior was controlled so as to minimize all but the crucial experimental variations, and the subjects were given considerable opportunity to vary their behavior.

A third explanation appears the most tenable one. To begin with, it is held that A's social perceptions did guide his behavior, and that changes in the structuring of his perceptions did determine changes in his behavior. From the sup-

port that the data give to Hypotheses 4 and 5, for example, we have at least some evidence that A's perceptions of his total relationship with B determined his behavior toward B. The difficulty comes in trying to ascertain which of A's perceptions were instrumental for determining his behavior.

To continue this explanation, in retrospect it seems that the changes reported in A's estimates from trial to trial were not important for determining changes in his behavior. It would seem that the perceptions which did guide A's behavior were his more global perceptions of his potential relationship to B. It is unlikely that these perceptions were fully measured by the subjects' periodic estimates, or that these global perceptions changed each time the estimates changed. The fluctuations in the estimates may be considered somewhat like sampling variations from the subjects' more total perceptions. As such, the estimates varied in response to minor changes that occurred from trial to trial in A's and B's behavior.

It would appear that for significant changes to occur in the subjects' behavioral output, there would have to be some changes in the subjects' global perceptions of the relationship. Such global changes would consist of some major restructuring of the perceptions of the total relationship. Such restructurings could occur in two ways. Either they could result from some sudden major change in the available information, or from a gradual cumulation of minor events which all yield similar information.

The third explanation may be summarized as follows. Firstly, in order for perceptual changes to be significantly reflected in social behavior, it appears that there has to be some global perceptual restructuring of the situation. Secondly, changes in the subjects' periodic estimates of their perceived own power did not necessarily represent such changes in their global perceptions. Instead it seems that the estimates were more a function of immediately previous changes in the partners' interaction.

This explanation is consistent with many of the facts that we already know about behavioral changes in general. For example, it is known from studies of racial tolerance that it is easier to produce changes in the indication of tolerant attitudes than it is to produce changes in tolerant behavior. In psychotherapy, perhaps more strikingly, it is comparatively easy for the therapeutic interaction to arouse minor changes in the patient's self-perceptions; but important behavioral changes are unlikely to occur until there has been some major restructuring of these perceptions. One can find other important examples where perceptual changes need to build up to some critical point before there is any significant evidence of a behavioral change.

Stabilization of Perception

Hypothesis 8. There will be greater fluctuations in A's perception of own power during the early stages than during the later

stages of the interaction period.

Tables 21 and 22 present two supplementary kinds of evidence for this hypothesis. In the first of these tables, the size of the fluctuations during the first half is compared with the size of these fluctuations during the second half. The second table compares the number of the changes in A's perceptual estimates from the first to the second half. According to Hypothesis 8, both the size and the number of the fluctuations should be greater during the first half than during the second half of the period.

TABLE 21

COMPARATIVE SIZE OF PERCEPTUAL FLUCTUATIONS
DURING FIRST AND SECOND HALVES OF
INTERACTION PERIOD

Variance of A's Perceived Relative Power				
Greater in first half	Same in first half	Less in first half	N	(by sign test) p
51	3	10	64	.001

TABLE 22

COMPARATIVE NUMBER OF PERCEPTUAL CHANGES DURING
FIRST AND SECOND HALVES OF INTERACTION PERIOD

Mean Number of Changes in A's Perceived Relative Power		Difference between means	t	N	p
first half	second half				
7.4	5.9	1.5	2.59	64	.01

Both tables present substantial evidence that the fluctuations in A's perceptual estimates tended to be greater during the earlier part of the period. It may be seen in Table 21 that the size of the variance of A's estimates decreased from the first to the second half for fifty-one of the sixty-four subjects. Table 22 reports that the number of revisions in the estimates also decreased significantly from the first half to the second half of the session.

It is not surprising that the subjects' perceptual estimates became less subject to change during the second half of the session. The finding would confirm the fact that the experimental task provided a relatively constant situation for the subjects. Thus, the further they became acquainted with their partner, the less the subjects found it necessary to make revisions in their perceptions of their relationship with him. Such an increasing stability in social perceptions over time is probably found only when there is a minimum of new information introduced into a social relationship.

Summary of Results

The majority of the hypotheses were supported at satisfactory levels of confidence, although there was a partial lack of support for Hypothesis 5 and a complete contradiction of Hypothesis 7. The following summary reports the findings in the order they were presented:

1. The subjects' perceived relative power varied directly with the initial information they received concerning

their probable potentiality for contributing to the group task. In other words, subjects whose partner initially was self-deprecatory continued to perceive their relative power as higher than did subjects whose partner initially expressed confidence in his competence ($p < .04$).

2. The subjects' perceived relative power varied directly with the degree to which their influence attempts were accepted by their partner. Those subjects whose ideas were predominantly accepted perceived their power as much higher than did those subjects whose ideas were predominantly rejected ($p < .001$).

It was also found that, regardless of whether they perceived their power to be above or below the point of equality, subjects tended to change their perceptual estimates toward this point after trials in which both partners had contributed the same to the group task ($p < .01$).

3. The subjects' perceived relative power varied directly with the favorableness of the half-time evaluation of their previous contribution toward the group's task. There was a significant difference in the effects of the Positive and the Negative half-time information upon the subjects' subsequent perceptions ($p < .01$).

4. Comparing the effects of initial Superior and initial Inferior information upon the subjects' behavior during the interaction period; it was found that, after Superior information, subjects (a) initiated a larger number of influence attempts ($p < .07$), (b) resisted their partner's influence attempts more

frequently ($p < .07$), and (c) displayed greater assertiveness toward their partner ($p < .07$).

Significant intercorrelations were found among the different indices of power-relevant behavior (product-moment r 's ranged from .60 to .62).

5. Hypothesis 5 was only partially confirmed. Although unfavorable information given to the subjects about their previous contribution to the group's task tended to depress their subsequent behavior, there was no significant difference between the effects of giving the subjects favorable or zero information at the midpoint of the period. The effects of Positive and Zero information differed significantly from those of Negative information, in increasing the subjects' behavioral output from the first to the second half of the period: (a) influence attempts ($p < .01$), (b) resistances ($p < .02$), and (c) assertiveness ($p < .001$).

6. There was a significant correspondence between subjects' perceptions of their relative power and their accompanying behavior. Average rank-order correlations -- between perceived relative power and number of influence attempts, number of resistances, and degree of assertiveness -- were .55, .48, and .51, respectively.

When subjects' perceptions of their relative power changed from the second quarter to the fourth quarter of the period, their behavioral output tended to change correspondingly: (a) number of influence attempts ($p < .07$), (b) number of resistances ($p < .05$), and (c) degree of assertiveness

($p < .001$).

7. No support was found for Hypothesis 7. Trial-to-trial changes in the subjects' perceptual estimates were not followed by corresponding fluctuations in their behavior (influence attempts or assertiveness). On the other hand, fluctuations in the subjects' perceptual estimates from trial to trial were found to be fairly sensitive to the immediately prior changes in their behavioral output (influence attempts, $p < .01$; assertiveness, $p < .01$).

8. The fluctuations in the subjects' periodic perceptual estimates were found to be both larger and more numerous during the earlier stages than during the later stages of the interaction period ($p < .01$).

Discussion

The findings of this study can be considered most coherently under four general headings.

Intercorrelation of Behavioral and Perceptual Indices

It was found that there were fairly high correlations among the basic behavioral indices. The subjects' number of influence attempts, their resistances to the partner, and their degree of assertiveness all varied together to a significant degree.

These high correlations were partly the result of the particular situation that was chosen for the experimental task. With respect to some parts of the activity the partners had a

cooperative relationship toward one another. That is, presumably they both benefited from the best possible mutual decisions. However, with respect to the decision-making procedure and the periodic estimation of their respective influence, the partners were unquestionably in competition with one another. Thus, in order to actualize his resources in the service of the group and to make the major share of the contributions, each partner was forced not merely to attempt to influence the other member, but he also had to resist the other's influence attempts in return. Furthermore, if an individual felt strongly enough to keep up a large number of influence attempts and resistances toward his partner, it was only consistent that he should exhibit considerable assertiveness. It would seem, therefore, that the high intercorrelations among these behavioral indices are characteristic of situations of competition and conflicting goals (cf. Deutsch, 9). In differently structured situations one need not necessarily expect such high correlations between, for example, frequency of influence attempts and frequency of resistances.

The findings that the behavioral indices were intercorrelated, and that they correlated with the perceptual estimates, were necessary for validating these measures. Thus they could be used for describing the changes in the subjects' participation in the interpersonal relationship.

Correspondence between Perception and Behavior

Two kinds of correspondences were studied -- correspon-

dences between gross fluctuations and correspondences between minute fluctuations.

With respect to the gross fluctuations, it was found that shifts in perceptions from the second to the fourth quarter of the period tended to be paralleled by similar shifts in behavior. This finding lends support to a general feedback assumption that there are continual modifications and readjustments during the process of social interaction.

With respect to the minute fluctuations, it was found that behavioral changes from trial to trial were likely to be followed by changes in the immediately following estimates of perceived relative power. These estimates appeared to be rather sensitive to variations in input. It did not appear, however, that the variations of the perceptual estimates were similarly followed by immediate behavioral readjustments.

If one intends to employ a feedback approach to the study of the phenomena of social interaction, it would seem necessary to spend a large amount of time for investigating the kind of perceptual reorganization that is necessary for evoking behavioral changes. It was noted earlier in this chapter that a cumulation of the kinds of minor perceptual changes that occurred in this experiment from trial to trial may eventually effect a significant restructuring in the behavioral output. This is a mere speculation which is stated as suggestive for future research.

Stabilization of Developing Social Perceptions

It was found at a high level of confidence that the perceptual estimates fluctuated relatively more during the first half of the experimental session than during the second half of the session. While not especially surprising, this finding implies that as a power relationship develops over a period of time, it requires a progressively stronger input of contradictory information in order to revise the growing perceptions of the parties to the relationship.

Determinants of Interpersonal Perception and Behavior

Three kinds of information were introduced with the aim of structuring the subjects' developing perceptions. All these kinds were found to be significant determinants of the interaction to the end of the experimental session. Even the information introduced at the very start of the session still had a measurable effect on the subjects at the end of the period.

It will be remembered that the first kind of information was provided by the experimental partner, who varied the degree of experience or ignorance that he attributed to himself. This information was given to the subject at the start of the session, before he had had any behavioral contact with his partner.

The literature on social perception abounds with studies treating of the formation of impressions concerning other peo-

ple (cf. Bruner and Tagiuri, 6). All but one of these studies, though, have been confined to the impressions that individuals form after having had contact only with photographs or with verbal descriptions of other people. The only published study directed at the formation of impressions during personal contact is that by Kelley (15). Kelley informed groups of subjects about an instructor whom they were to meet. In his description of the instructor, he mentioned to half the subjects that the instructor was "warm" and to the other half that he was "cold." After meeting the instructor, the two groups of subjects differed considerably in their impressions of him.

The results of the present experiment may be considered to extend Kelley's findings. Kelley's subjects had considerably less opportunity for interacting with the instructor than the subjects in this experiment had for interacting with their experimental partner. Moreover, in this study the subjects' perceptions of the relationship with their partner were investigated. Nevertheless, if we compare subjects in this experiment who were subsequently exposed to the objectively identical behavior of their partner, we find that the initial information exerted a persisting effect upon their structuring of the relationship.

The effects of the initial information, however, were small when compared to the effects of the second kind of information that was provided for the subject. Regardless of whether the subject initially had received "superior" or "inferior" information, the actual behavior of his partner became more im-

portant to him in determining his perceptions. Depending upon whether his partner accepted or rejected his ideas, the average subject's perceptions of his power moved steadily up or down.

We may refer to our earlier discussion of resource potential and resource actualization. In those terms, it may be conceived that the first type of information the subject received referred to the members' comparative potential resources, whereas the second type of information gave him comparative evidence concerning the members' actual resources. The continuous feedback of latter type of information was certainly effective in overriding the effects of the former type.

One finding has not been emphasized previously. Because of the nature of the experimental task, the accepted subjects received less challenge from the situation than the rejected subjects. Since the experimental partner was supposed to accept the majority of the subjects' influence attempts in the "accept" condition, he was constrained in the number of influence attempts that he could initiate himself. Thus the sixteen accepted subjects received less behavioral stimulation from their partner, and this fact limited the degree to which they themselves could give behavioral evidence of their rising power perceptions. Since their partner evidenced relatively few resources, it was less necessary and also less possible for these subjects to fully actualize their own resources. Although their perceptions of relative power could rise in this situation, the degree of their absolute behavioral output was not necessarily enhanced.

In this connection, it might be noted that in studies by Jack (12) and Page (30) on ascendancy training, and by Keister (14) on failure-tolerance training, the subjects received more than mere acceptance or support from the trainers. In order to improve the confidence of the subjects in the face of social conflicts and of difficult tasks, the trainers provided both support and challenge to the subjects. If our aim were to enhance subjects' more general power perceptions and power behavior, it would appear necessary to give them experiences where they may see an increase in both their relative power and in their absolute ability for making their resources available.

The information introduced at the halfway mark was the third and final determinant of the subjects' changing perceptions and behavior. It was found that the "negative" information acted as a rather effective depressant on the subjects' subsequent interaction. On the other hand, the "positive" information did not appear to act as a significant stimulant for the subjects' perceptions or behavior.

The following interpretation may be offered for this finding. To begin with, it should be remembered that only the data for the rejected subjects contributed to the finding. Therefore, it appears that when the experimenter's half-time evaluation of a subject's previous contributions was "negative," this information reinforced the information already given to the subject by his partner's continual rejection of his ideas. Thus the negative information only tended to further depress his already descending perceptions. On the other hand, if a

rejected subject received "positive" information at the middle of the session, this contradicted the information that the partner's previous rejections had imparted. But it would seem that the subject would discount the importance of such information when his partner continued to reject his influence attempts even after the experimenter had clearly said that the subject's ideas had been more often correct.

The above interpretation could be empirically tested if the half-time information given to the accepted subjects had also been varied. In that case, it would be hypothesized that the "positive" information would significantly raise, but that the "negative" information would not significantly lower the subjects' perceptual estimates during the second half. Presumably the trial-to-trial feedback from the partner's accepting behavior should have the opposite effect from the one described above. (Limited data from the pretests, where "negative" information was, indeed, given to two accepted subjects, indicate the probable validity of the interpretation offered here.)

In general, therefore, it may be concluded that the partner's accepting or rejecting behavior was the most important information that the situation provided for guiding the subjects' perceptions and their behavior. The continuous feedback of the partner's actual behavior acted as a more important determinant than either the initial or the half-time information that they received.

CHAPTER V

SUMMARY AND CONCLUSIONS

This study was initiated in order to investigate an individual's perceptions and behavior regarding the development of his power relationship with another person. In focusing on these phenomena, a feedback orientation was adopted for viewing the process of social interaction. This meant that the sequential changes in the individual's power perceptions and behavior became the object of investigation.

A theory was outlined in which it was proposed that an individual's social power in informal groups is based on his ability to actualize important resources. It was considered that the individual actualizes his resources when he converts his personal properties or attributes with the effect of satisfying or depriving other group members' needs. Thus it was posited that the development of perceptions concerning the power of different group members is dependent upon the demonstration of their respective abilities to make available or to withhold resources relevant to the group's functioning. A number of hypotheses were stated in consequence of this formulation.

A laboratory experiment was conducted in order to test the hypotheses. Sixty-four subjects, each partnered with a

trained experimental assistant, participated in a series of twenty-four decision-making episodes. Ostensibly, both partners were subjects who were helping to develop a new version of a city planning aptitude test. Since the behavior of the assistant was carefully prearranged, the outcomes of the decision-making trials were controlled. Data were gathered for comparing the changes in the subjects' perceptions and behavior over the entire length of the experimental session. The subjects' estimates of their relative power were obtained before and after each of the trials, and their behavior during each trial was systematically observed. Thus it became possible to trace the various fluctuations in the subjects' perceptions and in their behavior.

Three experimental manipulations were introduced in the different kinds of information to which subjects were exposed. There were variations in (a) the information they received initially about the partner's probable task ability, in (b) the degree of acceptance or rejection the partner gave to their ideas during the actual behavioral sequence, and in (c) the favorableness of the evaluation of their relative performance during the first half of the session, given by the observer after the twelfth trial.

Correspondences were found to exist between the subjects' perceptions of their relative power and their behavior toward the partner. Perceptions and behavior tended to vary together over the length of the period. Fluctuations in the subjects' perceptions were inclined to diminish over time.

Further, each of the manipulations in the information was discovered to exercise a significant effect on the subjects' interaction with their partner. The information conveyed by the behavior of the partner was found to exert the most important effect, superseding the effects of the other kinds of information. Subjects whose influence attempts were accepted increased their perceptions of own power, whereas those who were rejected decreased theirs. While not as important as the partner's behavior, the other two kinds of information produced a statistically significant effect on the subjects' perceptions and behavior to the end of the period. Finally, it was found that whereas fluctuations in the subjects' behavior were immediately followed by changes in their estimates of relative power, these estimates did not significantly determine the immediately subsequent behavior.

Some Implications of the Study

Conceptual Implications

At the beginning of this report, a feedback approach toward the understanding of social interaction was outlined. Three general variables -- information, channels, and screening devices -- were proposed as the necessary components of any feedback system. Information was considered to be the content of the interaction between people, channels to be the physical or psychological interconnections, and screening devices to be the intervening functions responsible for transforming input into output.

In this study, the major emphasis was placed upon the nature of the information that passed between people during the formation and maintenance of a power relationship. The input of information was controlled, and its output was systematically measured during an extended interaction sequence. The impact of the input on the individual's screening devices was measured by obtaining periodic estimates of his perceived relative power. Thus it was possible to construct a series of developmental curves which traced the changes in the individual's perceptions during the interaction period. These curves demonstrated that the information input tended to be closely reflected by the individual's perceptual changes. The information input, however, was not significantly reflected by immediate changes in the individual's output. Perhaps the explanation for this lack of immediate change was that such input was largely screened out by the action of the individual's intervening psychological processes. In order to understand the significance of the developmental curves, and of the actions of the screening processes, it would seem desirable to conduct other studies. In such studies it would be possible to further vary the sequence of the input and the content of the information communicated. It would also be useful to know more about the nature of the screening action of the various perceptual, cognitive and motivational processes.

In this study we did not use refined concepts of information or of input and output. It is believed, however,

that if the concept of feedback is to be eventually integrated into a wider body of social psychological theory, its component elements must be specified more than has yet been done. The work of Shannon and Weaver (37a), Miller (29a), and others who have delineated the information concept; and the work of Bavelas (3a) and those who have applied the channel concept to communication patterns, will need to be extended to a more global consideration of group life. If the conceptual interrelations between the variables of information, channels, and screening devices can be expressed with greater rigor, it is believed that the idea of feedback can add considerably to our theories regarding ongoing social processes.

This study also has emphasized the construct of social power. Social power has become important to social psychologists ever since they came to accentuate the systematic understanding of groups. When groups are considered with respect to decision-making (cf. Strodbeck, 38a) or the allocation of resources (cf. Parsons, 30a), it becomes important to know how influence is distributed among the members.

The theory outlined here, with reference to informal groups, has grounded the concept of social power upon the potentiality of a group member for making available or withholding resources which are important for other group members. The term resource potential, which was thus introduced, was considered to be an interpersonal construct. On the one hand, it was linked to the personal properties of the individual, and on the other hand, it was tied to the social and situa-

tional needs confronting the group member. The concept of "actualization-utilization balance" (AUB) was also introduced. It was defined as the balance between the giving to and the taking from other persons of needed resources.

In the experiment reported here, the content of the information was conceived in terms of actual and potential resources. At the beginning of the session, subjects were differentially informed of the resource potential of their partner with respect to the task that subject and partner were to perform. Later, the subjects received continual information from the interaction concerning the actual resources that the partner contributed to the performance. Finally, at the middle of the period, subjects again were differentially informed concerning the apparent worth of the resources contributed by subject and partner. The results demonstrated that all three types of information had a meaningful and persistent effect on the subjects' perceptions of their relative power. These perceptions were differentially affected by varying the evidence concerning the partner's potential and actual resources. The partner's concrete actualization, or lack thereof, however, provided much more important evidence regarding comparative power than any other kind of information introduced.

The experimental interaction occurred in groups whose resource interdependence was high. That is, in order for the group to reach decisions, one or both members had to utilize the other's resources.

It is reported that near the end of his career Kurt Lewin once remarked that psychology has had "too much Freud, and too little Marx." One of the fundamental concepts of the Lewinian system, it must be remembered, is the concept of force. In physics, "force" is defined as a product of motion times mass. By his remark, therefore, Lewin meant that in psychology there has been a much greater emphasis on motivational or motion constructs than there has been on property or mass constructs. Lewin's insight would appear to have important implications. In line with his observation, for example, it may be noted that most studies of the interdependence of group members have defined interdependence in terms of needs or goals. It would seem that the concepts of properties and resources should be equally relevant to social interdependence -- that is, without the potential presence of resources, needs and goals become almost meaningless.

Methodological Implications

The study reported here employed the procedure of a "controlled interaction sequence" for studying interpersonal behavior. In examining the interaction between two persons, the effects on the subjects of their exposure to various cues were compared by controlling one half of the interaction pattern.

Since the experiment focused on the subjects' perceptions of their total relationship with their partner, however, it was not possible to control the partner's behavior too

inflexibly. Only the crucial experimental manipulations were controlled rigidly. The remainder of the partner's behavior was prescribed within certain limits -- i.e., beyond his prearranged acceptances or rejections of the subjects' ideas, he also gave them systematic opportunities to initiate influence attempts while making his own responses appear realistic and unconstrained. From an independent check of the observational data, it was found that, at least between groups of subjects within each of the "accept" and "reject" conditions, the partner's behavior did not show significant fluctuations. Nevertheless, these controls were not entirely satisfactory, because the partner's behavior necessarily varied among subjects who made many and subjects who made few influence attempts. If similar interaction sequences are to be studied in the future, it would be desirable to find improved ways of controlling the partner's behavior.

An important feature of the experimental methodology was the "breaking into the feedback circuit" by making frequent sequential measurements of the subjects' ongoing perceptions. (In process, though not in content, these measurements were somewhat similar to those that have been used in studies on the level of aspiration.) These measurements required that the interactions be interrupted at approximate two-minute intervals, at which time the subject -- and ostensibly his partner -- would privately indicate his perceptions of his share of the group's influence. Despite the fact that an acceptable rationale was provided for making these periodic

judgments, one may wonder what effect such measurements have on the social process. Certainly, it would appear that the subjects could hardly avoid becoming more aware of their power relationship with the other person. Their sensitivity to this aspect seems to be indicated by the rather large number of reported changes. This seems to be the familiar problem of social scientific measurement contaminating the very process it aims to measure. With reference to the obtaining of subjective reports concerning the input of social interaction, this writer has no ready solutions to offer.

What are the possibilities for the use of this kind of sequential technique for other research problems in group dynamics? A time-sequential interactional method would seem to be applicable to the study of the degree of transfer of social power from one situation to another. That is, if an individual has a given amount of power in one situation, how do his perceptions and his behavior change when he transfers to a new situation? The technique might be applicable to a more controlled study of interpersonal schismogenesis. That is, how do interpersonal cleavages originate -- how rapidly, from what kinds of information, and in what sorts of situations will such cleavages be produced? Finally, one might investigate the differential predictions of the "continuity" and the "discontinuity" theories of learning in the context of human social situations. What social learning and behavioral change is the product of continuous minor revisions in perceptions, and what change is the result of apparently discontinuous restructur-

ing of the individual's perceptions?

Problems for Future Research

Effects of Personality Determinants

The effects of the subjects' personalities on their perceptual and behavioral changes were exposed only to exploratory study. No significant correlations were found, presumably because of measurement inadequacies. There is, however, much reason to believe that individual differences in personality are important in the determination and maintenance of interpersonal perception and behavior patterns. For example, individuals vary widely in the magnitude of their perceptual and behavioral fluctuations during the development of social relationships.

From general personality theory, we know that an individual's personality provides him with many mechanisms to act as screening devices against a too rapid influence of environmental stimuli. For example, drives toward self-maintenance and toward self-consistency have been postulated by different authors (18a, 3b). The strength of such drives would be expected to vary among different persons, who would, therefore, be affected differentially by environmentally determined changes. Also, it is known from studies of level of aspiration phenomena that persons are differentially affected by the potential and by the actual aspects of task performance. Some persons are inclined to maintain relatively steady levels of aspiration and to view their potentialities within

a frame that is larger than their present situation, whereas others tend to fluctuate in their self-perceptions as the result of minor ups and downs of their immediate performance. Brownfain (4) has indicated that such differences are probably also linked to variations among persons in the stability of their self-esteem.

To a certain extent, the feedback approach adopted here represents an "other-directed" model of social interaction (cf. Riesman, 34). To the degree that individuals vary along a hypothetical continuum of "inner-other directedness," they would also be expected to vary in their readiness to alter their self-perceptions and behavior as the result of information from the behavior of others.

From the experimenter's anecdotal observations in the laboratory itself, it appeared that those subjects who seemed most insecure in the experimental situation tended either to show extremely wide or extremely narrow fluctuations in their perceptual estimates. Some subjects varied as much as sixty or more percentage points, whereas others varied less than five or ten points in their periodic judgments. A problem for future research, therefore, would be to study the degree to which personality differences affect fluctuations during the formation and maintenance of social relationships.

Resource Balances in Social Groups

The concepts of actualization of own resources and utilization of others' resources have been brought into the

discussion at various places. These concepts have been used to refer to the twin processes which make social interaction indispensable for individuals -- giving things to and taking things from other persons. To the degree that two or more persons have a give-and-take relationship toward one another, they are members of a mutual group.

It has been stated that each member of a social group demonstrates to the others his actualization-utilization balance. On the basis of his actualization of resources in the past, he is seen to have potentiality for making available and withholding resources in the future. On the basis of his utilization of others' resources in the past, he is perceived to have the probability of desiring or fearing certain of the others' resources in the future. The perceptions of group members concerning the potential actualization and utilization of resources, by themselves and by others, lay the basis of the distribution of social power in groups.

It would seem interesting to explore the concept of actualization-utilization balance in future theorizing and research. For example, is this balance a generally valid index for describing individuals' membership and participation in social groups? Can groups as total units be conceived usefully in terms of the actualization-utilization balances of their members? Do democratically controlled groups, for example, permit different modes of actualization and utilization than do autocratically controlled groups? What are the implications of conceiving intra- and inter-

group relationships in terms of the group members' interdependent needs or lack of needs for different resources?

In order to ask such questions in a way likely to yield meaningful answers, it appears necessary to specify these concepts further.

APPENDIX A

SEQUENCE OF EXPERIMENTAL PROBLEMS AND DECISION OUTCOMES

The experimental task was described in Chapter III. When the interaction period started, the subject and the experimental assistant successively examined and discussed a series of twenty-four towns. In each town they were to choose one site from three possible ones for the location of a given building or other construction.

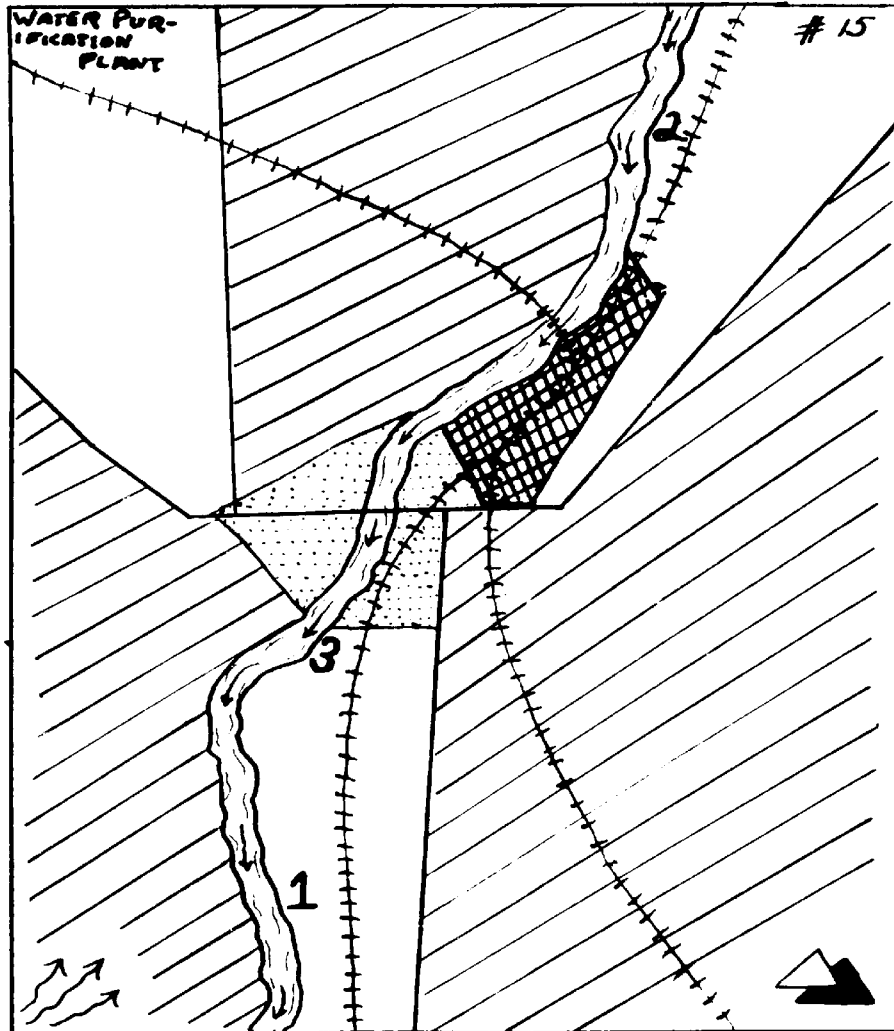
The towns were presented to all subjects in the same order. This order is presented below, together with the prearranged decision-making outcomes. (Four outcomes are conceivable: (a) both partners agree, (b) assistant bows, (c) subject concedes, (d) both disagree.)

<u>Order of the Problems</u>		<u>2 Patterns of Prearranged Outcomes</u>	
<u>Town</u>	<u>Construction to be Planned</u>	<u>Accept</u>	<u>Reject</u>
0.	Airfield	(illustrative example)	
<u>First Half</u>			
1.	Neighborhood park	a	a
2.	Bus station	b	c or d
3.	Sewage plant	b	c or d
4.	Highway department garage	c (or d)	b
5.	Trash dump	b	c or d
6.	Slaughtering and meat packing plant	a	a
7.	Youth center	b	c or d
8.	Supermarket	b	c or d
9.	Fire station	a	a
10.	Fair grounds	b	c or d
11.	Hospital	a	a
12.	Steamship loading pier	b	c or d

<u>Order of the Problems</u>		<u>2 Patterns of Prearranged Outcomes</u>	
<u>Town</u>	<u>Construction to be Planned</u>	<u>Accept</u>	<u>Reject</u>
<u>Second Half</u>			
13.	High school	a	a
14.	Police headquarters	b	c or d
15.	Water purification plant	b	c or d
16.	Drop forge steel plant	c (or d)	b
17.	Memorial park	b	c or d
18.	Athletic stadium	a	a
19.	Neighborhood shopping center	b	c or d
20.	Railroad depot	b	c or d
21.	Junior high school	a	a
22.	City hall	b	c or d
23.	Pottery works	a	a
24.	Elementary school	b	c or d

APPENDIX B

SAMPLE ILLUSTRATION OF A TOWN



- | | |
|---|--|
|  Business |  Main Roads |
|  Industry |  Railroads |
|  Residential |  Wind |
|  Open Area |  North |
|  River | 1, 2, 3 Sites |

APPENDIX C

POST-EXPERIMENTAL QUESTIONNAIRE¹

PLEASE GIVE YOUR REACTIONS BRIEFLY:

1. What did you like about this experience?
2. What did you dislike about this experience?
3. Complete this sentence: "I felt that my partner was _____

4. How did you like your partner -- at beginning? Mark scale
with a 1
at end? Mark scale
with a 2

very much	much	somewhat	little	very little
-----------	------	----------	--------	-------------

5. How would you apply the following adjectives to your partner?

Circle those terms that you think do describe him: XXXX

Cross out those terms that you think do not describe him:

YYYY

Leave blank all the other words:

ZZZZ

strong	weak	friendly	unfriendly
immature	mature	intelligent	unintelligent
sure of self	unsure of self	cold	warm
rejecting	accepting	older than you	younger than you
experienced	inexperienced	yielding	resistant

Add any others you think appropriate: _____

6. Looking back again, how high would you now estimate your percentage of influence for the entire test? _____%
7. Any other comments?

¹The appearance of this page is more condensed than that of the original questionnaire due to use of large type.

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