A LABORATORY STUDY OF
POWER BASE-CONFLICT RELATIONSHIPS--
AS APPLICABLE TO DISTRIBUTION CHANNELS

Dissertation

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

by

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1971

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1971
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dissertation. Further, funds were provided to pay the
laboratory subjects. Thus, this dissertation represents,
in large measure, the completion of the original project.
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CHAPTER I
INTRODUCTION

This introduction chapter gives a brief overview of the setting for the dissertation and then reviews the theoretical literature in greater depth. Hypotheses are developed and the objectives, focus, and scope of the dissertation are stated. The justification for the research is reviewed and a written outline for the remainder of the dissertation is provided.

Background

Marketing scholars have progressed in viewing channels of distribution. Firms in a channel of distribution are no longer viewed as autonomous units on different structural levels. Increasingly, emphasis has shifted to the study of distribution channels as behavioral systems. Each firm has resources of its own, yet is usually dependent to some degree upon other firms for marketing flows from manufacturers to distribution firms and ultimately, to consumers. There is also a dependence of one firm upon another for marketing flows from consumers back through distribution
firms to manufacturers. In a further behavioral context, it is not uncommon for one channel member to impose restrictions on another channel member's actions.

Whenever one member of a system possesses valuable resources needed by another system member, there is necessarily the presence of power, regardless of whether power is used or not. Further, because distribution channels are not perfectly cooperative, there are elements of conflict which are inherent, and whenever power is used, it may beget greater conflict or be used to produce more cooperative relationships.

Setting

A channel of distribution has been defined in many ways in the marketing literature. The most useful definition, in terms of the behavioral context of this dissertation, is the "marketing flow" concept attributed to Vaile, Grether, and Cox.¹ They define a channel of distribution as the combination and sequence of agencies through which moves one or more of the marketing flows. The flows are classified as: physical possession, ownership, promotion, negotiation, financing, risk, ordering, and payment.

Although negotiation is considered a flow in its own right, it is evident that negotiation is often involved in all the other flows. Since the concepts of power and conflict are most visible in the negotiation flow, it follows that power and conflict are intertwined in all the marketing flows.

**Existing Marketing Literature**

Application of the concepts of power and conflict to distribution channels can be traced to Palamountain.\(^2\) He saw that classical economic theory with its pivotal emphasis on price determined by the interaction of conditions controlling supply and demand was inadequate to explain the effects of: (1) legal regulation, (2) rules of business conduct; and (3) conditions of dependency and control in vertical marketing relationships. He concluded that the classical explanation of distribution as a series of markets omits consideration of power\(^3\) and that it is apparent that in the plane of vertical conflict, power relationships are direct, obvious, and important to the extent that the market is imperfect.\(^4\)


\(^{3}\)Ibid., p. 51.

\(^{4}\)Ibid., pp. 52-53.
Between the mid-1960's and the present, there was growing interest by marketing scholars about the behavioral aspects of channels of distribution. A book of readings edited by Stern drew together much of the marketing literature concerned with the behavioral dimensions of distribution channels.\(^5\) Stern co-authored many articles in the book, using organization theory as the primary frame of reference. Stern also advised two doctoral dissertations dealing with the behavioral concepts of power\(^6\) and conflict.\(^7\)

Based upon the observations and research of the original work by Palamountain and continued current research, one can say with certainty that resources in distribution channels are divided among the members, channel members are dependent upon each other in varying degrees, and that elements of power and conflict exist. Thus, in order to better understand distribution channels, it is


\(^7\)Larry J. Rosenberg, "An Empirical Examination of the Causes, Levels, and Consequences of Conflict in the Distribution Channel," unpublished Ph.D. dissertation (Columbus, Ohio: The Ohio State University, 1969).
necessary to better understand the behavioral dimensions of power and conflict.

**Power**

Power has been defined in many ways and Palamountain stated:

At best, power is an elusive concept. Nowhere is the imprecision of the social sciences, and the complexity of their subject matter, better demonstrated than in the difficulty involved in defining such an obvious and basic factor as power. It is not my purpose, nor, alas, is it within my competence, to produce a full definition and classification of power. For the purposes of this study, however, the broad category of power, or social power, to differentiate it from control over external nature, always involves control over other men. This means that power is always a two-sided human relationship in which both consent and constraint are important, although variable elements.8

One of the first scholars to carefully describe power and related topics was Max Weber.9 He saw power as the probability that one actor within a social relationship would be able to carry out his own will despite resistance, regardless of the basis on which this probability rests. To Weber, imperative control is the probability that a command with a specific content will be obeyed by a given

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8Palamountain, op. cit., p. 52.

group of persons. Discipline is the probability that by virtue of habituation a command will receive prompt and automatic obedience in stereotyped forms, on the part of a given group of persons. Weber concluded that the concept of power is highly comprehensible from the point of view of sociology. All conceivable qualities of a person and all conceivable combinations of circumstances may put him in a position to impose his will in a given situation. He further concluded that the sociological concept of imperative control is more precise and means the probability that a command will be obeyed.

A political scientist, Robert Dahl, utilized a definition of power similar to Weber's. Dahl defined power as the ability of O to make P do what P would not have otherwise done. P can perform some action x on occasions when O exerts power and on occasions when O does not exert power. Thus, power is measured by the probability that P performs x when O exerts power minus the probability that P would perform x by himself without any intervention from O.

Katz and Kahn take a somewhat different approach and

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10 Robert A. Dahl, "The Concept of Power," Behavioral Science, II (1957), pp. 201-223. (Many behavioral scientists represent power initiators as the symbol O and power recipients as the symbol P. This O-P convention is used, although a priori, O does not necessarily have more power than P.)
consider influence as their basic concept. They distinguish power from influence in that power refers to potential acts, rather than transactions actually occurring. It is the capacity to exert influence.

Although Dahl felt that some students of power feel that the whole study is a "bottomless swamp," Cartwright felt that:

The basic problem is how to keep from getting lost among masses of discrete data and interminable theoretical distinctions, especially since the natives appear to have no common language. A map is needed to help the student find his way. For this reason, one major objective here will be to contribute to the construction of a map.

It will be useful to begin by taking a look at the broad outlines of the topic. One sees immediately that investigators have approached the study of influence from many different directions and have concentrated on many different features. As an aid to placing each approach within the total field and to relating one with another, we shall identify three major aspects of the influence process upon which attention may be focused. These are: (a) the agent exerting influence, who for convenience is denoted O, (b) the method of exerting influence, and (c) the agent subjected to influence, denoted P. When an agent, O, performs an act resulting in some change in another agent, P, we say that O influences P. If O has the capability of influencing P, we say that O has power over P. 13


12 Dahl, op. cit., p. 201.

Schopler defines power much in the same manner as Dahl. He states that

O's power over P is defined as the net increase in the probability of P enacting a behavior after O has made an intervention, compared to the probability of P's enacting the behavior in the absence of O's intervention.14

The definition of power that will be used for this paper is a simplification of all the definitions cited. That is, power is the ability of O to make P do what he would not have otherwise done.

Use of Power

If O has power over P, we would expect to find a positive correlation between the possession of power and the use of power. In a study of professional roles conducted by Zander, Cohen, and Stotland,15 the correlations between extent of possession and of use were all in the .80's or above. Similarly, Hurwitz, Zander, and Hymovitch16

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found that professional mental health workers with high attributed power talked more frequently in group discussion than those with less power. And Lippitt and his associates\textsuperscript{17} found moderate positive correlations ranging from .35 to .66 between the power attributed to children in a summer camp and the frequency of his attempts to influence others. Therefore, in studying power it would be appropriate to study the use of power rather than the mere capability of use.

**Bases of Power**

Bases of power are the behavioral representation of O's resources as perceived by P whenever power is present. Because of the high correlation between power and power use, it is evident that bases of power are present in power use.

French and Raven distinguish between five bases of power believed to be applicable to distribution channel study: reward, coercive, expert, legitimate, and referent.\textsuperscript{18}


Whenever power attempts are made, they can be conceptualized as being based on one of the five following factors:

Reward power is based on P's perception that O has the ability to provide rewards to P that would not be possible through independent action. P must perceive that O has the ability to mediate rewards and will deliver the reward to P when P cooperates.

Coercive power is based on P's expectation that P will be punished by O if P fails to cooperate. Reward and coercive power are somewhat similar although reward power connotes a "positive" benefit from a cooperative action and coercive power a "negative" punishment from lack of cooperative action. Coercive power implies the concept of threat due to noncompliance.

Legitimate power is based on the deference that P gives to O because of O's position or authority which makes it "right" to expect O to have power over P.

Referent power is based on the desire for P to be identified with O. By identification, French and Raven mean a feeling of oneness of P with O, or a desire for such identity.

Expert power is based on P's perception that O has greater expertise in a given area than does P. P expects that a more advantageous outcome is possible by using O's knowledge and skills. Expert power differs from reward power because it is based on objective skills ostensibly from past experience.

Conflict

Conflict was considered by Palamountain and by more recent authors including Stern\textsuperscript{19} and Assael\textsuperscript{20} to be a significant factor in the behavioral dimensions of distribution channels. Further, there is support for study

\textsuperscript{19}Stern, op. cit.

\textsuperscript{20}Henry Assael, "Constructive Role of Interorganizational Conflict," Administrative Science Quarterly (December 1969), pp. 573-582.
of conflict in conjunction with power use in the behavioral science literature. For example, Kahn defines conflict as follows:

To say that (A) has the power to change (B's) behavior necessarily implies that (A) exerts force in opposition to some or all of the previously existing forces on (B). This is conflict. 21

Coser stated that conflict, as distinct from other forms of interaction, always involves power and that whatever the goals of conflicting parties, power (the chance to influence the behavior of others in accord with one's own wishes) is necessary for their accomplishment. 22

Weber's 23 definition of conflict also implies use of power. He stated that a social relationship will be referred to as "conflict" insofar as action within it is oriented intentionally to carrying out the actor's own will against the resistance of the other party.

Dahl considers conflict in terms of frustration and then links the reaction to frustration with power. He stated:


23 Max Weber, op. cit., p. 121.
Let one person frustrate the other in pursuit of his goals, and you have already the germ of a political system. For the one may then try to change the behavior of the other. If he does so by creating the expectations of sizeable rewards or deprivations, then relations of power come into existence.  

Finally, Stern and Gorman discuss conflict in the context of distribution channels:

When a channel of distribution is viewed as a social system, the members of such a channel are, by definition, caught up in a web of interdependency. The actions or behavior of any one member have consequences for the level of output (measured in terms of individual goals) achieved by the others. This dependency relationship represents the root of conflict in channels of distribution. In any social system, when a component perceives the behavior of another component to be impeding the attainment of its goals or the effective performance of its instrumental behavior patterns, an atmosphere of frustration prevails. A state of conflict may, therefore, exist when two or more components of any given system of action, e.g. a channel of distribution, become objects of each other's frustration.  

Research Justification

It has already been established that power and conflict are important basic behavioral phenomena in distribution channels. There has been relatively little research done

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on the relationship between power and conflict, let alone as these variables are applicable to distribution channels. Beier, in his comprehensive review on power in the channel of distribution, concluded that:

A critical area of future research is the means of exercising power and the effects on the reactions of object firms. In this case the means of exercising power, e.g. environmental control, face-to-face bargaining, appeals to a consumer franchise, and so on, become the experimental variables. This may be a most difficult series of experiments to set up in actual channels because of the potential conflict which may arise between participants. Hence, some form of laboratory simulation may be required in order to further this area of inquiry. The output of such a series of experiments should be to measure the effectiveness of the different methods of applying power. This may be expressed in terms of the levels of conflict, the amount of success any specific mean enjoys, probability of overt or covert reactions, or some other dimensions.

There are different approaches to studying power and conflict in channels of distribution. One approach is to observe a "real world" distribution channel and to describe

26 This is evident from reviewing a comprehensive review on power as applicable to distribution channels in Frederick P.J. Beier, "Power in the Channel of Distribution," unpublished Ph.D. dissertation (Columbus, Ohio: The Ohio State University, 1969). There have been some recent empirical studies by Rosenberg, op. cit., on conflict and El-Ansary, on power in distribution channels.

27 Beier, op. cit., p. 259.
the situation in behavioral terms. A perceptive manager, business consultant, or social scientist would understand the behavioral relationships after years of experience. However, the results of this approach are difficult to transfer from one channel of distribution to another.

A related approach is to make a more formal study of power and conflict relationships through use of questionnaires, primary data, secondary data, and interviews. After a number of these type studies, the results can then be integrated for comparison, evaluation, and generalization.

Another research approach is to study power and conflict in a pure behavioral form in the laboratory and apply the results to channels of distribution. Palamountain was a conceptual forerunner to this approach. Beier's review of the literature on power concepts suggested this laboratory approach because of the difficulty in setting up a study in a real distribution channel.


29 For example, Rosenberg, op. cit., and Adel El-Ansary, op. cit.
Need for Laboratory Research

A laboratory situation provides a means for clearly operationalizing the variables of power and conflict. The laboratory also provides a means for holding some variables constant while manipulating others. Not only is it difficult to hold variables constant in the real world while manipulating others, but there is the danger of damaging existing marketing relationships in real-world experimentation.

The logical conclusion is that laboratory study of the power-conflict relationship is needed with implications then drawn for the future studies applicable to distribution channels. In the future, an integration of the results found from all the research approaches can be made.

Problems in Laboratory Research

A limited amount of research on power has been done in the behavioral sciences. The majority of studies fall in the realm of social psychology.\textsuperscript{30} None look explicitly at power-conflict relationships. Further, much of the

published research is not readily comparable because the methodology differs considerably from study to study. Dahl noted the difficulty of empirical research when he stated:

The concepts and measures discussed in this article (on power) have not been clothed in operational language. It is not yet clear how many of them can be. Yet the researcher who seeks to observe, report, compare, and analyze power in the real world, in order to test a particular hypothesis or a broader theory, quickly discovers urgent need for operationally defined terms. Research so far has called attention to three kinds of problems. First, the gap between concept and operational definition is generally very great, so great, indeed, that it is not always possible to see what relation there is between the operations and the abstract definition. Thus a critic is likely to conclude that the studies are, no doubt, reporting something in the real world, but he might question whether they are reporting the phenomena we mean when we speak of power. Second, different operational measures do not seem to correlate with one another (March 1956), which suggests that they may tap different aspects of power relations. Third, almost every measure proposed has engendered controversy over its validity.

None of these results should be altogether surprising or even discouraging. For despite the fact that the attempt to understand political systems by analyzing power relations is ancient, the systematic empirical study of power relations is remarkably new. 31

Problem Definition

There are many possible different studies on various aspects of power and power-conflict relationships, the

limitations of research notwithstanding. In considering power as applicable to distribution channels, Beier has suggested that one of the first steps of future research should be the verification of the existence of the bases of power.\textsuperscript{32} He also noted the importance of manipulating the different bases to determine the effectiveness of each,\textsuperscript{33} and concluded that a laboratory approach to study power bases and conflict would probably be required.\textsuperscript{34}

Thus, a significant problem for research, simply stated, is to study the effect power bases have on conflict, using a laboratory approach. Two often-used laboratory techniques used in power and conflict studies are simulation and gaming. We now turn to a consideration of their use in studying the problem of power base-conflict relationships.

**Simulation or Gaming**

The distinction between simulation and gaming as used in laboratory research is not always clearcut. However, Raser\textsuperscript{35} reviews usage of the terms and concludes:

> In a simulation, the rules for translating external variables into simulation variables are highly formal; in more colloquial language, the rules are tight and tough. All substitutions and analogies must be defended; the relations

\textsuperscript{32}Beier, op. cit., p. 257.

\textsuperscript{33}Ibid., p. 258.

\textsuperscript{34}Ibid., p. 259.

\textsuperscript{35}Raser, op. cit., p. 30.
between variables must be carefully specified: the operation of the simulation must be governed by mathematical rules. Clearly, then, the translation of variables must be based on adequate theory and data.

In a game, according to my definition, there is more learning with respect to analogical consistency and strictness. The rules for translating "real life" variables are less demanding, so it is possible to "play around" a bit and "make do."

This research is undertaken because there is so little known about the relationships between power bases and conflict. A gaming approach is used because so little is known about the relationships of power and conflict that a simulation is impossible at this point in time.

Laboratory Games

In laboratory games, there are payoffs which are the monetary or behavioral benefits accruing to each person from outcomes. Outcomes are the aggregate result of all decisions made in a game situation. Decisions are the agreements reached by game participants in choosing strategies. Strategy choices are the decision-making alternatives that each game participant has.

In looking at conflict, there are two approaches. One is to consider the perceptions of the subjects as perceived conflict. The other is to consider the actions or non-cooperative strategy choices as behavioral conflict. Further, in breaking down perceived conflict for individuals
Galtung has distinguished between intrapersonal (or personal conflict) relating to conflict within a person and interpersonal conflict relating to conflict between persons.\textsuperscript{36} The relationships among power base use, perceived conflict, payoffs, outcomes, decisions and strategy choices in the real world are complex. Figure 1 illustrates the complexity. For example, it is very likely that power base use affects outcomes directly. Yet at the same time the strategy choices of each participant also affect the outcomes. Further, the direction of causality is not always apparent when residuals exist from previous relationships. Use of a gaming approach allows research in the one-way effect that power base use has on perceived conflict, strategy choices, decisions, outcomes and payoffs.

Objectives, Scope and Focus

Objectives

The objective of this research is to study the relationships between power base usage and conflict produced. The means employed is a gaming approach. Implementation of meeting the objective is made through the following steps:

1. State hypotheses on power base-conflict relationships.
2. Develop suitable methodological tools for analysis.
3. Empirically study the relationships between power base use and conflict and test the hypotheses.
4. Recommend directions for future empirical re-research of power and conflict as applicable to channels of distribution.

Scope of Study

The research draws selectively from the literature of Marketing, Management, Organization Theory, Psychology, Sociology, Political Science, Operations Research, and Economics. The effect is an interdisciplinary approach to the power base use-conflict relationships as applied to distribution channels. Because there is such a wide range of concepts relating to power bases and to conflict, not all the sources reviewed are utilized. A selection is made of the concepts and empirical studies most appropriate.

The scope includes conflict produced from the use of the five different power bases designated by French and
Raven. The scope does not include the following:

1. The effects of combinations of power bases.
2. How power is originally obtained.
3. How power is increased.
4. How power can be used to solve conflict situations.
5. The effects of power bases over a great length of time.
6. A longitudinal study of power base use.
7. Relationships among power base use, conflict, outcomes, and payoffs other than the particular study outlined.

Each of the areas that the research scope does not consider is easily a major research project by itself. The subject scope is purposely limited to provide a manageable, yet meaningful building block of research.

Focus

The research focuses upon the following:

1. Differences in perceived personal conflict produced between each power base group (including a "no-power" control group).
2. Differences in perceived interpersonal conflict produced between each power base group (including a "no-power" control group).
3. Differences in behavioral conflict produced between each power base group (including a "no-power" control group).
Methodological Overview

The basic methodological approach was to vary only the independent variable component of power bases. The effects on perceived conflict and behavioral conflict were compared with a control group and implications drawn for future study.

Volunteer students were used for subjects and played a nonzero-sum prisoner's dilemma game in a laboratory situation. Perceived conflict was measured by developing questions relating to ways in which the subjects could become frustrated. Behavioral conflict was measured in two ways, using the total non-cooperative choices and the total points. It would be expected, of course, that there be a close relationship between the measures of total non-cooperative choices and total points.

Figure 2 on the following page presents a model of the methodological approach. The methodology is treated in greater detail in Chapter 2.

Hypotheses

The normal expectation is that the subjects would act as rational people, i.e., that they would choose the course of action best for them. Thus, any use of power to make them do what they otherwise would not have done would meet with expected resistance and conflict. Even if the action specified by a person exercising power were more rational,
**EXPERIMENTER**

Definition of:
- Power
- Power Base
- Conflict
- Research Problem

**EXPERIMENTAL DESIGN**

**LABORATORY MODEL**

- Type
- Instructions to Participants
- Game Rules

**CONFEDERATE SELECTION**

O Subjects—Confederates Who Use a Power Base

**LABORATORY GAME**

- Setting
- Power Base Messages
- Strategy Choices
- Questionnaire

**SAMPLE SELECTION**

P Subjects—Recipients of a Power Base

**OUTPUT**

Strategies → Decisions → Points → Ranks → Dollars → Perceived Conflict

(Outcomes) (Payoffs)

**ANALYSIS OF RESULTS**

the receiver might still resist. As Singer pointed out:

Even though in the time period implied by the effort to modify or reinforce, B might find A's preferences the most attractive for himself, he may nevertheless refuse to comply. The explanation lies primarily in the consideration on B's part: precedent. Each time that B does the rational thing and complies with the preferences of A, he increases A's propensity to believe in the efficacy of threat and to utilize it again and again. As a result, B has an additional reason to do the thing which is, in the specific and discrete influence situation, irrational. 37

Assuming rational behavior when power is used, generation of greater conflict would be expected. When power is not used, less conflict would be expected, as with a control group in a laboratory environment. Among the five power base groups there are no significant differences in conflict expected. The hypotheses for perceived conflict, perceived interpersonal conflict, and behavioral conflict can be stated in null form as follows:

\[ H_0 \text{ 1: Perceived personal conflict for the control group is not significantly less than the experimental power base groups.} \]

\[ H_0 \text{ 2: There is no significant difference in perceived personal conflict among the experimental power base groups.} \]

$H_0$ 3: Perceived interpersonal conflict for the control group is not significantly less than the experimental power base groups.

$H_0$ 4: There is no significant difference in perceived interpersonal conflict among the experimental power base groups.

$H_0$ 5: Behavioral conflict in terms of total non-cooperative choices for the control group is not significantly less than the experimental power base groups.

$H_0$ 6: There is no significant difference in behavioral conflict in terms of total non-cooperative choices among the experimental power base groups.

$H_0$ 7: Behavioral conflict in terms of total points for the control group is not significantly greater than the experimental power base groups.

$H_0$ 8: There is no significant difference in behavioral conflict in terms of total points among the experimental power base groups.

Outline of Dissertation

This first chapter has provided an overview of the dissertation and includes the background, literature, and hypotheses relevant to this study. Chapter II describes the methodology in detail. The third chapter analyzes the results in terms of the hypotheses. Chapter IV discusses the limitations to the study. The last chapter is a summary and also includes directions for future study.
CHAPTER II
METHODOLOGY

This chapter is comprised of four major sections. The first section describes the experimental design. The second presents a capsule review of the laboratory procedure. The third section deals with discussion of the various alternatives for each laboratory variable, how the variables were operationalized or held constant, and why one choice rather than another was made. The fourth section describes the method of data analysis and statistical methodology.

Experimental Design

The experimental design consisted of a number of related designs. The strategy choices, decisions, outcomes, and payoffs are determined using a posttest study control group design\(^{38}\) as represented in Figure 3.

### POWER BASE USED

<table>
<thead>
<tr>
<th>Coercive</th>
<th>Reward</th>
<th>Legitimate</th>
<th>Referent</th>
<th>Expert</th>
<th>None (Control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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**Figure 3.** Experimental Design Representation for Determination of Strategy Choices, Decisions, Outcomes, and Payoffs.

The experimental design for measuring perceived conflict consists of three separate posttest-only control group designs and as a multiple before-after control group design. Figure 4 represents these designs.

### POWER BASE USED

<table>
<thead>
<tr>
<th>Coercive</th>
<th>Reward</th>
<th>Legitimate</th>
<th>Referent</th>
<th>Expert</th>
<th>None (Control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message</td>
<td>X</td>
<td>X</td>
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<td>X</td>
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<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Game</td>
<td>XX</td>
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<td>00</td>
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<td>00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>Payoffs</td>
<td>XXX</td>
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<td>XXX</td>
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</tbody>
</table>

**Figure 4.** Experimental Design Representation for Measurement of Perceived Conflict After Message, Game, and Payoffs.
Capsule Review of Methodology

Sixty-nine male Ohio State University students taking Business Administration courses during the Summer Quarter in 1970 volunteered to be subjects. When the subjects entered a quiet classroom that served as the laboratory, they were randomly assigned to form part of a dyad. The other member of every dyad was a paid confederate, although the subjects were led to believe that the confederates were also subjects. A barrier was created across the classroom so that members of the dyads could not see each other.

Written instructions were given to the subjects (see Appendix A) and to the confederates (see Appendix B). The instructions informed the subjects that they were participants in a decision-making project and that they could win from $.06 to $4.38, at six cent intervals depending upon their final rank which was based upon accumulation of "points." The points were derived from a non-zero sum prisoner's dilemma game as follows:

<table>
<thead>
<tr>
<th>Confederate's Strategies</th>
<th>T</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject's Strategies</td>
<td>Y (300,300)</td>
<td>(100,400)</td>
</tr>
<tr>
<td></td>
<td>Z (400,100)</td>
<td>(200,200)</td>
</tr>
</tbody>
</table>

Three practice decisions were made to familiarize the subjects with the mechanics of the game, using the following matrix:
Confederate's Strategies

<table>
<thead>
<tr>
<th></th>
<th>T</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject's Strategies</td>
<td>Y</td>
<td>(5,10)</td>
</tr>
<tr>
<td></td>
<td>Z</td>
<td>(80,85)</td>
</tr>
</tbody>
</table>

After the practice decisions, Questionnaire 1 (see Appendix C) was given to the subjects to test understanding of the instructions and motivations prior to the actual game. This Questionnaire was also analyzed to test the assumption that the six experimental groups consisting of the five power bases (expert, legitimate, referent, reward, and coercive) and a control group were initially similar. Questionnaire 1 was collected upon completion.

Additional instructions (see Appendix D) were distributed. These instructions contained the prisoner's dilemma game for the "real" decisions. In the control group the game proceeded. However, in the five experimental groups, the confederate was "selected" to be a "message sender" and the subject was "selected" to be a "message receiver." The confederate then passed a power base message precoded by the experimenter. These messages were:

Expert: I've been in these decision projects before and know that you should choose Y.

Referent: We are really a team. Let's work together. You choose Y and I'll choose T.
Legitimate: Because of my position as message sender, I have a legitimate right to request you to choose Y.

Coercive: You had better choose Y! Every time you choose Z, you will drop 2 rankings in the final standings from where you normally would finish.

Reward: Every time you choose Y, I can reward you by moving you up 2 rankings from where you normally would finish.

Questionnaire 2 (see Appendix E) was given to the subjects (except for the control group) to test perceptions about the power base messages. Questionnaire 2 was collected after the subjects completed answering it. In every case, the confederates were also given questionnaires and "faked" answering the questions so that the subjects would continue to perceive the confederates as subjects.

The game then proceeded for 15 trials, although the subject's recording forms had spaces for more than 15 decisions. This was done so that the subjects would not know which decision was the last. One minute was given between trials and during the time the subjects wrote their reasons for choosing one strategy or the other on a "why decision sheet."

After the 15 trials were completed, the subjects were told that all the decisions had been made. The subjects then answered Questionnaire 3 (see Appendix F) which included questions on perceived personal conflict and perceived interpersonal conflict. Questionnaire 3 was
collected upon completion.

After all the subjects participated, rankings of the subjects were made based upon total points and adjustments for the subjects in the reward and coercive power base groups. The subjects then were informed of their ranking and dollar payoff and answered Questionnaire 4 (see Appendix G) which was composed of the same questions as Questionnaire 3. The subjects then received payoffs ranging from $4.38 to $.06 in $.06 increments.

Because of the great amount of data generated, only part of the data was analyzed. In particular, Questionnaire 1 was analyzed using a Hartley's F_{max}, the F test, and Dunnett's t to test the assumption that the groups were initially similar. Questionnaire 3 was analyzed using Hartley's F_{max}, the F test, and Dunnett's t to test the hypotheses relating to power base use and perceived conflict. Behavioral conflict was analyzed using both total non-cooperative choices and total points to test the hypotheses relating to power base use and behavioral conflict. Finally, the questions in Questionnaire 2 pertaining to subject's perceptions of the power base messages were analyzed using a Hartley F_{max}, the F test, and Dunnett's t as an empirical test of some possible limitations.
Alternatives for Laboratory Variables

Methodological choices were based upon appropriateness of studying basic power base-conflict relationships, rather than similarity with the "real world." Whenever there were viable choices which would not hamper study of the basic phenomena, selection of a methodological alternative was then based upon similarity with the type of interpersonal relationships which might exist in distribution channels.

Basic Game Unit

Whenever more than two subjects are used as the basic game unit, it is possible for coalitions to form. These possibilities unduly complicate a basic study of power base-conflict relationships. Therefore, dyads were used as the basic game unit.

Types of Laboratory Games

There are many different types of laboratory games. One major distinction is between physical games and abstract games. Physical games employ the use of some type of physical mechanism or equipment which provide a somewhat realistic setting to a game framework.

The other type of game is the abstract game theory matrix often referred to in economics, operations research, and behavioral science. Von Neumann and Morgenstern
pioneered much of the early mathematical development of game theory. Empirical laboratory adaptations have been made by Rapoport.

A matrix-type game is used for this research project for a number of reasons. First, and most importantly, a prisoner's dilemma game theory matrix presents two extreme alternatives to the subjects. One is perfectly cooperative. The other is perfectly uncooperative, which sets up an ideal operationalization for behavioral conflict. If each participants acts in his own selfish interests, the result is that both participants fare worse than if they both were cooperative. Figure 5 repeats the representation of the Prisoner's Dilemma game used.

<table>
<thead>
<tr>
<th>Other Player</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Figure 5. Representation of the Prisoner's Dilemma Game Used in this Research Study.


Secondly, by far the greatest amount of published behavioral science research using games has utilized prisoner's dilemma games in which each participant has only two choices. Although use of a prisoner's dilemma game may evoke criticism because of its simplistic nature, the basic concern of this research is to attempt creation of extreme situations in which the effects of power bases and conflict can be studied. If there are no noticeable effects in the extreme two-choice state of the laboratory, then one could expect that there would be no real distinction with finer gradations in either the laboratory or the real world.

**Number of Participants**

It was felt that 12 dyads for each of the five power base groups and the control group constituted a sufficient sample. However, it was necessary to have more than 72 subjects volunteer because of a few errors in the play of the game by the confederate. There were three subjects who did not answer Questionnaire 4. Rather than including these subjects in the sample for this study, it was felt that they should be excluded so that further future analysis of the data could be made with the same sample. Thus, the final sample consisted of 69 subjects, eleven in each of the referent, expert, and control groups and twelve in each of the reward, coercive, and legitimate groups.
Sample Selection

Within the context of sample selection, there are a number of subsets which are also research variables. These include the following:

1. Volunteer or conscripted subjects
2. Demographic characteristics

Volunteer or Conscripted Subjects

Consideration in choosing volunteer or conscripted subjects is based on an experimenter's "social responsibility." Volunteer subjects make their own decisions to participate. Conscripted subjects are forced to participate whether they so desire or not. Thus, an experimenter employing tactics of conscription to obtain subjects is exploiting the subjects. The experimenter gains all the benefits while a subject receives none and is forced to participate. A further consideration to a researcher is that conscripted subjects may rebel and destroy the validity of the research.

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Discussion of volunteers and conscripted subjects is based upon the experiences of: (1) the researcher for this project; (2) James S. Hensel in acquiring student subjects for "Physiological Measures of Advertising Effectiveness: An Empirical and Theoretical Approach," unpublished Ph.D. dissertation (Columbus, Ohio: The Ohio State University, 1970); (3) Ohio State Graduate Student researcher, Brian Sternthal; (4) Philip M. Burgess, Director, Behavioral Science Laboratory, The Ohio State University, and (5) Clyde W. Franklin, Jr., Assistant Professor of Sociology, The Ohio State University.
"Semi-conscription" is a practice which is commonly used by many laboratory experimenters. As part of some academic courses, students are required to participate in laboratory experiments. Usually there is an alternative course requirement presented to the student, such as writing a paper. Volunteers were recruited from students attending Business Administration courses during the Summer Quarter of 1970. The research asked the students to volunteer because participation in the research would be: (1) very worthwhile from a learning experience viewpoint, (2) helpful in examining their own decision-making process, and (3) included real money payoffs to over $4.

**Demographic Characteristics**

Demographic characteristics refer to the age, sex, educational level, and cultural background of the subjects. The sample was taken from a student population above age 19, college education level of junior of higher, and an American culture.

The subject sample was restricted to males to eliminate the possibility of sex as a variable because it is not clear whether sex is a factor affecting results of laboratory experiments. For example, Orwant and Orwant\(^2\) found

that sex differences affected research results, while Lutzker, Rapoport and Chammah, and Kanouse and Wiest found that sex had no effect.

**Personality Traits**

Considering the length of time the subjects were available, it was inadvisable to administer in-depth psychological tests. However, it was felt that questions providing a measure of motivation for: (1) success; (2) fear of failure; (3) financial gain; and (4) personal satisfaction for this research would be useful in determining whether personality effects could be netted out across power base groups. These questions also provided a basis for measuring sample homogeneity for each power base group.

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Forms of Communication

A major distinction in forms of communication is between "none" and "allowed." In the no-communication situation, only the implicit communication of the other's bids is permitted. In allowed communication, there are subsets of one-way or two-way, verbal or written, and free (players can say whatever they want) or programmed responses.

Communication is the medium by which the power bases were operationalized in this research. It would be possible to have two-way messages flowing to and from the subject to whom power is applied. However, two-way flow of communication introduces an uncontrollable degree of variability into the game. Therefore, only one-way communication was used.

Verbal communication is difficult to control and thus written messages were used. Further, the messages were precoded by the experimenter so that there would be no variability of message for each power base. The implication, of course, is that the subject can react to the power base message through his future bids.

Power Base Messages

The power base messages were handwritten messages prepared beforehand by the researcher. The researcher derived the messages from the French and Raven power base definitions. Subsequently, four advanced graduate students were asked
how well each message portrayed a particular power base. The researcher then made some modifications.

The message passed for each power base is repeated as follows:

**Expert:** I've been in these decision projects before and know that you should choose Y.

**Legitimate:** Because of my position as message sender, I have a legitimate right to request you to choose Y.

**Referent:** We are really a team. Let's work together. You choose Y and I'll choose T.

**Reward:** Every time you choose Y, I can reward you by moving you up 2 rankings from where you normally could finish.

**Coercive:** You had better choose Y! Every time you choose Z, you will drop 2 rankings from where you normally would finish.

**Confederates**

One-way communication of precoded messages focuses the results of the research on the recipient of a power base. A further consideration is to have a "confederate" or "stooge" act as the message sender and make decisions programmed by the researcher. The dependent variable then would be the decisions and conflict perceived by the subject receiving the power base message.

Thus, confederates were recruited and told to play a delayed matching strategy—the first choice was cooperative and the confederate matched the previous choice of the
subject by choosing either a cooperative or noncooperative strategy. The confederates were paid a fixed fee of $2.25 per session for their participation and there was no indication that any subject recognized that a matching strategy was being used.

Payoffs to Participants

A distinction in payoffs is made between monetary and nonmonetary rewards. Criticisms of research using games center on the possibility that the players may become bored with the game and create some excitement by maximizing the difference in points between themselves and the other players. Further, there has been evidence that monetary rewards produce different results than nonmonetary rewards.

When dollar amounts are used as the matrix entries, there is a possibility that the participants may work together and compete against the experimenter by trying to win the maximum joint payoff.


One method of guarding against this player collusion and still have dollar payoffs is to have the players compete for "points." The points that each player accumulates are then ranked. For each rank there is a corresponding dollar payoff. This method of transferring points into dollars through ranking was used for this research.

**Goal Orientation**

The goal orientation of the participants is determined by: (1) whether there are monetary payoffs or not, and (2) how the payoffs are distributed. It has already been established that there will be monetary payoffs.

The different payoff goals are: (1) individualistic (make as much as you can); (2) maximizing joint payoff; (3) maximizing the difference between one participant and his "opponent," and (4) competing against all participants in a similar position. A fifth goal orientation that has not yet appeared in the literature is to have a group payoff based on how one group fared compared to all other groups and then distributing the group payoff among the participants in proportion to how each did compared to the other.

The study of individualistic goals for subjects should come first. In this way, it should be possible to see the effect of power base on payoffs and conflict when
the participants are playing strictly for themselves, compared to a higher order goal. Also, the study of conflict resolution would be aided by knowledge of conflict arising from individual goals because it is obvious that many real world firms and people have individualistic goals.

**Time Limit for Decisions**

Having a time limit for decisions may influence the research results. For example, many studies of prisoner's dilemma games had a time limit of less than ten seconds for decisions. These studies usually produced long chains of the same decision.

In an effort to produce meaningful decisions based on some thought, the subjects in this research given one minute were asked to write down their reason for choosing a particular decision. This approach virtually eliminated guessing and the overly simple choice of the same strategy each time.

**Number of Decisions**

Determination of the number of decisions is somewhat arbitrary because there are no hard and fast rules which apply. Fifteen trials were used for this research because that was the greatest number of decisions that were able to be fitted into the time allotted and still allow for the instructions and answering of questionnaires.
Number of Messages

Because there is more than one trial, there are potential opportunities to send more than one message. However, the timing of the message and consideration of different messages for the same power bases would introduce additional variables into the research. Therefore, only one power base message was passed, and that at the beginning of the game.

Laboratory Setting

The quiet environment of a basement classroom served as the "laboratory." A barrier, consisting of paper hanging from a rope across the center of the room, was erected so that the participants could not see each other. Confederates were seated on one side of the barrier and experimental subjects on the other side.

The experimenter then passed out the instructions. The subjects received one set of instructions (see Appendix A) and the confederates received another (see Appendix B). However, the subjects were made to believe that the participants on the other side were subjects like themselves.

Three practice decisions were made so that the subjects could familiarize themselves with the mechanics of making decisions. A number of subjects asked questions about the overly simplistic matrix that was used for practice decisions. They were satisfied with the researcher's
answer that the real point table would be different.

**Questionnaire 1**

Following the practice decisions, Questionnaire 1 was answered by the subjects. The questionnaire consisted of nine statements with which the subjects could respond by circling answers on a nine-point scale ranging from "very strongly agree" to "very strongly disagree."

The first three questions related to understanding of the game mechanics and payoffs. Questions 4, 5, 6, and 8 were concerned with the motivation of the subjects regarding success, financial gain, self-satisfaction, and fear of failure as related to the upcoming game decisions. Question 7 was concerned with feelings of "nervousness." Question 9 checked on whether the subjects had received prior knowledge about the game from other students.

**Assumptions**

The questions in Questionnaire 1 were not only a basis for before-after measurements, but also can be used as checks for sample homogeneity among power base groups.

**Assumption 1:** Initially, the subjects in each of the six groups were not significantly different from each other in terms of:

1.1 Understanding of the game instructions
1.2 Motivational characteristics
1.3 Anxiety
1.4 Prior knowledge of the game.
**Additional Instructions**

After Questionnaire 1 was completed, it was collected by the researcher. The "real point table" and "additional instructions" (see Appendix C) were then distributed to the participants. The additional instructions "selected" the confederate as a "message sender" and the subject as the "message receiver."

Each confederate was given time to "write a message" which was then passed over the top of the barrier to the subject. The subject was instructed to read the message and then turn it over so that no one else could see it.

**Questionnaire 2**

After the subjects in the experimental groups read the message, Questionnaire 2 was distributed. This questionnaire contained questions relating to the subjects' perceptions of the power base content of the messages. Thus, a check could be made whether each power base message was perceived as intended.

**Play of Game**

The game then proceeded for 15 decisions. For each decision, the subjects would choose a strategy and also write down why they chose that particular strategy. At the researcher's signal, both the subjects and the confederates held up their strategy choices. The subjects would then record their strategy, the confederate's strategy, and their own points. In reviewing these forms,
there were very few mistakes made by the subjects in calculating the points. Thus, it was evident that the subjects understood the basic mechanics of the game.

Operationalization of Perceived Personal Conflict

Subjects could become frustrated because the results of the game interfered with their personal goals and motivations. Specifically, those possibilities include the following (the question numbers from Questionnaire 3 are listed in parentheses):

1. General anger with the decision project (36, 57, 68).

2. Low ranking (37, 53, 54).

3. Inability to start over again (58).


5. Reconsideration of volunteering (49).

Operationalization of Perceived Interpersonal Conflict

Subjects could become frustrated because of interpersonal conflict with the other person in the dyad. Specifically, these possibilities include the following (the question numbers from Questionnaire 3 are listed in parentheses):

1. Desire to be paired with another person (38).

2. Desire to punish the other person (39).

3. Desire to talk to the other person (59).

4. Desire to send, rather than receive a message (60).
5. Uncertainty of other's strategy choices (62).
6. Friendship with other person (63).
7. Retaliation by other (65).
8. Desire of subject to force compliance (67).

**Operationalization of Behavioral Conflict**

Behavioral conflict reflects the decisions that the subjects made, and thus the non-cooperative choices using the game theory matrix are a good measure of behavioral conflict. Because total points for the subjects are somewhat dependent upon the confederate's programmed delayed matching strategies, it was felt that both non-cooperative choices and total points were representative of behavioral conflict. It was expected, though, that there should be little difference between the results of both these approaches to looking at behavioral conflict.

**Additional Perspectives on the Subjects**

Some women volunteered to be participants and were used mostly as confederates. Two women became subjects because of an excess number of women volunteering for one particular time. These two subjects were eliminated from the sample when additional male subjects volunteered. Each of the subjects whose decisions were disallowed from the sample received the same payoff as the confederates, $2.25.
Some confederates received more than $2.25 because they volunteered to participate more than just once. There was no indication that the subjects recognized that the confederates were any different from themselves or that some confederates participated more than once.

Because "extra" dyads were recruited, there was a total of 73 dyads after all the "defective" dyads were eliminated. Rather than arbitrarily rejecting one of the subjects in the group with 13 rather than 12 subjects, it was decided to create an additional rank and make the largest payoff $4.38. All other ranks and payoffs remained the same.

After all the subjects participated in the game, the rankings were determined, based upon total points and adjustments for the subjects in the reward and coercive groups.

Statistical Methodology

The statistical methodology was derived by considering

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The researcher is indebted to Dr. Ransom Whitney, Mathematics Department, The Ohio State University, and Dr. Lawrence Mayer, the Behavioral Science Center, The Ohio State University, for their constructive comments and feedback in the appropriateness of the statistics used in this study.
the form of the data for analyzing the assumptions and hypotheses. Answers to the questionnaires produced data from 1 to 9 on a nine-point scale. Strictly speaking, this is ordinal data and non-parametric statistics would be used for analysis. However, the assumption was made that the data could be considered as interval data and parametric statistics used for analysis. Whenever possible, this assumption is usually made by behavioral scientists to allow higher order statistics to be used.

One of the basic assumptions for using parametric statistics is that the variance due to experimental error within each of the treatment populations be homogeneous. This assumption was checked for each question using Hartley's $F_{\text{max}}$ test. The equation is as follows:

$$F_{\text{max}} = \frac{\text{largest of the treatment variances}}{\text{smallest of the treatment variances}}$$

In analyzing whether the hypotheses using the data from the questionnaires should be accepted or rejected, the F statistic was used for one-way analysis of variance for the six treatments for each question. If the F statistic were significant, it would indicate that at least two of the groups were significantly different, but not indicate which.

If $F_{\text{max}}$ is significant, then the use of parametric statistics is not valid. However, there is no need for a high degree of sensitivity in such tests, because F tests are robust with respect to departures from homogeneity of
variance. The experimenter need only be concerned about relatively large departures for the hypothesis of equal population variances.

Comparison of each group with each other group was made using a Dunnett's $t$ test. This statistic was used to raise the significance level for the paired tests so that the overall significance level was preserved. For example, if the Student's $t$ test were used and the significance level set at ($p = 0.05$), then in 100 comparisons, it would be expected that five cases of significance would occur when in fact the comparison was not significant. Because of the great number of paired comparisons, the level of significance was raised using the Dunnett's $t$. The equation for this statistic is as follows:

$$t = \frac{T_j - T_0}{\sqrt{2MS_{error}/n}}$$

where $T_j = \text{mean } j$

$T_0 = \text{control mean}$

$n = \text{number of treatments}$

$MS_{error} = \frac{SS_{error}}{k(n-1)}$

$k = 69 \text{ observations}$

$SS_{error} = \text{sum of the squares of the error term}$

The $F$ and Dunnett $t$ tests analyze each question for each paired comparison of groups. However, an additional statistical test, the signs test, was used to give an
overall evaluation of possible significance. For each paired comparison of groups, the means were compared for each question in terms of one being greater than or less than the other.

Analysis of the data from the non-cooperative choices and total points differed substantially from analysis of the questionnaires. The data derived from the choices and point totals were frequency counts which were rank-ordered. Once the data was rank ordered, non-parametric tests for ordinal data were used. Specifically, an overall measure was obtained using a Kruskal-Wallis one-way analysis of variance. This statistic is as follows:

\[ H = \frac{12}{N(N+1)} \sum_{j=1}^{k} \left( \frac{R_j^2}{n_j} \right) - 3(N+1) \]

\[ 1 - \frac{\sum T}{N^3 - N} \]

where:

- \( N \) = number of observations in all \( k \) samples together
- \( T = t^3 - t \) (when \( t \) is the number of trial observations in a tied group of scores.)
- \( R_j \) = Rank of the \( j \)th subject

Paired comparisons were made for each group compared with each other group using the Mann-Whitney \( U \) statistic. This statistic is as follows:

\[ U = n_1n_2 - U^1 \]

where:

- \( n_1 \) = first group's sample size
\[ n_2 = \text{second group's sample size} \]
\[ U^1 = \text{smaller of U's} \]
\[ U = n_1 n_2 + \frac{n_1(n + 1)}{2} - R_1 \]
\[ R_1 = \text{sum of the ranks assigned to group whose sample size is } n_1 \]
\[ U = n_1 n_2 + \frac{n_2(n^2+1)}{2} - R_2 \]
\[ R_2 = \text{sum of the ranks assigned to group whose sample size is } n_2 \]

**Summary of Methodology**

Sixty-nine male students taking Business Administration courses during Summer Quarter, 1970 formed the final sample size. They were randomly assigned to one of six groups: expert, legitimate, reward, referent, or coercive power bases or the control group. The subjects received precoded power base messages from confederates and then 15 trials of a prisoner's dilemma game were played. The subjects were ranked according to their total points, adjustments made for ranking of subjects in the reward and coercive groups.

The subjects in the control group answered Questionnaires 1, 3, and 4; the subjects in the five experimental groups answered Questionnaires 1, 2, 3, 4. Questionnaire 1 pertained mainly to motivations of the subjects and understanding of the mechanics of the game. Questionnaire 2
pertained to perceptions of the power base messages. Questionnaires 3 and 4 pertained to perceived personal and interpersonal conflict.

Assumption 1 was analyzed using the $F_{\text{max}}$, $F$ test, and Dunnett $t$ statistics. Hypotheses 1, 2, 3, and 4 were analyzed using the $F_{\text{max}}$, $F$ test, Dunnett $t$, and signs test. Hypotheses 5, 6, 7, and 8 were analyzed using the Kruskal-Wallis and Mann-Whitney U test.
CHAPTER III
ANALYSIS OF RESULTS

This chapter analyzes the results of the research. Assumptions are empirically examined, perceived personal and interpersonal conflict are analyzed using the results from Questionnaire 3, and behavioral conflict is analyzed using the subjects' non-cooperative choices and point totals as the basis for comparison. Analysis includes the following:

1. Comparisons of the control group paired with each of the five experimental power base groups.

2. Comparison of the control group with a combined group of all the power base groups.

3. Comparisons of each of the five power base groups paired with each of the other power base groups.

Empirical Testing of Assumptions

In order for texts of experimental differences between the different groups to be meaningful, the groups initially had to be similar. Any subsequent differences in perceptions or actions by the participants could then be attributed to experimental factors.
Initially, the subjects were randomly assigned to receive a particular power base message. The usual research procedure is to assume that if the subjects are randomly assigned, then the experimental groups are initially similar. However, for this research study, the assumption that the groups were initially similar was tested. In this way, an empirical check was made of this crucial assumption.

Assumption 1: Initially, the subjects in each of the six groups were not significantly different from each other in terms of:

1.1 Understanding of the game instructions
1.2 Motivational characteristics
1.3 Anxiety
1.4 Prior knowledge of the game.

As reported below, there is a great deal of support to retain the overall assumption that the groups initially were not significantly different from each other, using the results from Questionnaire 1 as the basis for comparison (see Tables 1 and 2).

Test of Assumption 1.1

In general, Assumption 1.1, which was concerned with the understanding of the game instructions, was upheld. None of the overall F tests were significant for questions
TABLE 1
SUMMARY OF DATA FOR EMPIRICALLY TESTING ASSUMPTION 1:
INITIALLY, THE SUBJECTS IN EACH OF THE SIX GROUPS WERE NOT SIGNIFICANTLY DIFFERENT FROM
THE SUBJECTS IN EACH OTHER GROUP, IN TERMS OF:
A 1.1 Understanding of Game Instructions (Questions 1, 2, and 3)
A 1.2 Motivational Characteristics (Questions 4, 5, 6, and 8)
A 1.3 Anxiety. (Question 7)
A 1.4 Prior knowledge of the game (Question 9)

<table>
<thead>
<tr>
<th>Question</th>
<th>Control Mean</th>
<th>Combined Mean</th>
<th>Expert Mean</th>
<th>Legitimate Mean</th>
<th>Referent Mean</th>
<th>Reward Mean</th>
<th>Overall Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The instructions are clear on how points are transferred to dollars</td>
<td>3.46</td>
<td>2.36</td>
<td>2.64</td>
<td>1.50</td>
<td>3.09</td>
<td>2.00</td>
<td>2.67</td>
</tr>
<tr>
<td>2. I understand well the mechanics of how to make decisions.</td>
<td>3.36</td>
<td>3.33</td>
<td>3.91</td>
<td>3.58</td>
<td>3.36</td>
<td>3.25</td>
<td>2.58</td>
</tr>
<tr>
<td>4. If I were to rank well in this decision project, it would be important for me to tell others.</td>
<td>5.82</td>
<td>5.29</td>
<td>6.09</td>
<td>5.17</td>
<td>4.36</td>
<td>6.00</td>
<td>4.83</td>
</tr>
<tr>
<td>6. It is important for me to know how I performed in this decision project, just for the sake of knowing.</td>
<td>2.36</td>
<td>2.74</td>
<td>3.00</td>
<td>2.42</td>
<td>2.45</td>
<td>2.75</td>
<td>2.17</td>
</tr>
<tr>
<td>Negatively worded:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I do not understand how the points are figured for myself and the other participants.</td>
<td>6.55</td>
<td>7.24</td>
<td>6.55</td>
<td>7.42</td>
<td>6.18</td>
<td>7.33</td>
<td>8.58</td>
</tr>
<tr>
<td>5. Money is not a strong motivating factor for me in this decision project.</td>
<td>4.55</td>
<td>3.74</td>
<td>2.64</td>
<td>3.92</td>
<td>2.45</td>
<td>4.92</td>
<td>4.58</td>
</tr>
<tr>
<td>7. I feel pretty nervous about having to make the decisions coming up.</td>
<td>6.64</td>
<td>6.45</td>
<td>6.18</td>
<td>6.25</td>
<td>6.73</td>
<td>7.26</td>
<td>6.83</td>
</tr>
<tr>
<td>8. If I were to rank poorly, I would not want anyone else to know.</td>
<td>5.91</td>
<td>5.97</td>
<td>6.18</td>
<td>5.00</td>
<td>6.55</td>
<td>6.00</td>
<td>6.17</td>
</tr>
<tr>
<td>9. Fellow students told me a lot about how this decision project works.</td>
<td>7.09</td>
<td>8.79</td>
<td>8.82</td>
<td>8.83</td>
<td>8.81</td>
<td>8.67</td>
<td>8.75</td>
</tr>
</tbody>
</table>

\*The mean for each group is derived from a nine-point scale numbered from 1 to 9 for each statement, where 1 = Very strongly agree, 9 = Very strongly disagree.

\*All five experimental power base groups are combined into one general "power" group mean.

\*The lower the mean, the greater a group responded as "expected."

\*The greater the mean, the greater a group responded as "expected."
**TABLE 2**

**SUMMARY OF RESULTS FOR EMPIRICALLY TESTING ASSUMPTION 1:**

INITIALLY, THE SUBJECTS IN EACH OF THE SIX GROUPS WERE NOT SIGNIFICANTLY DIFFERENT FROM EACH OTHER.*

<table>
<thead>
<tr>
<th>Question</th>
<th>Positively worded:</th>
<th>Negatively worded:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The instructions are clear on how points are transferred to dollars.</td>
<td>18.240</td>
<td>1.420</td>
</tr>
<tr>
<td>2. I understand well the mechanics of how to decide.</td>
<td>1.128</td>
<td>0.128</td>
</tr>
<tr>
<td>3. If I were to rank well in this decision project, it would be important for me to tell others.</td>
<td>1.252</td>
<td>0.252</td>
</tr>
<tr>
<td>4. It is important for me to know how I performed in this decision project, just for the sake of knowing.</td>
<td>0.400</td>
<td>0.000</td>
</tr>
<tr>
<td>5. Money is not a strong motivating factor for me in this decision project.</td>
<td>0.701</td>
<td>0.070</td>
</tr>
<tr>
<td>6. I feel pretty nervous about having to make the decisions coming up.</td>
<td>0.033</td>
<td>0.033</td>
</tr>
<tr>
<td>7. If I were to rank poorly, I would not want anyone else to know.</td>
<td>0.882</td>
<td>0.882</td>
</tr>
<tr>
<td>8. Fellow students told me a lot about how this decision project works.</td>
<td>1.753</td>
<td>1.753</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>*In terms of:</th>
<th>A 1.1 Understanding of game instructions (Questions 1, 2, 3)</th>
<th>A 1.2 Motivational characteristics (Questions 4, 5, 6, 8)</th>
<th>A 1.3 Anxiety (Question 7)</th>
<th>A 1.4 Prior knowledge of the game (Question 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F&lt;sub&gt;Max&lt;/sub&gt; =</td>
<td>greatest variance/ν&lt;sub&gt;1&lt;/sub&gt;</td>
<td>The critical values of F&lt;sub&gt;Max&lt;/sub&gt; = F(6,11) = 6.32 (p &lt; 0.05) and 9.3 (p &lt; 0.00).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall F-test (6, 63) =</td>
<td>(5, 60). The critical values are 1.37 (p &lt; 0.25), 1.95 (p &lt; 0.10), 2.37 (p &lt; 0.05), and 3.34 (p &lt; 0.01).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tests of significance are made for each paired comparison for each question, using a Dunnett's t statistic. For example, comparing the means of the expert and legitimate groups yields a Dunnett's t of 1.262. The critical values of Dunnett's t (df = 63) are 2.28 (p &lt; 0.05), 2.63 (p &lt; 0.02), and 2.84 (p &lt; 0.01).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A test of significance is made for each question using a Student's t statistic. For example, comparing the means of the control and combined power base groups for Question 1 yields a Student's t of 1.218. The critical values of Student's t (df = 67) are 1.296 (p &lt; 0.10), 1.671 (p &lt; 0.05), 2.000 (p &lt; 0.025) and 2.390 (p &lt; 0.01).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Apparent significance (for example, Question 9) is not the case for paired comparisons in which Hartley's F is significant.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>**</th>
<th>**</th>
<th>**</th>
<th>**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant at (p &lt; 0.10)</td>
<td>Significant at (p &lt; 0.05)</td>
<td>Significant at (p &lt; 0.025)</td>
<td>Significant at (p &lt; 0.01)</td>
</tr>
</tbody>
</table>
related to this issue (i.e., Questions 1, 2, and 3). However, further analysis showed that the variances could not be considered as equal for some questions because Hartley's $F_{\text{max}}$ test produced significant results $(p < 0.005)$. These results and the subsequent implications are discussed in the following two paragraphs.

For Question 1, the legitimate power base group understood much better how the points were transferred into dollars than the control group. The major reason why these means appeared to be different was that one subject in the control group very strongly disagreed to the question in contrast to the great majority of the subjects. However, this subject changed his feelings to agree with the question after the game was completed. This subject's response was the major reason for the high Hartley's $F_{\text{max}}$ of 18.240. Other than this individual case, none of the paired comparisons were significant using the Dunnett $t$ test.

For Question 3, Hartley's $F_{\text{max}}$ was also significant and, in addition, the Dunnett's $t$ test between the referent and coercive groups was significant $(p < 0.05)$. However, the major cause for the significant difference was one person in the referent group whose response was significantly different from the other subjects in his group and the subjects in the coercive group. Because
the $F_{\text{max}}$ statistic was significant, the assumption of equal variances does not hold, and Dunnett $t$ test is not completely valid. Therefore, this one paired test which was significant should not be construed as very important and Assumption 1.1 can be considered as upheld.

**Assumption 1.2**

Assumption 1.2, regarding motivational characteristics, had evidence for support, but also had some evidence to the contrary. Question 4, regarding hope for success, produced results as expected. Hartley's $F_{\text{max}}$, the overall $F$, and Dunnett $t$ test were all not significant and there was no evidence that the groups were significantly different.

Question 5, regarding financial gain, was the weakest link of all. Hartley's $F_{\text{max}}$ was marginally significant ($p < 0.05$) due to the relatively high variance of the reward group. However, the reward group was also much less motivated by money than either the expert ($p < 0.05$) or the referent group ($p < 0.05$). Not surprisingly, the overall $F$ test was also significant ($p < 0.05$).

Question 6, regarding participation just for the sake of knowledge, produced results which were not significant, except for Hartley's $F_{\text{max}}$ ($p < 0.05$) which was marginally significant.

There was no significant difference among the groups.
in answering Question 8 regarding fear of failure. None of the tests were significant, even at the .05 level.

Overall for Assumption 1.2, there was some evidence that the reward group was less motivated by financial gain than the expert and referent groups. However, the reward group was only neutral (mean = 4.92) to financial gain, while agreeing (mean = 2.75) to participation for the sake of knowledge. Thus, while there was some evidence that the reward group was not motivated altogether in the same way as the other groups, nevertheless the reward group was positively motivated by at least one factor. In conclusion, Assumption 1.2 can be considered as still standing, although implications drawn about the reward group may have limitations in comparison with the other groups.

**Assumption 1.3**

Assumption 1.3, regarding initial anxiety, was upheld except for one case. The Dunnett t test showed that the legitimate group was significantly more anxious at the start than the reward group (p < 0.05). It is difficult to explain this result other than the possible reason that most of the legitimate group were tested on a hot day which may have adversely tempered the subject's responses toward anxiety.

For the reward group, it is already known that they were less motivated toward financial gain than the
legitimate group and thus could then have been less anxious.

**Assumption 1.4**

Assumption 1.4, regarding prior knowledge of the game, produced results for Question 9 which were significantly different when taken at face value. Not only was Hartley's $F_{\text{max}}$ test significantly different ($p < 0.005$), but so was the overall $F$ test ($p < 0.01$) and Dunnett $t$ test for the control group paired with the expert group ($p < 0.01$), legitimate ($p < 0.005$). However, the $F_{\text{max}}$ test holds the key, because there was one subject in the control group who responded that he knew a great deal about the game, while virtually every other subjects in all the groups was completely at the other end of the questionnaire scale. Further, after the payoffs, this one subject disagreed that he had prior information about the game. Therefore, Assumption 1.4 can still be considered as upheld.

**Summary of Assumption 1**

Overall, Assumption 1 was upheld and the groups can be considered as not being significantly different at the start of the game. These results lent empirical support to the assumption of randomization of students to the different groups. However, there may be some slight limitation because of the responses to financial gain motivation and initial anxiety, both of which were relatively low
compared to the legitimate group.

**Test of Hypothesis 1**

It was expected that the control group would perceive less personal conflict in terms of answering the personal conflict questions on Questionnaire 3 than the experimental power base groups. This is stated in null hypothesis form as follows:

\[ H_0 \]: Perceived personal conflict for the control group is not significantly less than the experimental power base groups.

To test Hypothesis 1, the mean responses of the control group for the questions related to personal conflict (i.e., Questions 36, 54, 68, 34, 49, 53, 57, 58, and 66) were compared with the mean responses for each of the experimental power base groups (see Table 3).

There was only slight evidence (see Table 4) that Hypothesis 1 should be rejected in favor of the alternate hypothesis that states, in short, that power base use breeds greater personal conflict. For instance, the relatively weak signs test indicated that the combined power group perceived significantly greater \((p < 0.10)\) personal conflict than the control group. For the individual groups, the legitimate group \((p < 0.10)\) and the coercive
<table>
<thead>
<tr>
<th>Questions for Perceived Personal Conflict</th>
<th>Control Mean</th>
<th>Combined Mean</th>
<th>Expert Mean</th>
<th>Legitimate Mean</th>
<th>Referent Mean</th>
<th>Reward Mean</th>
<th>Conative Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>36. This whole decision project made me angry.</td>
<td>7.64</td>
<td>7.57</td>
<td>8.09</td>
<td>7.67</td>
<td>6.91</td>
<td>8.00</td>
<td>7.17</td>
</tr>
<tr>
<td>54. It bothered me that I couldn't get all the points I wanted.</td>
<td>5.27</td>
<td>5.09</td>
<td>6.09</td>
<td>4.33</td>
<td>4.82</td>
<td>5.33</td>
<td>4.92</td>
</tr>
<tr>
<td>68. I was a very mean and tough decision maker.</td>
<td>6.27</td>
<td>5.76</td>
<td>6.55</td>
<td>5.92</td>
<td>5.91</td>
<td>5.33</td>
<td>5.17</td>
</tr>
<tr>
<td>Positively Worded: c</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37. I think my final rank is high.</td>
<td>4.45</td>
<td>4.40</td>
<td>4.45</td>
<td>5.08</td>
<td>3.55</td>
<td>3.83</td>
<td>5.00</td>
</tr>
<tr>
<td>49. If I had the chance, I would volunteer for a similar project in the future.</td>
<td>2.36</td>
<td>3.24</td>
<td>3.55</td>
<td>3.08</td>
<td>3.73</td>
<td>2.92</td>
<td>3.00</td>
</tr>
<tr>
<td>53. I was satisfied with my point total.</td>
<td>4.09</td>
<td>4.64</td>
<td>4.18</td>
<td>4.92</td>
<td>4.73</td>
<td>4.50</td>
<td>4.83</td>
</tr>
<tr>
<td>57. This decision project was fun.</td>
<td>2.73</td>
<td>3.33</td>
<td>3.91</td>
<td>3.42</td>
<td>2.64</td>
<td>3.17</td>
<td>3.50</td>
</tr>
<tr>
<td>58. If I were to start over again, I don't think I could rank any better.</td>
<td>4.36</td>
<td>5.19</td>
<td>4.00</td>
<td>5.58</td>
<td>5.91</td>
<td>4.75</td>
<td>5.67</td>
</tr>
<tr>
<td>66. I concentrated on getting the best for me overall, rather than any one particular decision.</td>
<td>3.45</td>
<td>3.19</td>
<td>4.00</td>
<td>3.33</td>
<td>2.55</td>
<td>3.08</td>
<td>3.00</td>
</tr>
</tbody>
</table>

a The mean for each group is derived from a nine-point scale numbered from 1 to 9 for each statement, where:
1 = Very strongly agree
9 = Very strongly disagree

b All five experimental power base groups are combined into one general "power" group mean.

c The lower the mean, the greater the perceived personal conflict. If the control group mean is not less than the mean of another group, Hypothesis no. 1 is upheld.

d The greater the mean, the greater the perceived personal conflict. If the control group mean is not greater than the mean of another group, Hypothesis no. 1 is upheld.
### Table 4

**SUMMARY OF RESULTS FOR TESTING HYPOTHESIS 1:**

**PERCEIVED PERSONAL CONFLICT FOR THE CONTROL GROUP IS NOT SIGNIFICANTLY LESS THAN THE EXPERIMENTAL POWER BASE GROUPS**

<table>
<thead>
<tr>
<th>Questions For Perceived Personal Conflict</th>
<th>Hartley's F</th>
<th>Control Combined Power</th>
<th>Control Expert</th>
<th>Control Legit Power</th>
<th>Control Referent Power</th>
<th>Control Reward Power</th>
<th>Control Coercive Power</th>
<th>Overall F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positively Worded:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36. This whole decision project made me</td>
<td>6.867**</td>
<td>0.121(-)</td>
<td>0.629(+</td>
<td>0.043(-)</td>
<td>1.007(-)</td>
<td>0.514(+9)</td>
<td>0.664(-)</td>
<td>1.024</td>
</tr>
<tr>
<td>angry.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>54. It bothered me that I couldn't get all</td>
<td>2.959</td>
<td>0.274(-)</td>
<td>0.932(+</td>
<td>1.093(-)</td>
<td>0.518(-)</td>
<td>0.071(+)</td>
<td>0.414(-)</td>
<td>1.208</td>
</tr>
<tr>
<td>the points I wanted.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>68. I was a very mean and tough decision</td>
<td>1.816</td>
<td>0.853(-)</td>
<td>0.349(+</td>
<td>0.466(-)</td>
<td>0.466(-)</td>
<td>1.230(-)</td>
<td>1.448(-)</td>
<td>1.053</td>
</tr>
<tr>
<td>maker.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Negatively Worded:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37. I think my final rank is high.</td>
<td>3.625</td>
<td>0.100(+5)</td>
<td>0.000(0)</td>
<td>0.870(-)</td>
<td>1.232(+)</td>
<td>0.260(+)</td>
<td>0.755(-)</td>
<td>1.831</td>
</tr>
<tr>
<td>49. If I had the chance, I would volunteer</td>
<td>10.625****</td>
<td>1.597(-5)</td>
<td>1.634(-)</td>
<td>1.016(-)</td>
<td>1.885(-)</td>
<td>0.781(-)</td>
<td>0.890(-)</td>
<td>0.473</td>
</tr>
<tr>
<td>for a similar project in the future.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53. I was satisfied with my point total.</td>
<td>2.211</td>
<td>0.781(-)</td>
<td>0.007(-)</td>
<td>0.903(-)</td>
<td>0.681(-)</td>
<td>0.447(-)</td>
<td>0.812(-)</td>
<td>0.217</td>
</tr>
<tr>
<td>57. This decision project was fun.</td>
<td>2.660</td>
<td>1.233(-)</td>
<td>1.876(-)</td>
<td>1.119(-)</td>
<td>0.144(+)</td>
<td>0.713(-)</td>
<td>1.254(-)</td>
<td>1.084</td>
</tr>
<tr>
<td>58. If I were to start over again, I don't</td>
<td>1.565</td>
<td>0.974(-)</td>
<td>0.331(+)</td>
<td>1.135(-)</td>
<td>1.408(-)</td>
<td>0.360(-)</td>
<td>1.213(-)</td>
<td>1.122</td>
</tr>
<tr>
<td>think I could do any better.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>96. I concentrated on getting the best</td>
<td>4.652</td>
<td>0.392(+5)</td>
<td>0.617(+4)</td>
<td>0.140(+4)</td>
<td>1.028(+)</td>
<td>0.429(+)</td>
<td>0.526(+)</td>
<td>0.809</td>
</tr>
<tr>
<td>for me overall, rather than any one</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>particular decision.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signs Test</td>
<td>0.090*</td>
<td>0.637</td>
<td>0.090*</td>
<td>0.204</td>
<td>0.500</td>
<td>0.020***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signs Test</td>
<td>0.090</td>
<td>0.637</td>
<td>0.090</td>
<td>0.910</td>
<td>0.746</td>
<td>0.998</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

*a* F<sub>Max</sub> = greatest variance; *b* = the critical values of F<sub>Max</sub> is F<sub>6,11</sub> = 6.32 (p < 0.05) and 9.3 (p < 0.01).

*b* A test of significance is made for each question using a Student's t statistic. For example, comparing the means of the control and combined power base groups for Question 36 yields a Student's t of 0.121. The critical values of Student's t(df=67) are 1.96 (p < 0.05), 1.67 (p < 0.01), 2.00 (p < 0.025), and 2.39 (p < 0.01).

*c* Tests of significance are made for each paired comparison for each question, using a Dunnett's t statistic. For example, comparing the means of the control and expert groups yields a Dunnett's t of 0.829. The critical values of Dunnett's t(df=63) are 2.85 (p < 0.05), 2.63 (p < 0.025), and 2.94 (p < 0.01).

*d* The lower the mean, the greater the perceived personal conflict.

*e* The greater the mean, the greater the perceived personal conflict.

*f* Minus signs (−) indicate disagreement with the hypothesis. That is, the second group perceived greater personal conflict than the control group, using the means as the basis for comparison. For example, on Question 36 the combined power group perceived greater personal conflict than the control group.

*g* Plus (+) signs indicate agreement with the hypothesis. That is, the control group did not perceive less personal conflict than the second power base group, using the means as the basis for comparison. For example, on Question 36 the control group did not perceive less personal conflict than the reward power base group.

*h* The signs test is used to compare the means of the second group with the means of the first group for each particular question. For example, in comparing the combined power group with the control group there were two cases in which the control group did not perceive less conflict than the combined power group. The probability of two or fewer cases occurring at random is 0.000.

*i* The signs test is used to compare the means of the control group with the means of the second power base group for each particular question. For example, in comparing the control and combined power groups, there were seven cases in which the control group perceived less personal conflict than the combined power group. The probability of seven or fewer cases occurring at random is 0.000.

*j* Overall F test (df=6,63) = F(6,60). The critical values are 1.37 (p < 0.25) and 1.05 (p < 0.10).

*Significant at (p < 0.10). **Significant at (p < 0.05). ***Significant at (p < 0.025). ****Significant at (p < 0.01).
group (p < 0.025) perceived significantly greater personal conflict overall when compared with the control group.

For the individual questions, none of the F tests were significant at the 0.10 level. The only Student t test to be significant (p < 0.10) showed that the combined power group was less disposed to volunteer for a similar project in the future than the control group. None of the Dunnett t tests were significant.

In reviewing the Hartley F tests, the legitimate group produced a surprisingly low variance to Question 49 which relates to volunteering for a similar project in the future. This produced a significantly high (p < 0.01) F_{max} of 10.525 when compared with the referent group. There is little explanation that can be given for this result although further research may shed some light.

Overall, there was some slight evidence that Hypothesis 1 should be rejected and the implication drawn that power base use produces higher personal conflict. However, the evidence was not strong and implications must be made with extreme care.

**Test of Hypothesis 2**

Set in null hypothesis form, Hypothesis 2 is as follows:

\[ H_0 \text{ 2: There is no significant difference in perceived personal conflict among the experimental power base groups.} \]
To test Hypothesis 2, the mean responses for each experimental power base group for the questions related to personal conflict (i.e., Questions 36, 54, 68, 37, 49, 53, 57, 58, and 66) were compared with the mean responses for each other experimental power base group.

The results from testing Hypothesis 2 (see Table 5) produced few significant results. There was little evidence that the null hypothesis should be rejected in favor of the alternate hypothesis that there are significant differences among the experimental power base groups in terms of perceived personal conflict. For instance, none of the overall F tests were significant at the 0.10 level and none of the Dunnett t tests were significant at the 0.05 level.

There were three cases in which the signs test was significant. Overall, the referent group perceived significantly greater \( p < 0.10 \) personal conflict than the expert group. The legitimate group perceived significantly greater \( p < 0.025 \) personal conflict than the reward group, and the coercive group perceived significantly greater \( p < 0.025 \) personal conflict than the reward group.

Thus, by and large, Hypothesis 2 can be considered as still standing although there were a few individual cases of significance.
### Table 5

<table>
<thead>
<tr>
<th>Question Numbers For Perceived Personal Conflict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positively Worded: a</td>
</tr>
<tr>
<td>36. This whole decision project made me angry.</td>
</tr>
<tr>
<td>54. It bothered me that I couldn't get all the points I wanted.</td>
</tr>
<tr>
<td>68. I was a very mean and tough decision maker.</td>
</tr>
</tbody>
</table>

| Negatively Worded: d                          |
| 37. I think my final rank is high.           |
| 49. If I had the choice I would volunteer for a similar project in the future. |
| 63. I was satisfied with my point total.     |
| 67. This decision project was fun.           |
| 78. If I were to start over again, I don't think I could do any better. |
| 66. I concentrated on getting the best for overall, rather than any one particular decision. |

| 1,024 | 1.615(+) | 1.290(+) | 1.057(+) | 0.476(+)| 0.714(+) | 1.523(+) | 0.359(+) | 1.189(+) |
| 1.208 | 1.476(+) | 1.391(+) | 0.574(+) | 1.211(+) | 0.706(+) | 0.610(+) | 0.117(+) | 0.506(+) |
| 1.053 | 0.834(+) | 1.091(+) | 0.810(+) | 0.179(+) | 0.810(+) | 1.017(+) | 0.764(+) | 0.985(+) |
| 1.831 | 1.235(+)| 0.862(+)| 0.757(+)| 2.134(+)| 1.773(+)| 0.118(+)| 0.399(+) | 2.018(+) |
| 0.473 | 0.242(-)| 0.854(+)| 0.741(+)| 0.875(-)| 0.232(+)| 0.116(+)| 1.101(+) | 0.986(+)|
| 0.217 | 0.821(-)| 0.597(-)| 0.728(-)| 0.212(+)| 0.476(+)| 0.095(+) | 0.264(+) | 0.119(+) | 0.381(+) |
| 1.084 | 1.928(+) | 1.197(-)| 1.054(+)| 1.247(+)| 0.405(+)| 0.136(-) | 0.848(-) | 1.381(-) | 0.545(-) |
| 1.122 | 1.514(-)| 1.787(+) | 0.717(-)| 1.594(-)| 0.311(-)| 0.815(+)| 0.081(-) | 1.108(+) | 0.232(+) | 0.89(-) |

**Signs Test:**

| 0.809 | 1.729(+)| 1.113(+)| 1.214(+)| 0.957(+)| 0.310(+)| 0.414(+)| 0.653(-)| 0.552(-)| 0.103(+) |
| 0.254 | 0.090* | 0.500 | 0.254 | 0.746 | 0.998 | 0.746 | 0.746 | 0.999 |
| 0.910 | 0.980 | 0.749 | 0.910 | 0.500 | 0.020*** | 0.500 | 0.500 | 0.746 |

---

aOverall F-test (df = 5, 63) ÷ (df = 5, 60). The critical values are 1.37 (p < 0.25) and 1.95 (p < 0.10).
bTests of significance are made for each paired comparison for each question, using a Dunnett's t statistic. For example, comparing the means for Question 36 for the expert group and the legitimate group yields a Dunnett's t statistic of 0.509. The critical value of Dunnett's t (5, 63) = 2.21 (p < 0.05).
cThe lower the mean, the greater the perceived personal conflict.
dThe greater the mean, the greater the perceived personal conflict.
eMinus (−) signs indicate disagreement with the hypothesis. That is, the second group perceived greater personal conflict than the first power base group, using the means as the basis for comparison. For example, on Question 36, the expert group perceived less personal conflict than the legitimate power base group.
fPlus (+) signs also indicate disagreement with the hypothesis. That is, the first group perceived greater personal conflict than the second power base group, using the means as the basis for comparison. For example, on Question 36 the expert group perceived greater personal conflict than the reward power base group.
gThe signs test is used to compare the means of the first group with the means of the second power base group for each particular question. For example, in comparing the expert and legitimate groups, there were three cases in which the expert group perceived greater personal conflict than the legitimate group. The probability of three or fewer cases occurring at random is 0.264.
hThe signs test is used to compare the means of the second group with the means of the first group for each particular question. For example, in comparing the expert and legitimate groups, there were six cases in which the legitimate group perceived greater personal conflict than the expert group. The probability of six or fewer cases occurring at random is 0.910.

* Significant at (p < 0.10)
** Significant at (p < 0.05)
*** Significant at (p < 0.025)
Summary of Perceived Personal Conflict Results

Based upon the results of the signs test displayed in Tables 4 and 5, the following rank ordered relationships can be established, based upon greater personal conflict:

Control > Expert
Reward > Control
Referent > Control
Coercive > Control (p < 0.025)
Legitimate > Control (p < 0.10)
Reward > Expert
Referent > Expert (p < 0.10)
Coercive > Expert
Legitimate > Expert
Referent > Reward
Coercive > Reward (p < 0.025)
Legitimate > Reward (p < 0.10)
Coercive > Referent
Legitimate > Referent
Legitimate > Coercive

Figure 5 represents these rank orders of perceived personal conflict produced by the different power bases:

<table>
<thead>
<tr>
<th>Lowest</th>
<th>Personal Conflict</th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert</td>
<td>Control</td>
<td>Reward</td>
</tr>
</tbody>
</table>

Figure 5. Representation of Power Base Rankings in Producing Personal Conflict.

There were no cases of inconsistency for any individual ranking. However, there were cases in which some
significant differences were not found between some rankings which would ordinarily be expected. For example, the only significant differences were found in the control-legitimate, control-coercive, expert-referent, reward-legitimate, and reward-coercive comparisons. The normal expectation would be that the expert-coercive and expert-legitimate comparisons would also have been significant.

In summary, there was some empirical support that expert and "no-power" power bases produced less perceived personal conflict when compared with the other experimental power base groups. The implication that can be drawn is that if a power base is used, and an objective of low personal conflict is desired, then an expert power base should be used. If an expert power base is not available, no power base should be used. Legitimate and coercive power bases should be avoided.

Test of Hypothesis 3

As with personal conflict, it was expected that the control group would perceive less interpersonal conflict than the experimental power base groups. This was stated in null hypothesis form as follows:

H₀ 3: Perceived interpersonal conflict for the control group is not significantly less than the experimental power base groups.

To test Hypothesis 3, the mean responses of the
control group for the questions related to interpersonal conflict (i.e., Questions 38, 39, 59, 60, 62, 65, 63, 67, 69) were compared with the mean responses for each of the experimental power base groups (see Table 6).

There was no evidence (see Table 7) that Hypothesis 3 should be rejected in favor of the alternate hypothesis that states, in short, that power base use breeds greater interpersonal conflict. On the contrary, there was some significant support which came from Question 38 which referred to wanting to be paired with another person. The overall F was significant (p < 0.01) because the control group very much preferred another pairing, when compared with the combined power (p < 0.01), expert (p < 0.01), referent (p < 0.01), and coercive (p < 0.05) groups. The only other support for rejection came from Question 62, which related to the uncertainty of what the other person would do. The control group was significantly more uncertain than the combined power group (p < 0.05) and the legitimate group (p < 0.025). Other than these cases, there was no support for rejection of Hypothesis 2. In fact, the signs test showed very little difference between the groups.

In reviewing the Hartley $F_{\text{max}}$ tests, only the result for Question 65 was significant (p < 0.05). This was due to the unusually low variance of the control group for
**TABLE 6**

SUMMARY OF DATA FOR TESTING HYPOTHESIS 3: PERCEIVED INTERPERSONAL CONFLICT FOR THE CONTROL GROUP IS NOT SIGNIFICANTLY LESS THAN THE EXPERIMENTAL POWER BASE GROUPS

<table>
<thead>
<tr>
<th>Questions for Perceived Interpersonal Conflict</th>
<th>Control Mean</th>
<th>Combined Mean</th>
<th>Expert Mean</th>
<th>Legitimate Mean</th>
<th>Referent Mean</th>
<th>Round Mean</th>
<th>Overall Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positively Worded:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38. I wish I could have been paired with another person.</td>
<td>5.27</td>
<td>7.03</td>
<td>7.64</td>
<td>6.00</td>
<td>7.01</td>
<td>6.75</td>
<td>7.00</td>
</tr>
<tr>
<td>39. I wish I could punish the other person.</td>
<td>8.27</td>
<td>7.97</td>
<td>8.45</td>
<td>7.67</td>
<td>8.09</td>
<td>8.00</td>
<td>7.67</td>
</tr>
<tr>
<td>50. If the other person and I could have talked things over, we both would have made more points.</td>
<td>3.64</td>
<td>4.98</td>
<td>5.27</td>
<td>5.00</td>
<td>5.91</td>
<td>5.25</td>
<td>3.58</td>
</tr>
<tr>
<td>60. If I had the choice, I would rather send a message, than receive a message.</td>
<td>4.55</td>
<td>4.07</td>
<td>3.64</td>
<td>4.25</td>
<td>4.55</td>
<td>3.58</td>
<td>4.33</td>
</tr>
<tr>
<td>62. The uncertainty about what the other person would decide bothered me.</td>
<td>6.91</td>
<td>5.69</td>
<td>6.18</td>
<td>5.00</td>
<td>5.45</td>
<td>5.33</td>
<td>6.50</td>
</tr>
<tr>
<td>65. If I tried to be sneaky, the other person would make me pay for it.</td>
<td>4.00</td>
<td>4.36</td>
<td>4.18</td>
<td>4.50</td>
<td>4.55</td>
<td>4.33</td>
<td>4.25</td>
</tr>
<tr>
<td>Negatively Worded:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63. If the other person were a good friend, my decisions would have been more selfish.</td>
<td>7.27</td>
<td>6.81</td>
<td>7.36</td>
<td>6.33</td>
<td>6.27</td>
<td>7.00</td>
<td>7.08</td>
</tr>
<tr>
<td>67. I tried to make the other person do what I wanted.</td>
<td>3.55</td>
<td>4.38</td>
<td>4.27</td>
<td>3.58</td>
<td>5.18</td>
<td>4.75</td>
<td>4.17</td>
</tr>
<tr>
<td>69. I tried to cooperate with the other person whenever he tried to cooperate with me.</td>
<td>4.00</td>
<td>3.88</td>
<td>3.82</td>
<td>4.17</td>
<td>2.55</td>
<td>4.75</td>
<td>4.00</td>
</tr>
</tbody>
</table>

*The mean for each group is derived from a nine-point scale numbered from 1 to 9 for each statement, where:*

1 = Very strongly agree
9 = Very strongly disagree

*bAll five experimental power base groups are combined into one general "power" group mean.

*cThe lower the mean the greater the perceived interpersonal conflict. If the control group mean is not less than the mean of another group, Hypothesis 3 is upheld.

*dThe greater the mean, the greater the perceived interpersonal conflict. If the control group mean is not greater than the mean of another group, Hypothesis 3 is upheld.
<table>
<thead>
<tr>
<th>Questions For Perceived Interpersonal Conflict</th>
<th>Hartley's F&lt;sub&gt;a&lt;/sub&gt;</th>
<th>Combined Control</th>
<th>Combined Control</th>
<th>Combined Control</th>
<th>Combined Control</th>
<th>Combined Control</th>
<th>Combined Control</th>
<th>Overall F&lt;sub&gt;b&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positively Worded:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38. I wish I could have been paired with an another person.</td>
<td>2.209</td>
<td>2.818(+)***</td>
<td>2.994(+)9***</td>
<td>0.941(+)</td>
<td>3.340(+)***</td>
<td>1.912(+)</td>
<td>2.235(+)**</td>
<td>3.206****</td>
</tr>
<tr>
<td>39. I wish I could punish the other person.</td>
<td>3.403</td>
<td>0.665(−)f</td>
<td>0.300(+)</td>
<td>1.022(−)</td>
<td>0.300(−)</td>
<td>0.460(−)</td>
<td>1.022(−)</td>
<td>0.578</td>
</tr>
<tr>
<td>59. If the other person and I could have talked things over, we both would have made more points.</td>
<td>1.637</td>
<td>1.437(+)*</td>
<td>1.350(+)</td>
<td>1.150(+)</td>
<td>1.876(+)</td>
<td>1.360(*)</td>
<td>0.345(−)</td>
<td>1.725</td>
</tr>
<tr>
<td>60. If I had the choice, I would rather send a message, than receive a message.</td>
<td>1.805</td>
<td>0.689(−)</td>
<td>0.997(−)</td>
<td>0.331(−)</td>
<td>0.000(0)</td>
<td>1.078(−)</td>
<td>0.236(−)</td>
<td>0.469</td>
</tr>
<tr>
<td>62. The uncertainty about what the other person would decide bothered me.</td>
<td>2.607</td>
<td>1.889(−)***</td>
<td>0.872(−)</td>
<td>2.339(−)***</td>
<td>1.744(−)</td>
<td>1.930(−)</td>
<td>0.501(−)</td>
<td>1.680</td>
</tr>
<tr>
<td>65. If I tried to be sneaky, the other person would make me pay for it.</td>
<td>6.205</td>
<td>0.626(−)</td>
<td>0.236(−)</td>
<td>0.662(−)</td>
<td>0.707(+)</td>
<td>0.441(+)</td>
<td>0.331(+)</td>
<td>0.142</td>
</tr>
<tr>
<td>Negatively Worded:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63. If the other person were a good friend, my decisions would have been more selfish.</td>
<td>1.683</td>
<td>0.771(+)</td>
<td>0.116(−)</td>
<td>1.225(+)</td>
<td>1.277(+)</td>
<td>0.356(+)</td>
<td>0.247(+)</td>
<td>0.746</td>
</tr>
<tr>
<td>67. I tried to make the other person do what I wanted.</td>
<td>3.427</td>
<td>1.167(−)</td>
<td>0.782(−)</td>
<td>0.042(−)</td>
<td>1.760(−)</td>
<td>1.324(−)</td>
<td>0.683(−)</td>
<td>0.986</td>
</tr>
<tr>
<td>69. I tried to cooperate with the other person whenever he tried to cooperate with me.</td>
<td>2.035</td>
<td>0.151(+)</td>
<td>0.184(+)</td>
<td>0.172(−)</td>
<td>1.472(+)</td>
<td>0.778(−)</td>
<td>0.000(0)</td>
<td>1.118</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.0746</td>
<td>.0746</td>
<td>.500</td>
<td>.500</td>
<td>.0855</td>
<td>.500</td>
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<td>.5000</td>
<td>.746</td>
<td>.746</td>
<td>.365</td>
<td>.746</td>
<td>.855</td>
</tr>
</tbody>
</table>

<sup>a</sup> <sub>F<sub>Max</sub> = greatest variance / F<sub>Min</sub> = least variance</sub> The critical values of F<sub>Max</sub> ≈ F(6,11) = 6.22 (p < .05) and 9.3 (p < .01).

<sup>b</sup> A test of significance is made for each question using a Student's t statistic. For example, comparing the means of the control and combined power base groups for Question 38 yields a Student's t of 2.818. The critical values of Student's t (df=67) ≈ (df=60) are 1.296 (p < .01), 1.671 (p < .05), 2.000 (p < .025), and 2.390 (p < .01). The critical values of Dunnett's t (df=60) are 2.23 (p < .05), 2.63 (p < .025), and 2.94 (p < .01).

<sup>c</sup> tests of significance are made for each paired comparison for each question, using a Dunnett's t statistic. For example, comparing the means of the control and expert groups yields a Dunnett's t of 2.984. The critical values of Dunnett's t (df=60) are 2.23 (p < .05), 2.63 (p < .025), and 2.94 (p < .01).

<sup>d</sup> The lower the mean, the greater the perceived interpersonal conflict.

<sup>e</sup> The higher the mean, the greater the perceived interpersonal conflict.

<sup>f</sup> Minus signs (−) indicate disagreement with the hypothesis. That is, the second group perceived greater interpersonal conflict than the first power base group, using the means as the basis for comparison. For example, on Question 38 the control group perceived greater interpersonal conflict than the expert group.

<sup>g</sup> Plus (+) signs also indicate disagreement with the hypothesis. That is, the first group perceived greater interpersonal conflict than the second power base group, using the means as the basis for comparison. For example, on Question 38 the control group perceived greater interpersonal conflict than the expert group.

<sup>h</sup> The test is used to compare the means of the first group with the means of the second power base group for each particular question. For example, in comparing the control and combined power groups, there were five cases in which the control group did not perceive less interpersonal conflict than the combined power group. The probability of five or fewer cases occurring at random is 0.746.

<sup>i</sup> The test is used to compare the means of the second group with the means of the first group for each particular question. For example, in comparing the combined power group with the control group there were four cases in which the combined power group perceived less interpersonal conflict than the control group. The probability of four or fewer cases occurring at random is 0.500.

<sup>j</sup> Overall F test (df=6,63) ≈ (df=6,60). The critical values are 1.35 (p < .025), 1.87 (p < .01), 2.25 (p < .05), and 3.12 (p < .01).

*Significant at (p < .01). **Significant at (p < .05). ***Significant at (p < .025). ****Significant at (p < .01).
this question. However, none of the t tests were significant for this question anyway.

Overall, there was no evidence that Hypothesis 3 should be rejected and the implication drawn that power base use produces higher interpersonal conflicts. There was some evidence to the contrary, although implications must be made with extreme care because the overall significance was fragmentary.

Test of Hypothesis 4

Set in null hypothesis form, Hypothesis 4 is as follows:

$H_0$ 4: There is no significant difference in perceived interpersonal conflict among the experimental power base groups.

To test Hypothesis 4, the mean responses for each experimental power base group for the questions related to interpersonal conflict (i.e., Questions 38, 39, 59, 60, 62, 65, 63, 67, and 69) were compared with the mean responses for each other experimental power base group.

The results from testing Hypothesis 4 (see Table 8) produced few significant results. As with the results from the personal conflict tests, there was little evidence that the null hypothesis should be rejected in favor of the alternate hypothesis that there are significant differences among the experimental power base groups in terms of
TABLE 8
SUMMARY OF RESULTS FOR TESTING HYPOTHESIS 4:
THERE IS NO SIGNIFICANT DIFFERENCE IN PERCEIVED INTERPERSONAL CONFLICT AMONG THE EXPERIMENTAL POWER BASE GROUPS.

<table>
<thead>
<tr>
<th>QUESTIONS FOR INTERPERSONAL CONFLICT</th>
<th>EXPERT LEGITIMATE</th>
<th>EXPERT REFERENCE</th>
<th>EXPERT REWARD</th>
<th>LEGITIMATE REFERENCE</th>
<th>LEGITIMATE REWARD</th>
<th>REFERENT LEGITIMATE</th>
<th>REFERENT REWARD</th>
<th>REFERENT REFERENCE</th>
<th>REFERENT CONCRETE</th>
<th>RECOMMEND $b$</th>
<th>CONCRETE $b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>38. I wish I could have been paired with another person.</td>
<td>$2.024^*$</td>
<td>$2.178(+)^a$</td>
<td>$0.356(+)^b$</td>
<td>$1.180(+)^b$</td>
<td>$0.847(+)^c$</td>
<td>$2.541(+)^{**}$</td>
<td>$1.021(+)^{**}$</td>
<td>$1.361(+)^a$</td>
<td>$1.543(+)^a$</td>
<td>$1.210(+)^b$</td>
<td>$0.540(+)^b$</td>
</tr>
<tr>
<td>39. I wish I could punish the other person.</td>
<td>0.592</td>
<td>$1.304(+)^a$</td>
<td>$0.589(+)^b$</td>
<td>$0.753(+)^b$</td>
<td>$1.304(+)^b$</td>
<td>$0.702(+)^b$</td>
<td>$0.564(+)^b$</td>
<td>$0.000(0)$</td>
<td>$0.151(+)^b$</td>
<td>$0.702(+)^b$</td>
<td>$0.564(+)^b$</td>
</tr>
<tr>
<td>59. If the other person and I could have talked things over, we both could have made more points.</td>
<td>1.045</td>
<td>$0.227(+)^a$</td>
<td>$0.518(+)^b$</td>
<td>$0.019(+)^b$</td>
<td>$1.404(+)^b$</td>
<td>$0.756(+)^b$</td>
<td>$0.212(+)^b$</td>
<td>$1.204(+)^a$</td>
<td>$0.548(+)^b$</td>
<td>$1.933(+)^a$</td>
<td>$1.416(+)^a$</td>
</tr>
<tr>
<td>60. If I had the choice, I would rather send a message, than receive a message.</td>
<td>0.466</td>
<td>$0.684(+)^b$</td>
<td>$0.991(+)^b$</td>
<td>$0.059(+)^b$</td>
<td>$0.776(+)^b$</td>
<td>$0.329(+)^b$</td>
<td>$0.759(+)^b$</td>
<td>$0.095(+)^b$</td>
<td>$1.072(+)^b$</td>
<td>$0.236(+)^b$</td>
<td>$0.854(+)^b$</td>
</tr>
<tr>
<td>62. The uncertainty about what the other person would decide bothered me.</td>
<td>1.182</td>
<td>$1.436(+)^a$</td>
<td>$0.865(+)^b$</td>
<td>$1.031(+)^b$</td>
<td>$0.387(+)^b$</td>
<td>$0.552(+)^b$</td>
<td>$0.414(+)^b$</td>
<td>$1.864(+)^a$</td>
<td>$0.147(+)^a$</td>
<td>$1.270(+)^a$</td>
<td>$1.449(+)^a$</td>
</tr>
<tr>
<td>65. If I tried to be sneaky, the other person would make me pay for it.</td>
<td>0.076</td>
<td>$0.394(+)^b$</td>
<td>$0.441(+)^b$</td>
<td>$0.188(+)^b$</td>
<td>$0.084(+)^b$</td>
<td>$0.066(+)^b$</td>
<td>$0.211(+)^b$</td>
<td>$0.317(+)^b$</td>
<td>$0.263(+)^b$</td>
<td>$0.366(+)^b$</td>
<td>$0.106(+)^b$</td>
</tr>
<tr>
<td>Negatively worded: $c$</td>
<td>0.815</td>
<td>$1.369(+)^a$</td>
<td>$1.419(+)^a$</td>
<td>$0.483(+)^c$</td>
<td>$0.372(+)^c$</td>
<td>$0.081(+)^c$</td>
<td>$0.906(+)^b$</td>
<td>$1.019(+)^b$</td>
<td>$0.966(+)^b$</td>
<td>$1.077(+)^b$</td>
<td>$0.113(+)^b$</td>
</tr>
<tr>
<td>67. I tried to make the other person do what I wanted.</td>
<td>0.885</td>
<td>$0.753(+)^b$</td>
<td>$0.973(+)^b$</td>
<td>$0.522(+)^c$</td>
<td>$0.116(+)^c$</td>
<td>$1.747(+)^b$</td>
<td>$0.304(+)^b$</td>
<td>$0.652(+)^b$</td>
<td>$0.472(+)^b$</td>
<td>$1.109(+)^b$</td>
<td>$0.652(+)^b$</td>
</tr>
<tr>
<td>69. I tried to cooperate with the other person whenever he tried to cooperate with me.</td>
<td>1.498</td>
<td>$0.374(+)^a$</td>
<td>$1.337(+)^a$</td>
<td>$1.000(+)^a$</td>
<td>$0.195(+)^a$</td>
<td>$1.736(+)^a$</td>
<td>$0.604(+)^a$</td>
<td>$0.183(+)^a$</td>
<td>$2.365(+)^a$</td>
<td>$1.560(+)^a$</td>
<td>$0.823(+)^a$</td>
</tr>
<tr>
<td>Signs Test $g$</td>
<td>0.500</td>
<td>0.910</td>
<td>0.990</td>
<td>0.909</td>
<td>0.993</td>
<td>0.500</td>
<td>0.520</td>
<td>0.637</td>
<td>0.020</td>
<td>0.090</td>
<td>0.746</td>
</tr>
<tr>
<td>Signs Test $h$</td>
<td>0.746</td>
<td>0.254</td>
<td>0.980</td>
<td>0.500</td>
<td>0.500</td>
<td>0.020</td>
<td>0.746</td>
<td>0.637</td>
<td>0.998</td>
<td>0.980</td>
<td>0.500</td>
</tr>
</tbody>
</table>

---

*a* Overall $F$ Test (df = 5, 63) $F$ (df = 5, 60). The critical values are 1.37 ($p < 0.05$), 1.95 ($p < 0.01$), and 2.37 ($p < 0.005$).

*b* Tests of significance are made for each paired comparison for each question, using a Dunnett's $t$ statistic. For example, comparing the means for Question 38 for the expert group and the legitimate group yields a Dunnett's $t$ statistic of 2.178. The critical values of Dunnett's $t$ (5, 63) $F$ (5, 63) are 2.21 ($p < 0.05$) and 2.88 ($p < 0.025$).

*c* The lower the mean, the greater the perceived interpersonal conflict.

*d* The greater the mean, the greater the perceived interpersonal conflict.

*e* Minus (-) signs indicate disagreement with the hypothesis. That is, the second group perceived greater interpersonal conflict than the first power base group, using the means as the basis for comparison. For example, on Question 38, the expert group perceived less interpersonal conflict than the legitimate power base group.

*f* Plus (+) signs also indicate disagreement with the hypothesis. That is, the first group perceived greater interpersonal conflict than the second power base group using the means as the basis for comparison. For example, on Question 38, the expert group perceived greater interpersonal conflict than the reward power base group.

*g* The sign test is used to compare the means of the first group with the means of the second power base group for each particular question. For example, in comparing the expert and legitimate groups, there were four cases in which the legitimate group perceived greater interpersonal conflict than the expert group. The probability of five or fewer cases occurring at random is 0.500.

*h* The sign test is used to compare the means of the second group with the means of the first group for each particular question. For example, in comparing the expert and legitimate groups, there were five cases in which the legitimate group perceived greater interpersonal conflict than the expert group. The probability of five or fewer cases occurring at random is 0.746.

---

*Significant at $p < 0.10$.**Significant at $p < 0.05$.***Significant at $p < 0.025$.
perceived personal conflict.

The only significant overall F test (p < 0.10) was for Question 38 and related to desire for pairing with another person. For the same question, the Dunnett t was significant (p < 0.05) for the legitimate-referent group comparison. The legitimate group very strongly preferred to have been paired with another person.

There were four cases in which the signs test was significant. Overall, the expert group perceived significantly less (p < 0.10) interpersonal conflict than the reward group, the referent group significantly less (p < 0.025) than the legitimate group, the referent group significantly less (p < 0.025) than the reward group, and the referent group significantly less (p < 0.10) than the coercive group.

It appears that there was strong evidence that referent power produced low interpersonal conflict which is not surprising considering that the message referred to a "team" approach. Otherwise, the results were spotty and Hypothesis 4 can be considered as still standing, although there were a few individual cases of significance.

**Summary of Perceived Interpersonal Conflict Results**

Based upon the results of the signs test displayed in Tables 7 and 8, the following rank ordered relationships
can be established, based upon greater interpersonal conflict:

<table>
<thead>
<tr>
<th>Legitimate</th>
<th>&gt;</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert</td>
<td>&gt;</td>
<td>Referent</td>
</tr>
<tr>
<td>Reward</td>
<td>&gt;</td>
<td>Expert</td>
</tr>
<tr>
<td>Expert</td>
<td>&gt;</td>
<td>Coercive</td>
</tr>
<tr>
<td>Legitimate</td>
<td>&gt;</td>
<td>Referent</td>
</tr>
<tr>
<td>Reward</td>
<td>&gt;</td>
<td>Legitimate</td>
</tr>
<tr>
<td>Legitimate</td>
<td>=</td>
<td>Coercive</td>
</tr>
<tr>
<td>Reward</td>
<td>&gt;</td>
<td>Referent</td>
</tr>
<tr>
<td>Coercive</td>
<td>&gt;</td>
<td>Referent</td>
</tr>
<tr>
<td>Reward</td>
<td>&gt;</td>
<td>Coercive</td>
</tr>
<tr>
<td>Control</td>
<td>&gt;</td>
<td>Expert</td>
</tr>
<tr>
<td>Legitimate</td>
<td>&gt;</td>
<td>Control</td>
</tr>
<tr>
<td>Control</td>
<td>&gt;</td>
<td>Referent</td>
</tr>
<tr>
<td>Reward</td>
<td>&gt;</td>
<td>Control</td>
</tr>
<tr>
<td>Coercive</td>
<td>&gt;</td>
<td>Control</td>
</tr>
</tbody>
</table>

Figure 6 represents these rank orders of perceived interpersonal conflict produced by the different power bases:

<table>
<thead>
<tr>
<th>Lowest</th>
<th>Interpersonal Conflict</th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referent</td>
<td>&lt; Expert</td>
<td>&lt; Control</td>
</tr>
<tr>
<td>Control</td>
<td>&lt; Coercive</td>
<td>&lt; Legitimate</td>
</tr>
<tr>
<td>Legitimate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 6  Representation of Power Base Rankings in Producing Interpersonal Conflict.

There was one case of inconsistency in that the expert group perceived greater interpersonal conflict than the coercive group. There were no cases in which expected significant differences between power base groups were absent.
In summary, there was empirical support that the referent power base produced less perceived interpersonal conflict when compared with the other experimental power base group. The implication that can be drawn is that if a power base is used and low interpersonal conflict is desired, then a referent power base should be used. A reward power base should be avoided.

**Test of Hypothesis 5**

It was expected that the performance (total non-cooperative choices) for the control group would be significantly less than the experimental power base groups. This result was expected because the non-cooperative choices represented behavioral conflict. Stated in null hypothesis form as follows:

\[ H_0 \text{ 5: Behavioral conflict in terms of total non-cooperative choices for the control group is not significantly less than the experimental power base groups.} \]

To test Hypothesis 5 the total non-cooperative choices for the control group were compared with the total non-cooperative choices for each of the experimental power base groups (see Table 9).

There was no evidence (see Table 10) that Hypothesis 5 should be rejected in favor of the alternate hypothesis that states, in short, that power base use is dysfunctional.
TABLE 9
SUMMARY OF DATA FOR TESTING HYPOTHESIS 5:

PERFORMANCE (in terms of non-cooperative choices) FOR THE CONTROL GROUP IS NOT SIGNIFICANTLY GREATER FOR THE CONTROL GROUP THAN THE EXPERIMENTAL POWER BASE GROUPS

<table>
<thead>
<tr>
<th>Number of Non-Cooperative (Conflict) &quot;Z&quot; Strategy Choices in the Game</th>
<th>Number of Subjects in Each Group Making Each Number of Non-Cooperative (Conflict) &quot;Z&quot; Strategy Choices in the Game.(^a)</th>
<th>Combined Control Power(^b)</th>
<th>Expert</th>
<th>Legitimate</th>
<th>Referent</th>
<th>Reward</th>
<th>Coercive</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>28</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
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<td>10</td>
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<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>11</strong></td>
<td><strong>58</strong></td>
<td><strong>11</strong></td>
<td><strong>12</strong></td>
<td><strong>11</strong></td>
<td><strong>12</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

\(^a\)For example, there were no subjects in the control group making "0" non-cooperative choices in the game, but there were 3 subjects in the control group who each chose the non-cooperative "Z" strategy 15 times. There were 8 subjects in the referent power base group who did not choose "Z" at all and 1 subject who chose "Z" once.

\(^b\)All five experimental power base groups were summed to a combined total.
TABLE 10

SUMMARY OF RESULTS FOR TESTING HYPOTHESIS 5:

PERFORMANCE (TOTAL COOPERATIVE CHOICES) FOR THE CONTROL GROUP IS NOT SIGNIFICANTLY GREATER THAN THE EXPERIMENTAL POWER BASE GROUPS

<table>
<thead>
<tr>
<th>Paired Comparisons of Strategy Choices for Control Group with Each Experimental Power Base Group</th>
<th>( n_1, n_2^a )</th>
<th>Statistical Tests(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control - Combined Power(^b)</td>
<td>11, 58</td>
<td>( Z^c = 3.57^a )</td>
</tr>
<tr>
<td>Control - Expert</td>
<td>11, 11</td>
<td>( U^d = 22^f )</td>
</tr>
<tr>
<td>Control - Legitimate</td>
<td>11, 12</td>
<td>( U^d = 22^f )</td>
</tr>
<tr>
<td>Control - Referent</td>
<td>11, 11</td>
<td>( U^d = 7^a )</td>
</tr>
<tr>
<td>Control - Reward</td>
<td>11, 12</td>
<td>( U^d = 24.5^f )</td>
</tr>
<tr>
<td>Control - Coercive</td>
<td>11, 12</td>
<td>( U^d = 24^f )</td>
</tr>
</tbody>
</table>

Overall test for six groups: \( H_0 \) corrected = 17.4\(^f\)

\(^a\)\(n_1\) = Size of smaller sample, \(n_2\) = size of larger sample.

\(^b\)All five experimental power base groups were summed to a combined total.

\(^c\)\(Z\) - Statistic

\(^d\)Mann-Whitney \(U\) Statistic

\(^e\)Accept Hypothesis 5 at \( p < 0.999 \)

\(^f\)Accept Hypothesis 5 at \( p < 0.99 \)

\(^g\)Kruskal-Wallis statistics corrected for ties. The critical values (df = 5) are 15.09 (\( p < .01 \)) and 20.52 (\( p < .001 \))

\(^h\)These are summary statistics based upon analysis of the data in Table 9.
by producing poorer performance. The results were rather startling because all the results pointed to the conclusion that power base use of any type produced better results. For example, the overall Kruskal-Wallis statistic was very significant \( p < 0.01 \) as were the tests for each individual power base. The expert, legitimate, reward, and coercive groups all made significantly greater \( p < 0.01 \) cooperative choices than the control group, using the Mann-Whitney \( U \) statistic for comparison.

The results very strongly pointed to the conclusion that there is significantly greater behavioral conflict in terms of non-cooperative choices in a no-power base situation compared with any situation using power bases.

**Test of Hypothesis 6**

Stated in null hypothesis form, Hypothesis 6 is as follows:

\[ H_0 \; 6: \; \text{There is no significant difference in behavioral conflict in terms of total non-cooperative choices among the experimental power base groups.} \]

To test Hypothesis 6, the total non-cooperative choices for each experimental group was compared with the total non-cooperative choices for each other group (see Table 11).

There was only slight evidence that Hypothesis 6
### TABLE 11
SUMMARY OF RESULTS FOR TESTING HYPOTHESIS 5:
THERE IS NO SIGNIFICANT DIFFERENCE IN NON-COOPERATIVE CHOICES AMONG THE EXPERIMENTAL POWER BASE GROUPS

<table>
<thead>
<tr>
<th>Paired Comparisons for Each Experimental Power Base Group</th>
<th>$n_1$, $n_2$</th>
<th>Mann-Whitney U Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert - Legitimate</td>
<td>11, 12</td>
<td>(+) 66</td>
</tr>
<tr>
<td>Expert - Referent</td>
<td>11, 11</td>
<td>(-) 46</td>
</tr>
<tr>
<td>Expert - Reward</td>
<td>11, 12</td>
<td>(-) 62.5</td>
</tr>
<tr>
<td>Expert - Coercive</td>
<td>11, 12</td>
<td>(+) 55.5</td>
</tr>
<tr>
<td>Legitimate - Referent</td>
<td>11, 12</td>
<td>(-) 47.5</td>
</tr>
<tr>
<td>Legitimate - Reward</td>
<td>12, 12</td>
<td>(-) 68</td>
</tr>
<tr>
<td>Legitimate - Coercive</td>
<td>12, 12</td>
<td>(+) 62</td>
</tr>
<tr>
<td>Referent - Reward</td>
<td>11, 12</td>
<td>(+) 42</td>
</tr>
<tr>
<td>Referent - Coercive</td>
<td>11, 12</td>
<td>(+) 34c</td>
</tr>
<tr>
<td>Reward - Coercive</td>
<td>12, 12</td>
<td>(+) 65</td>
</tr>
</tbody>
</table>

Overall test for five groups: $H^d$ corrected = 4.6

---

$a_{n_1}$ = size of smaller sample, $n_2$ = size of larger sample.

$b$Control and combined power base groups not considered.

$c$Reject Hypothesis 6 at $p < .10$ (two-tailed test).

$d$Kruskal-Wallis statistic. Corrected for ties. The Critical value is 9.24 ($p < .01$).

$e$Plus signs (+) indicate that the first power base group named produced less non-cooperative choices than the second group. For example, the expert group had less non-cooperative choices (and more cooperative choices) than the legitimate group.

$f$Minus signs (−) indicate that the second power base group named produced greater non-cooperative choices than the first group. For example, the referent group had more non-cooperative choices (and less cooperative choices) than the expert group.

$g$These are summary statistics based upon analysis of the data in Table 9.
should be rejected in favor of the alternate hypothesis that states, in short, that there are significant differences between the results produced by use of different power bases. The only result that was significant ($p < 0.10$) was between the referent and coercive groups. The referent group produced less non-cooperative choices than the coercive group.

**Summary of Behavioral Conflict Using Non-Cooperative Choices**

Based upon total non-cooperative choices, the following relationships of greater behavioral conflict can be established:

- Control $>$ Expert ($p < 0.01$)
- Control $>$ Legitimate ($p < 0.01$)
- Control $>$ Referent ($p < 0.001$)
- Control $>$ Reward ($p < 0.025$)
- Control $>$ Coercive ($p < 0.01$)
- Legitimate $>$ Expert
- Expert $>$ Referent
- Expert $>$ Reward
- Coercive $>$ Expert
- Legitimate $>$ Referent
- Legitimate $>$ Reward
- Coercive $>$ Legitimate
- Reward $>$ Referent
- Coercive $>$ Referent ($p < 0.10$)
- Coercive $>$ Reward

Figure 7 represents in rank order, the behavioral conflict as measured by total non-cooperative choices.
Lowest Behavioral Conflict Highest
Referent < Reward < Expert < Legitimate < Coercive < Control

Figure 7. Representation of Power Base Rankings in Producing Behavioral Conflict--Using Non-Cooperative Choices.

Test of Hypothesis 7

It was expected that performance in terms of total points would be significantly greater for the control group than the experimental power base groups. This is stated in null hypothesis form as follows:

\[ H_0 \text{ 7: Behavioral conflict in terms of total points for the control group is not significantly greater than the experimental power base groups.} \]

To test Hypothesis 7, the total points for the 15 trials were summed for each group and then the sum for the control group was compared with the sum for each of the experimental power base groups (see Table 12).

There was no evidence (see Table 13) that Hypothesis 7 should be rejected in favor of the alternate hypothesis that states, in short, that power base use produces poorer performance and greater behavioral conflict. The results were similar to the results for Hypothesis 5—that power base use of any type produced better results. For example, the overall Kruskal-Wallis statistic was
### Table 12

**Summary of Data for Testing Hypothesis 7:**

Performance (total points) for the control group is not significantly greater than the experimental power base groups.

<table>
<thead>
<tr>
<th>Number of Total Points in the Game</th>
<th>Number of Subjects in Each Group Making Each Number of Total Points in the Game</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
</tr>
<tr>
<td>4500</td>
<td>0</td>
</tr>
<tr>
<td>4400</td>
<td>0</td>
</tr>
<tr>
<td>4300</td>
<td>1</td>
</tr>
<tr>
<td>4200</td>
<td>0</td>
</tr>
<tr>
<td>4100</td>
<td>0</td>
</tr>
<tr>
<td>4000</td>
<td>0</td>
</tr>
<tr>
<td>3900</td>
<td>1</td>
</tr>
<tr>
<td>3800</td>
<td>0</td>
</tr>
<tr>
<td>3700</td>
<td>0</td>
</tr>
<tr>
<td>3600</td>
<td>3</td>
</tr>
<tr>
<td>3500</td>
<td>2</td>
</tr>
<tr>
<td>3400</td>
<td>1</td>
</tr>
<tr>
<td>3300</td>
<td>0</td>
</tr>
<tr>
<td>3200</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>11</td>
</tr>
</tbody>
</table>
### Table 13
**Summary of Results for Testing Hypothesis 7:**

Performance (total points) for the control group is not significantly greater than the experimental power base groups.

<table>
<thead>
<tr>
<th>Paired Comparisons of Strategy Choices for Control Group with Each Experimental Power Base Group</th>
<th>(n_1, n_2^a)</th>
<th>Statistical Test^d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control - Combined Power^b</td>
<td>11,58</td>
<td>(Z^c = 3.68^9)</td>
</tr>
<tr>
<td>Control - Expert</td>
<td>11,11</td>
<td>(U^d = 20^f)</td>
</tr>
<tr>
<td>Control - Legitimate</td>
<td>11,12</td>
<td>(U^d = 28^f)</td>
</tr>
<tr>
<td>Control - Referent</td>
<td>11,11</td>
<td>(U^d = 9.5^g)</td>
</tr>
<tr>
<td>Control - Reward</td>
<td>11,12</td>
<td>(U^d = 32.6^g)</td>
</tr>
<tr>
<td>Control - Coercive</td>
<td>11,12</td>
<td>(U^d = 17^f)</td>
</tr>
</tbody>
</table>

Overall test for six groups: \(H^h \text{ corrected} = 16.6\)

---

*a* \(n_1\) = Size of smaller sample, \(n_2\) = Size of larger sample.

*b* All five experimental power base groups were summed to a combined total.

*c* \(Z\) Statistic

*d* Mann-Whitney \(U\) Statistic

*e* Accept Hypothesis 7 at \(p < 0.001\)

*f* Accept Hypothesis 7 at \(p < 0.09\)

*g* Accept Hypothesis 7 at \(p < 0.975\)

*h* Krushal-Wallis statistic corrected for ties. The critical values (df=6) are 15.09 (\(p = 0.01\)) and 20.62 (\(p = 0.001\))

^i^ These are summary statistics based upon analysis of the data in Table 12.
highly significant ($p < 0.01$) as were the tests for each individual power base. The expert, legitimate, and coercive power bases were all significant at ($p < 0.01$), referent at ($p < 0.001$), and coercive at ($p < 0.025$).

**Test of Hypothesis 8**

Stated in null hypothesis form, Hypothesis 8 is as follows:

$$H_0 \ 8: \ \text{There is no significant difference in}\ \text{behavioral conflict in terms of total points among the experimental power base groups.}$$

To test Hypothesis 8, the total points for each experimental group for all the 15 trials were compared with the total points for each other group (see Table 14).

There was only slight evidence that Hypothesis 8 should be rejected in favor of the alternate hypothesis that states, in short, that there are significant differences between the results produced by use of different power bases. The only result that was significant ($p \ < \ 0.10$) was between the legitimate and referent groups. The referent group had significantly greater points than the legitimate group.

**Summary of Results of Behavioral Conflict**

The following rank ordered relationships can be
### Table 14
Summary of Results for Testing Hypothesis 8:
There is No Significant Difference in Total Points Among the Experimental Power Base Groups

<table>
<thead>
<tr>
<th>Paired Comparisons for Each Experimental Power Base Group</th>
<th>$n_1$, $n_2$</th>
<th>Mann-Whitney U Statistic$^h$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert - Legitimate</td>
<td>11,12</td>
<td>(−) 65.5</td>
</tr>
<tr>
<td>Expert - Referent</td>
<td>11,11</td>
<td>(−) 58.5</td>
</tr>
<tr>
<td>Expert - Reward</td>
<td>11,12</td>
<td>(+) 58.5</td>
</tr>
<tr>
<td>Expert - Coercive</td>
<td>11,12</td>
<td>(+) 54</td>
</tr>
<tr>
<td>Legitimate - Referent</td>
<td>11,12</td>
<td>(−) 52</td>
</tr>
<tr>
<td>Legitimate - Reward</td>
<td>12,12</td>
<td>(+) 63</td>
</tr>
<tr>
<td>Legitimate - Coercive</td>
<td>12,12</td>
<td>(+) 55.5</td>
</tr>
<tr>
<td>Referent - Reward</td>
<td>11,12</td>
<td>(+) 42</td>
</tr>
<tr>
<td>Referent - Coercive</td>
<td>11,12</td>
<td>(+) 42.5</td>
</tr>
<tr>
<td>Reward - Coercive</td>
<td>12,12</td>
<td>(+) 64</td>
</tr>
</tbody>
</table>

Overall test for five groups: $H^d$ corrected = 3.61

$^a$ $n_1$ = size of smaller sample, $n_2$ = size of larger sample.

$^b$ All five experimental power base groups were summed to a combined total.

$^c$ Reject Hypothesis 8 at $p < 0.10$ (two-tailed test)

$^d$ Kruskal-Wallis Statistic

$^e$ Plus (+) signs indicate that the first power base group named produced greater average total points than the second group.

$^f$ Minus (−) signs indicate that the second power base group named produced less average total points than the second group.

$^g$ Reject Hypothesis at ($p < 0.10$)

$^h$ These are summary statistics based upon analysis of the data in Table 12.
established, based upon greater behavioral conflict in terms of greater average total non-cooperative choices:

Control > Expert \( (p < 0.01) \)
Control > Legitimate \( (p < 0.01) \)
Control > Referent \( (p < 0.001) \)
Control > Reward \( (p < 0.01) \)
Control > Coercive \( (p < 0.01) \)
Expert > Legitimate
Expert > Referent
Reward > Expert
Coercive > Expert
Legitimate > Referent \( (p < 0.10) \)
Reward > Legitimate
Coercive > Legitimate
Reward > Referent
Coercive > Referent
Coercive > Reward

Figure 8 represents in rank order the behavioral conflict produced by the different power bases:

Lowest Behavioral Conflict Highest
Referent < Legitimate < Expert < Reward < Coercive < Control

Figure 8. Representation of Power Base Rankings in Producing Behavioral Conflict--Using Total Points.

Summary of Behavioral Conflict

There were slight differences in using the number of non-cooperative choices and in using the number of total points in ranking the different groups in behavioral conflict. Specifically, there was only a slight difference among legitimate, expert, and reward power-bases in producing behavioral conflict. Thus, because of the different
point values in the matrix for each decision, it was possible for slight changes to occur in the ranking of these three power bases when comparing the results using total non-cooperative choices and the results using total points.

Summarizing the results of behavioral conflict, it is very apparent that power base use of any type produces better performance and less behavioral conflict than no-power base use. If performance is the chosen objective, referent power should be used, because it clearly produces the best results. There are only small differences in behavioral conflict produced among legitimate, expert, and reward power bases, although each produces less behavioral conflict than coercive power. Use of no-power base should definitely be avoided if performance is the criterion.

**Summary and Implications**

The ranking of the different groups in producing the different types of conflict are displayed in Figure 9.
Lowest

**Personal Conflict**

Expert < Control < Reward < Referent < Coercive < Legitimate

**Interpersonal Conflict**

Referent < Expert < Control < Coercive = Legitimate < Reward

**Behavioral Conflict**

Referent < [Legitimate ≃ Expert ≃ Reward] < Coercive < Control

Figure 9. Representation of Power Base Rankings in Producing Conflict.

Of all the groups, the referent power base group had the most favorable characteristics, moderate in personal conflict, and clearly low in behavioral conflict. Thus, it appears that in an interpersonal situation, the power wielding individual (who has the choice of message to send) should exhort those of lesser power to work with him as a team. Low perceived conflict and greater performance can then be expected, compared with any other use of power and with no use of power.

The results produced by the control group were somewhat puzzling. Perceived conflict was moderately low, yet performance was significantly poorer than any of the other groups. The implication is that in interpersonal situations, at least some interaction and use of power bases is
necessary or performance suffers. One reason why this may occur is because communication has been found to produce significantly more cooperative decisions and a greater number of total points to the subjects, compared with a control group in which no message was passed. 49

The reward group produced some very puzzling results. It could be expected that persons receiving this power base message would be very pleased. However, this group perceived moderate personal conflict in comparison to the other groups, high interpersonal conflict, and had moderate performance. Of course, the reward group would receive more money than their points indicated, because of the adjustments made at the end of the game. That is, each subject in the reward group would be raised two ranks in the final standings for each cooperative decision.

Surprisingly, there was little difference between the reward and coercive groups, in terms of conflict, although the payoffs to each differed substantially. The implication is that some persons are fortunate to receive a reward power base message and gain more than they actually produce in output compared to other persons in different power base

situations. Similarly, some persons are unfortunate to receive a coercive message and gain less than they actually produce in output compared to other persons in different power base situations. However, these results could have been caused by the coercive group not believing the message. Analyzing the results after the payoffs through the responses to Questionnaire 4 should provide additional insights into the perceptions of conflict by the reward and coercive power bases.
CHAPTER IV
LIMITATIONS

As with any research, there are limitations to this study of power base-conflict relationships. These limitations can be divided into five classifications relating to laboratory setting, game structure, operationalization of conflict variables, operationalization of power base variables, and statistical methodology. Further analysis of the data and future laboratory studies are then discussed.

Laboratory Setting
A major limitation in this research study pertains to all similar studies using a laboratory setting. That is, the validity of the study may be questioned in terms of its representation of the real world. However, as Raser points out:

Our knowledge of the "objective" world is too limited, our measures and our senses too fallible, our theories too uncertain and contradictory, and our data too ambiguous to justify any claims to real objectivity, no matter what means we might use to determine validity.

In any case, testing for isomorphic validity is difficult in the social sciences, for we are often uncertain of the actual characteristics of the referent system that we cannot establish a standard
for comparison. It takes two to tango, and when the pair consists of a referent and a replicate, it is impossible to tell whether the replicate is in step if the referent is not also clearly visible. In the social sciences, the referent is seldom more than a shadow, 'seen through a glass darkly.'

Raser goes on to say that "to claim that gaming is a stimulus to theory building, an incentive to gather further data, and a way of ordering previously disjoined bits of knowledge into a consistent picture, is to argue that gaming is scientifically useful." Therefore, while the gaming approach to study of power base-conflict relationships is a limitation, there is so little conclusive knowledge about the relationship between these behavioral variables in either the real world or the laboratory that this study is useful in taking a step toward identification of relationships and reevaluation of theoretical constructs.

Additionally, there are a number of factors pertaining to the laboratory setting which could have influenced the results. For one, some subjects could see the strategy choices of some of the confederates in different dyads. Clearly, any future research in the laboratory should eliminate this limitation by taking the dyads individually or placing subjects in isolation booths. Also, there


51 Ibid., pp. 141-142.
should be no opportunity for the subject to see the confederate as occurred in a number of instances in this study. Further, the verbal instructions given to the participants should be tape recorded to eliminate any variations by the researcher. Overall, however, although some control was lost in the laboratory setting, it was not felt that the results would have differed greatly. A replication with these slight adjustments is needed for future research.

**Game Structure**

There were many alternatives in developing the particular game used, and this produced many limitations. These limitations are more concerned with the general applicability and implications drawn from the research rather than limitations on the study itself.

For example, the points in the cells of the payoff matrix were relatively close together (see Figure 10).

<table>
<thead>
<tr>
<th></th>
<th>T</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>300,000</td>
<td>100,000</td>
</tr>
<tr>
<td>Z</td>
<td>400,100</td>
<td>200,200</td>
</tr>
</tbody>
</table>

Figure 10. Representation of the Matrix Used in this Study.

Changing the points in the cells to reflect lesser or
greater magnitudes, wider variances, or negative numbers has changed the decisions of subjects in other experiments, although it is not known what effect such changes would have in conjunction with power base-conflict relationships. However, it might be expected that wider point ranges would produce a lesser number of ties in the final ranking and produce greater differences of perceived conflict between the experimental groups. 52

Future research is needed to explore a limitation pertaining to the magnitude of the reward and coercive messages. If the pre-coded message had presented larger or smaller rewards or penalties the results might change for these two groups. For example, if the coercive message had threatened loss of four ranks instead of two, the results might have changed significantly.

Simultaneous bidding was used in this game. If another form of bidding or selection of strategies was used, the results might be changed significantly.

Use of a delayed matching strategy may have influenced the results. If a different strategy were used by the confederate the results may have been significantly different.

The fact that the participants were not told when the

52 For example, see Rapoport and Chammah, Prisoner's Dilemma (Ann Arbor, The University of Michigan Press, 1965) and a number of studies published in the Journal of Conflict Resolution.
last trial was to occur certainly influenced the results. Many participants, when told that the last trial had been completed, remarked or wrote down that they would have switched from a cooperative strategy to a non-cooperative strategy. Future research in "end effects" should give some indication of the "staying power" of different power base messages.

The location of the mutually cooperative decision in the matrix was in the top left corner. If the matrix were rotated the results might differ significantly because Americans tend to read left to right and from top to bottom.

The time limit for making decisions was about one minute for each trial. If the time limit were greatly shortened or lengthened the results might change significantly.

There were 15 trials in this study. If the number of trials were 5, 10, 20, 25, or 30, for example, the results may have been significantly different.

The amount of the monetary payoff to the participants may have significantly influenced the results. The ranking method was utilized as a research tool for the first time in this study, and it is not known whether the results would change if another payoff method or magnitude of payoff were used. However, it appeared that the ranking method worked out quite well in not allowing the
subject to implicitly collude against the researcher as would be the case if the payoffs were in the matrix cells. Further, the effects of payoff feedback were measured separately from the power base-perceived conflict measurements.

The goals of the participants were influenced by both the instructions and the way in which the monetary payoffs were determined. That is, the instructions informed that subjects that their goal was to maximize their own return and presented the ranking method for payoffs.

Use of a confederate is another limitation related to the structure of the game. If there were no confederate, and there were two subjects who were allowed to make "free" decisions, the results might change significantly.

These limitations in the game structure can be dealt with only in reviewing all the appropriate available literature on empirical studies of games and then devising laboratory games to modify one research factor and then see whether the results pertaining to power bases and conflict are altered.

Operationalization of Conflict Variables

A key limitation relates to the validity of the study. That is, the question can be raised whether this laboratory
study truly measured conflict.

One limitation concerned with the measurement of perceived conflict pertains to the fact that the subjects may have perceived the question differently than the researcher intended. There is little that can be done other than having the subjects ask questions of the researcher if they did not understand a question. There were few questions asked, and it appeared that the subjects were concentrating on the questions. Therefore, although this limitation exists, it appeared to present no threat to changing the results.

Another limitation concerned with the measurement of perceived conflict refers to whether the statements on the questionnaires adequately operationalized perceived conflict. This limitation can be dealt with in two ways. First, operationalization of conflict is still an area where a great deal of conceptual thinking and empirical research is needed. Thus, the limitation involved with operationalizing conflict extends beyond this study to the state of the art in empirical behavioral science research. Secondly, the researcher very carefully tried to select the most important factors which would tend to allow the subjects to perceive conflict.

In the case of behavioral conflict, there are fewer limitations, and these are not particularly concerned with operationalization of conflict. The reason is that the subjects had two clear extreme choices. They could either
be cooperative or non-cooperative. Any limitations would be concerned with the laboratory setting or the game structure.

**Operationalization of Power Base Variables**

Another limitation is concerned with the operationalization of the power base variables. Specifically, the question can be raised whether the messages adequately operationalized each power base.

This limitation was dealt with in two ways. First, a panel of judges reviewed the messages to determine whether the messages as coded were representative of the French and Raven power base definitions. A first draft of the messages was revised and then reviewed again with no further changes. Thus, the precoded messages that the confederates sent to the subjects were carefully reviewed beforehand.

Secondly, the subjects were given Questionnaire 2 which related to the power base messages. The results of this questionnaire (see Tables 15 and 16) provide insights into the perceptions of the subjects regarding the power base messages; and these results are discussed below.

**Reward Power Base**

The results from Question 14 (see Table 16) relating to perceptions of the reward power base message were extremely satisfactory. The reward group
<table>
<thead>
<tr>
<th>Questions for Perceptions of Power Base Messages</th>
<th>Power Base</th>
<th>Expert Mean</th>
<th>Legitimate Mean</th>
<th>Referent Mean</th>
<th>Reward Mean</th>
<th>Coercive Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. The other person will reward me whenever I do what he wants.</td>
<td>Reward</td>
<td>7.09</td>
<td>6.58</td>
<td>6.45</td>
<td>4.25</td>
<td>6.25</td>
</tr>
<tr>
<td>15. The other person has a legitimate right to more points than me.</td>
<td>Legitimate</td>
<td>7.73</td>
<td>7.33</td>
<td>8.00</td>
<td>8.08</td>
<td>8.33</td>
</tr>
<tr>
<td>16. I am an expert. I really know the best decisions to make.</td>
<td>Expert</td>
<td>5.91</td>
<td>5.75</td>
<td>3.91</td>
<td>4.92</td>
<td>4.83</td>
</tr>
<tr>
<td>17. The other person thinks we are a team.</td>
<td>Referent</td>
<td>6.27</td>
<td>5.75</td>
<td>3.64</td>
<td>4.08</td>
<td>4.83</td>
</tr>
<tr>
<td>18. The other person is dumb. He doesn’t know how to make decisions at all.</td>
<td>Expert</td>
<td>4.55</td>
<td>5.58</td>
<td>6.73</td>
<td>6.83</td>
<td>6.67</td>
</tr>
<tr>
<td>19. I have a legitimate right to more points than the other person.</td>
<td>Legitimate</td>
<td>6.27</td>
<td>5.25</td>
<td>6.73</td>
<td>6.50</td>
<td>7.33</td>
</tr>
<tr>
<td>20. I am really part of a team with the other person.</td>
<td>Referent</td>
<td>5.45</td>
<td>4.50</td>
<td>5.00</td>
<td>5.67</td>
<td>5.42</td>
</tr>
<tr>
<td>21. I would not like to be identified as a friend of the other person.</td>
<td>Referent</td>
<td>5.55</td>
<td>5.33</td>
<td>6.09</td>
<td>6.33</td>
<td>6.83</td>
</tr>
<tr>
<td>22. I will be punished whenever I don’t do what the other person wants.</td>
<td>Coercive</td>
<td>6.73</td>
<td>6.83</td>
<td>6.45</td>
<td>6.58</td>
<td>7.17</td>
</tr>
</tbody>
</table>

*The mean for each group is derived from a nine-point scale numbered from 1 to 9 for each statement, where

1 = Very strongly agree
9 = Very strongly disagree
<table>
<thead>
<tr>
<th>Question</th>
<th>Power Base</th>
<th>Hanley's</th>
<th>Overall</th>
<th>Expert</th>
<th>Legitimate</th>
<th>Expert</th>
<th>Referent</th>
<th>Reward</th>
<th>Expert</th>
<th>Coercive</th>
<th>Legitimate</th>
<th>Legitimate</th>
<th>Referent</th>
<th>Referent</th>
<th>Reward</th>
<th>Reward</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. The other person will reward me whenever I do what he wants,</td>
<td>Reward</td>
<td>1.222</td>
<td>3.787</td>
<td>0.631</td>
<td>0.774</td>
<td>3.530</td>
<td>1.045</td>
<td>0.160</td>
<td>2.964</td>
<td>0.423</td>
<td>2.739**</td>
<td>0.254</td>
<td>2.541*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. The other person has a legitimate right to more points than me,</td>
<td>Legitimate</td>
<td>2.561</td>
<td>0.459</td>
<td>0.485</td>
<td>0.325</td>
<td>0.439</td>
<td>0.747</td>
<td>0.821</td>
<td>0.945</td>
<td>1.260</td>
<td>0.103</td>
<td>0.411</td>
<td>0.315</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. I am an expert. I really know the best decisions to make.</td>
<td>Expert</td>
<td>11.896</td>
<td>2.284</td>
<td>0.214</td>
<td>2.629**</td>
<td>1.333</td>
<td>1.445</td>
<td>2.472**</td>
<td>1.144</td>
<td>1.259</td>
<td>1.353</td>
<td>1.241</td>
<td>0.114</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>17. The other person thinks we are a team.</td>
<td>Referent</td>
<td>2.693</td>
<td>2.385*</td>
<td>0.522</td>
<td>2.575**</td>
<td>2.184</td>
<td>1.436</td>
<td>2.109</td>
<td>1.700</td>
<td>0.936</td>
<td>0.446</td>
<td>1.194</td>
<td>0.785</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. The other person is dumb. He doesn't know how to make decisions at all.</td>
<td>Expert</td>
<td>5.898*</td>
<td>3.094*</td>
<td>1.313</td>
<td>2.701**</td>
<td>2.894</td>
<td>2.683**</td>
<td>1.447</td>
<td>1.616</td>
<td>1.401</td>
<td>0.134</td>
<td>0.077</td>
<td>0.216</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. I have a legitimate right to more points than the other person.</td>
<td>Legitimate</td>
<td>1.567</td>
<td>1.520</td>
<td>1.146</td>
<td>0.499</td>
<td>0.255</td>
<td>1.188</td>
<td>1.655</td>
<td>1.432</td>
<td>2.387*</td>
<td>0.255</td>
<td>0.679</td>
<td>0.955</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. I am really part of a team with the other person.</td>
<td>Referent</td>
<td>1.889</td>
<td>0.401</td>
<td>0.906</td>
<td>0.423</td>
<td>0.210</td>
<td>0.036</td>
<td>0.475</td>
<td>1.133</td>
<td>0.890</td>
<td>0.633</td>
<td>0.396</td>
<td>0.243</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. I would not like to be identified as a friend of the other person.</td>
<td>Referent</td>
<td>2.440</td>
<td>1.563</td>
<td>0.306</td>
<td>0.769</td>
<td>1.135</td>
<td>1.856</td>
<td>1.091</td>
<td>1.473</td>
<td>2.209*</td>
<td>0.349</td>
<td>1.069</td>
<td>0.735</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. I will be punished whenever I do not do what the other person wants.</td>
<td>Coercive</td>
<td>3.523</td>
<td>0.253</td>
<td>0.137</td>
<td>0.346</td>
<td>0.187</td>
<td>0.569</td>
<td>0.491</td>
<td>0.331</td>
<td>0.442</td>
<td>0.167</td>
<td>0.923</td>
<td>0.773</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$F_{Max}$ - reject variance/n1
Least variance/n2

The critical values of $F_{Max} = F(5, 11) = 5.32$ (p $<$ 0.05), 8.6 (p $<$ 0.01).

Overall F test (df = 5, 53) $\geq$ (df = 5, 53). The critical values are 1.95 (p $<$ 0.10), 2.37 (p $<$ 0.05), and 3.34 (p $<$ 0.01).

Tests of significance are made for each paired comparison for each question, using a Dunnett's t statistic. For example, comparing the means for Question 14 for the expert group and the legitimate group yields a Dunnett's t statistic of 0.631. The critical values of Dunnett's t (5, 53) $\geq$ (5, 60) are 2.21 (p $<$ 0.05), 2.55 (p $<$ 0.025), 2.87 (p $<$ 0.01), and 3.14 (p $<$ 0.005).

* Significant at (p $<$ 0.05)
** Significant at (p $<$ 0.025)
*** Significant at (p $<$ 0.01)
**** Significant at (p $<$ 0.005)
subjects significantly agreed that the other person (the confederate) would reward them whenever they did what he wanted (made cooperative decisions) when compared with the expert (p < 0.005), legitimate (p < 0.01), referent (p < 0.025), and coercive (p < 0.005) groups. Thus, there was a strong indication that the reward power base message was perceived as such.

**Legitimate Power Base**

The results from Questions 15 and 19 (see Table 16) relating to perceptions of legitimate power were satisfactory. Question 15 delved into the subjects' perceptions of whether the other person (the confederate) had a legitimate right to more points than the subject. The results of this question were not significant, although the legitimate group agreed with the question more so than any other group.

Question 19 asked whether the subjects agreed that the other person (the confederate) had legitimate authority to request certain (cooperative) decisions. The legitimate group agreed with the question more so than any other group and significantly greater (p < 0.05) than the coercive group. Thus, there was a moderate indication that the legitimate power base message was perceived as such. Further, there was a strong indication that the coercive message produced resistance by the subjects.
Expert Power Base

The results from Questions 16 and 18 relating to perceptions of the expert power base message were somewhat unsatisfactory. Question 16 referred to whether the subjects perceived themselves as being experts and knowing the best decisions to make. The results to this question showed that the referent group perceived themselves as having significantly greater expertise than the expert (p < 0.025) and legitimate groups (p < 0.05). Further, the expert group had the least agreement with this question and produced a relatively high variance indicating a dispersion of believability.

Question 18 referred to whether the subject perceived that the other person (the confederate) had prior experience in being involved with the decision projects. The results to this question were very satisfactory. The expert group had significantly greater agreement than the referent (p < 0.025), reward (p < 0.01), and coercive (p < 0.025) groups and had greater agreement than the legitimate group. There was a relatively large variance on Question 16 and 18, however, and further investigation showed that most subjects either agreed or disagreed rather than remaining neutral.

The conclusion that can be reached from these results is that the subjects perceived that the confederate had had prior experience. However, seeing the confederate may
have generated a feeling of "he's no better than I."
The results from Question 16 indicated that the recipients of expert power base messages tended to deprecate their own expertise. Future research is needed to look further into this area of expert power to find subtle differences in wording that can strongly affect the results.

Referent Power Base

The results from Questions 17, 20, and 21 were moderately satisfactory. Question 17 related to whether the subject thought that the other person (the confederate) felt that the dyad was a team. The referent group had significantly greater agreement than the expert (p < 0.025) group and greater agreement than all the other experimental groups.

However, Question 20 looked at the "team" aspect from a slightly different perspective and rather than asking about how the subjects thought the confederate felt, asked whether the subjects felt they were really a team with the other person. The results to this question were extremely similar in comparing the groups with each other. The legitimate group had the greatest agreement with this question, followed by the referent group.

Question 21 related to whether the subjects would not like to be identified as a friend of the other person. The referent group was more in disagreement with this question than the expert and legitimate groups, but in
lesser disagreement than the reward and coercive groups. None of the paired comparisons were significant, however.

The conclusions that can be drawn from these results relating to the referent power base message is that the referent group very strongly agreed that the other person thought of the dyad as a team, but the subjects were less certain that they saw the dyad as a team and whether they would like to be identified as a friend. Altogether, the operationalization of the referent power base message can be considered as moderately satisfactory.

**Coercive Power Base**

Question 22, relating to whether the subjects felt that they would be punished whenever they did not do what the other person (the confederate) wanted, produced some interesting results. Although none of the paired comparisons were significant, the coercive group had the least agreement with the question. Thus, although a coercive power base message was sent, the subjects disregarded the message and did not believe the threat. This is a strong limitation on the coercive group and further research is needed to understand why the message is disbelieved and to develop coercive power base messages that are believable to the subjects.

**Statistical Methodology**

A limitation in using the paired comparisons is that the significance level for the Dunnett's t test may have
been set too high and some measures of significance may have been lost. Effort was made to find the statistics for the .10 level in the Dunnett test, but were not able to be located. This limitation is not a serious limitation, because any errors are on the conservative side.

Another limitation of somewhat more serious consequence pertains to statistical data that were not available for comparison. Specifically, there were two messages that could have influenced the comparison of the results. The first is the referent power base message. This message could have influenced the comparison of the results. The first is the referent power base message. This message was the only message that gave any indication of what the confederate would choose. Future research is needed to determine whether it was the "team" feeling or the stating of the confederate's probable choice that influenced the results of the referent group.

Secondly, there was no group which received a message of no consequence. It was not able to be determined whether a message of any type produced better performance or a power base message of any type produced better performance. Future research is needed to determine the effect of relatively simple messages which have little or no meaning, compared with the control group and the experimental power base group.
Further Analysis of Data

Future study is needed to complete analysis of all the data that was produced by this research study. First, analysis of any differences between the groups in payoffs is needed. Based upon total points and the adjustments made to the rankings of the reward and coercive power base groups, it can be hypothesized that:

$H_1$: Payoffs to the coercive power base group are significantly less than any other power base group.

$H_2$: Payoffs to the reward power base group are significantly greater than any other power base group.

Analysis of these hypotheses can be done much in the same way as the analysis of the rankings for total points and number of non-cooperative choices using the Mann-Whitney U statistic.

No hypotheses were formulated for the payoffs of the reward and coercive power base group compared to the control group because it is difficult to find a basis for such hypotheses. In the case of the reward group, this group already had significantly greater points than the control group. Adjustments to the final rankings of the reward group would only increase the already significant results. In the case of the coercive group, the difference in rankings will decrease substantially. However,
it is difficult to tell how much of a difference there will be.

Secondly, Questionnaire 4 should be analyzed in much the same way that Questionnaire 3 was analyzed, using the $F_{\text{max}}$, $F$, and Dunnett $t$ tests. Differences in the results would be due to the knowledge of the final payoffs which could have a strong import on perceived conflict. Based upon the results of Questionnaire 3, there are a number of hypotheses that can be stated. For one, subjects receiving the coercive power base message did not believe that they would be punished. In reality they were punished by having their rankings dropped for each non-cooperative choice. Thus, perceived conflict would be expected to be significantly high, producing the following hypotheses:

$H_3$: After the payoffs, perceived personal conflict for the coercive power base group is significantly greater than the control group.

$H_4$: After the payoffs, perceived interpersonal conflict for the coercive power base group is significantly greater than the control group.

$H_5$: After the payoffs, perceived personal conflict for the coercive power base group is significantly greater than the other power base groups.

$H_6$: After the payoffs perceived interpersonal conflict for the coercive power base group is significantly greater than the other power base groups.
A similar series of hypotheses can be generated for the reward power base group. Because the rankings for the reward group were raised, it would be expected in Hypothesis 2 that the payoffs would be significantly greater than any other group. Thus, perceived conflict would be expected to be significantly low, producing the following hypotheses:

\[ H_7: \text{After the payoffs, perceived personal conflict for the reward power base group is significantly less than the control group.} \]

\[ H_8: \text{After the payoffs, perceived interpersonal conflict for the reward power base group is significantly less than the control group.} \]

\[ H_9: \text{After the payoffs, perceived personal conflict for the reward power base group is significantly less than the other power base groups.} \]

\[ H_{10}: \text{After the payoffs, perceived interpersonal conflict for the reward power base group is significantly less than the other power base groups.} \]

For the three remaining power base groups—legitimate, referent, and expert, the only expectation that can be made is that there would be the same relationships after the payoffs as before, producing the following hypotheses:

\[ H_{11}: \text{After the payoffs, there is no significant difference in the rankings of greater perceived personal conflict for the legitimate, expert, and referent power base groups compared with the rankings of these groups before the payoffs were known.} \]
H₁₂: After the payoffs, there is no significant difference in the rankings of greater perceived interpersonal conflict for the legitimate, expert, and referent power base groups compared with the rankings of these groups before the payoffs were known.

Another useful analysis of the data would be to compare the results for all the similar questions (see Figure 11). Analysis of variance using the F statistic can be used along with paired comparisons of the responses for paired questions for each group and among the groups. Because of the adjustments to ranks it would be expected that:

H₁₃: Perceived personal conflict is significantly greater for the coercive power base group after the payoffs compared with before.

H₁₄: Perceived interpersonal conflict is significantly greater for the coercive power base group after the payoffs compared with before.

H₁₅: Perceived personal conflict is significantly less for the reward power base group after the payoffs compared with before.

H₁₆: Perceived interpersonal conflict is significantly less for the reward power base group after the payoffs compared with before.

H₁₇: There is no significant difference in perceived personal conflict for the expert power base group after the payoffs compared with before.

H₁₈: There is no significant difference in perceived interpersonal conflict for the expert power base group after the payoffs compared with before.

H₁₉: There is no significant difference in perceived personal conflict for the referent power base group after the payoffs compared with before.
<table>
<thead>
<tr>
<th>Q1</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
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<tbody>
<tr>
<td>Q2</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>Q3</td>
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<td>28</td>
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<td>30</td>
<td>31</td>
<td>32</td>
<td>33</td>
<td>34</td>
<td>35</td>
</tr>
<tr>
<td>Q4</td>
<td>77</td>
<td>78</td>
<td>79</td>
<td>80</td>
<td>81</td>
<td>82</td>
<td>83</td>
<td>84</td>
<td>85</td>
</tr>
</tbody>
</table>

| Q3 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 |
| Q4 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 |

**Note:**  
Q1 = Questionnaire 1  
Q2 = Questionnaire 2  
Q3 = Questionnaire 3  
Q4 = Questionnaire 4  

Similar questions can be found by reading vertically. For example, Questions 1, 27, and 77 are similar.

**Figure 11. Similar Question Numbering System.**
H₂₀: There is no significant difference in perceived interpersonal conflict for the referent power base group after the payoffs compared with before.

H₂₁: There is no significant difference in perceived personal conflict for the legitimate power base group after the payoffs compared with before.

H₂₂: There is no significant difference in perceived interpersonal conflict for the legitimate power base group after the payoffs compared with before.

Some additional insights on how the subjects went about making their decisions, what effects the power base messages had upon the subjects' decisions, and some elements of perceived conflict can be obtained by reviewing the open-ended "why" decision sheet for each group. It would be difficult to analyze this data statistically, but some general "feel" for each group can be obtained. Subsequently it might be possible to develop classifications and use statistical techniques for analysis.

Further insights on the power base messages can be obtained by reviewing the open-ended responses on Questions 71 and 121 pertaining to a message the subjects would like to send to the other person, and Questions 72 and 122 pertaining to power base messages the subjects would like to receive. Again, the responses can be reviewed for a general "feel" and then categorizations developed for statistical analysis.
**Future Laboratory Studies**

First, it is important to check on the limitations of the matrix values. The points in the payoff matrix should have a much greater variance. The greater variance should produce a greater range of total points and reduce the great number of ties. Further, there may well be a greater impact upon perceived conflict.

Second, changing the goal orientation of the subjects to a higher order goal than playing solely for self would be useful as a measure of conflict reduction and possible improved performance. Of particular interest is the goal of maximizing the joint payoff for the dyad. Another possible goal is maximizing the joint payoff for the dyad and then splitting according to the points for each person in the dyad.

Third, it is necessary to see what effect the programmed delayed matching strategy has when compared with the situation in which both persons in the dyad are subjects. Some modifications can also be made in the questionnaires to allow all the subjects to answer on a nine point scale ranking for very strongly agree to very strongly disagree on whether they would like to send each of the power base messages and whether they would like to receive the power base messages.

Fourth, it would be useful to have non-paid
volunteers participate as subjects. In this way, there would be no explicit benefits in the form of monetary payments. Thus, the behavioral aspects of power bases and conflict can be measured independently.

Fifth, the effect of end effects should be measured. This would give some indication of the "staying power" of each power base.

Sixth, the effect of rotating the mutually cooperative decision through all four positions in the matrix must be studied. If there are significant differences based upon learned preferences to read from top to bottom and left to right, then the entire research findings using game theory must be suspect.

Seventh, the effect of making the subjects experts by teaching them the ramifications of their strategies would be most useful. It would be expected that perceived conflict would decrease for those subjects who are part of a dyad with a subject who often chooses the cooperative strategy and increase significantly for subjects who are part of a dyad with a subject who often chooses the non-cooperative strategy.

Eighth, and perhaps most importantly, research is needed to find the threshold at which power base use and conflict become dysfunctional, resulting in greater behavioral conflict and poorer performance.
CHAPTER V
SUMMARY AND CONCLUSIONS

This final chapter includes a summary of the dissertation, conclusions that can be drawn from the results, and directions for further study. The summary includes a brief condensation of the theory, methodology, results, and limitations.

Theory

Power and conflict have been recognized by marketing scholars as important dimensions in distribution channels. Of particular importance is the relationship between the use of power bases (as defined by French and Raven) and conflict. Most investigation of power, power bases, and conflict has been conceptual, descriptive, or anecdotal, rather than study of an empirical nature.

Devising an empirical study of power base-conflict relationships at this point in time necessitated taking a laboratory gaming approach. Within this laboratory methodological context, eight null hypotheses were formulated:
H₀ 1: Perceived personal conflict for the control group is not significantly less than the experimental power base groups.

H₀ 2: There is no significant difference in perceived personal conflict among the experimental power base groups.

H₀ 3: Perceived interpersonal conflict for the control group is not significantly less than the experimental power base groups.

H₀ 4: There is no significant difference in perceived interpersonal conflict among the experimental power base groups.

H₀ 5: Behavioral conflict in terms of total non-cooperative choices for the control group is not significantly less than the experimental power base groups.

H₀ 6: There is no significant difference in behavioral conflict in terms of total non-cooperative choices among the experimental power base groups.

H₀ 7: Behavioral conflict in terms of total points for the control group is not significantly greater than the experimental power base groups.

H₀ 8: There is no significant difference in behavioral conflict in terms of total points among the experimental power base groups.

Methodology

The final sample consisted of 69 Ohio State University students taking Business Administration courses during the Summer Quarter of 1970 and who volunteered to be paid subjects. The subjects were randomly assigned to one of the six research groups. The referent, expert, and control groups each had 11 subjects and the reward, coercive
and legitimate groups each had 12 subjects.

Each subject formed part of a dyad with a confederate. The subjects were instructed to accumulate as many "points" as possible, and after the decisions for all subjects were made, the subjects would be ranked from highest to lowest based upon total points. The subject with the highest rank would receive $4.32 and the subject with the lowest rank would receive $.06 (gradations were $.06 for each rank between the highest and lowest. The confederates were paid $2.25 per session for participation lasting less than an hour.

Each of the five power bases was operationalized by having the confederate send a precoded message to the subject. A Prisoner's Dilemma game was then played for 15 trials. Measurement of conflict was operationalized in two ways. First, the subjects answered questionnaires before and after the game. The before-game questionnaire contained questions pertaining to the subjects' perceptions of the operationalization of the messages. The after-game questionnaire contained statements concerned with perceived personal and interpersonal conflict based upon nine reasons by which subjects could become frustrated.

The data for perceived conflict was analyzed by using Hartley's $F_{\text{max}}$ test (to test the assumption of equal variances between paired groups), the F-test, and the
Dunnett's test for each question for each paired comparison. An overall evaluation of the paired group comparisons was made using the signs test.

The second measure of conflict was made by using the total non-cooperative choices made by the subjects in each group as behavioral conflict. A Mann-Whitney U statistic was used for all possible paired group comparisons and a Kruskal-Wallis statistic was used for an overall measure.

Results

The findings are graphically summarized in Figure 12:

**Lowest**

**Personal Conflict**

Expert < Control < Reward < Referent < Coercive < Legitimate

**Interpersonal Conflict**

Referent < Expert < Control < Coercive Legitimate < Reward

**Behavioral Conflict**

Referent < [Legitimate ≈ Expert ≈ Reward] < Coercive < Control

Figure 12. Representation of Power Base Rankings in Producing Conflict.

The most significant result was the great difference in behavioral conflict in comparing use of any power base with the control group. The control group had highly
significantly greater behavioral conflict (more non-cooperative choices) than any of the power base groups. Among the power bases, use of referent power clearly produced the lowest behavioral conflict.

The results for perceived personal conflict were less striking. The expert and control group produced personal conflict on the lower end of the perceived personal conflict spectrum. Legitimate power produced the greatest perceived personal conflict. There was little difference among the other power base groups.

The results for perceived interpersonal conflict showed that referent power produced the lowest conflict and reward power the highest. There was little difference in perceived interpersonal conflict in comparing the other research groups.

Limitations

There were a number of limitations to this dissertation. These limitations were separated into five classifications relating to laboratory setting, game structure, operationalization of conflict variables, operationalization of power base variables, and statistical methodology. Suggestions were provided for future research which would test the limitations of this study and develop future further analysis of the data.
Conclusions

An expert base should be used by the power wielder if relatively low personal conflict is desired. If it is not possible to use an expert power base and relatively low personal conflict is still desired, no power base should be used.

If relatively low interpersonal conflict is desired by the power wielder, a referent power base should be used. A moderately good substitute is use of an expert power base.

If relatively low behavioral conflict is desired by the power wielder, then a power base of some type should definitely be used rather than none. Among the five power bases, a referent power base should be used.

Of all the groups, the referent power base group had the most favorable characteristics: moderately low in perceived personal conflict, relatively low in perceived interpersonal conflict, and clearly low in behavioral conflict. Thus, it appears that in an interpersonal situation, the power wielding individual (who has the choice of message to send) should exhort those of lesser power to work with him as a team. Low perceived conflict and behavioral conflict can then be expected, compared with use of any other power base and
with no use of power.

Further Study of Behavioral Dimensions of Distribution Channels

In planning future study of the behavioral dimensions of distribution channels, there are a number of steps that must be taken to tie the conclusions reached from this study with real world distribution channels. First, it is important that the nature of power, power bases, and conflict be better understood in distribution channels. Some work has been done already, but has been primarily anecdotal,\(^{53}\) rather than scientific empirical study. Rosenberg has provided a start for the study of conflict,\(^ {54}\) and El-Ansary has done the same for power.\(^ {55}\) What is needed now is a study of distribution channels which investigates power and conflict together, rather than separately. Such a study would investigate use of power bases and the effect upon perceived conflict and behavioral conflict. Some development also is needed to transfer the results of behavioral conflict in the laboratory into behavioral conflict and, more importantly, performance in the real world.

\(^{53}\) For example, see Kriesberg, op. cit., and Wittreich, op. cit., both in Stern, op. cit.

\(^{54}\) Rosenberg, op. cit.

\(^{55}\) El-Ansary, op. cit.
Based on the findings of this study, there is a directional hypothesis that can be made:

\( H_0 \) 23: The rankings of behavioral conflict produced by different power bases is the same in distribution channels as in the laboratory. That is, it is expected that referent power will produce the lowest behavioral conflict, followed by reward, legitimate, and expert producing about equal behavioral conflict, and then by coercive power. Use of no-power produces clearly higher behavioral conflict.

In looking at how the results of personal and interpersonal conflict from this study can be applied to distribution channels, an intermediate step is needed. This step would determine how applicable studies of dyads are to inter-organizational relationships, based upon further laboratory empirical study and already published research studies in related behavioral science literature.

**General Approach to Future Research on Power-Conflict Relationships**

The general approach to future research in power-conflict relationships should be "back and forth" in the sense of going from the laboratory research to distribution channels and then back to laboratory research. In this way, contemporary theoretical thought and empirical research as applicable to distribution channels can be continuously updated. This approach is in contrast to what appears to be the current situation
in which there is parallel development of: theory, real world modifications of business operations, empirical laboratory research, and empirical real world research. There has been relatively little integration of the results from each point of view, due in part to few applicable empirical research studies. It is expected that a greater number of empirical studies on power base-conflict relationships as applicable to distribution channels will provide innovative insights into integration of theory strongly based on research. Of particular importance is discovery of the threshold at which power base use and conflict become dysfunctional, resulting in greater behavioral conflict and poorer performance.
APPENDIX A
Instructions to Decision-Making Participants

This is a decision-making project supported by funds from the Division of Research, College of Administrative Sciences, The Ohio State University.

If you follow the instructions carefully, concentrate, and use appropriate strategies, you can gain up to $4.32, which will be yours to keep. If you are not careful or do not concentrate, you may receive as little as $.06.

Below is an example of a point table to familiarize you with how the points are determined for each decision. Within each box the first number refers to your points and the second number refers to the other participant's points.

Each participant will simultaneously choose a strategy for himself. The intersection of strategies determines how many points each receives.

For example, if you choose your strategy Y and the other participant chooses his strategy T, you would receive 5 points for this decision and he would receive 10 points. If you had chosen Z and he had chosen U you would receive 70 points and the other decision maker would receive 75 points.

<table>
<thead>
<tr>
<th>Your Strategies</th>
<th>T</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5,10</td>
<td>20,15</td>
</tr>
<tr>
<td>Z</td>
<td>80,85</td>
<td>70,75</td>
</tr>
</tbody>
</table>
You will make a number of decisions. The points for all the decisions will be added together to reach a total. After all 72 participants have completed their decisions, the total points for everyone will be ranked from highest to lowest. The money corresponding to each rank is given below.

For example, if you ranked 25th in total points, you would receive £2.88. If you ranked 54th, you would receive $1.14. If another participant ranked 25th, he would receive £2.88. If he ranked 54th, he would receive $1.14.

Money for Final Total Point Rankings
(From Highest Total Points to Lowest)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Dollars</th>
<th>Rank</th>
<th>Dollars</th>
<th>Rank</th>
<th>Dollars</th>
<th>Rank</th>
<th>Dollars</th>
<th>Rank</th>
<th>Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.32</td>
<td>13</td>
<td>3.60</td>
<td>25</td>
<td>2.88</td>
<td>37</td>
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<td>49</td>
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<tr>
<td>2</td>
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<td>26</td>
<td>2.82</td>
<td>38</td>
<td>2.10</td>
<td>50</td>
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<td>29</td>
<td>2.64</td>
<td>41</td>
<td>1.92</td>
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<tr>
<td>6</td>
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<td>18</td>
<td>3.30</td>
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<td>2.58</td>
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<tr>
<td>7</td>
<td>3.96</td>
<td>19</td>
<td>3.24</td>
<td>31</td>
<td>2.52</td>
<td>43</td>
<td>1.80</td>
<td>55</td>
<td>1.08</td>
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<tr>
<td>8</td>
<td>3.90</td>
<td>20</td>
<td>3.18</td>
<td>32</td>
<td>2.46</td>
<td>44</td>
<td>1.74</td>
<td>56</td>
<td>1.02</td>
</tr>
<tr>
<td>9</td>
<td>3.84</td>
<td>21</td>
<td>3.12</td>
<td>33</td>
<td>2.40</td>
<td>45</td>
<td>1.68</td>
<td>57</td>
<td>.96</td>
</tr>
<tr>
<td>10</td>
<td>3.78</td>
<td>22</td>
<td>2.06</td>
<td>34</td>
<td>2.34</td>
<td>46</td>
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<tr>
<td>11</td>
<td>3.72</td>
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<td>35</td>
<td>2.28</td>
<td>47</td>
<td>1.56</td>
<td>59</td>
<td>.84</td>
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<tr>
<td>12</td>
<td>3.66</td>
<td>24</td>
<td>2.94</td>
<td>36</td>
<td>2.22</td>
<td>48</td>
<td>1.50</td>
<td>60</td>
<td>.78</td>
</tr>
</tbody>
</table>
You should try to get the greatest number of points for yourself compared to everyone else.

Please maintain complete silence throughout the decisions. Any indication of pleasure or displeasure with strategies will destroy the validity of the project.

The following steps outline the procedure to be followed:

1. You will make three practice decisions using the point table on the first page of the instructions.
2. Write why you made this particular choice on the "WHY" Decision Sheet.
3. Record your strategy choice on the Decision Recording Form.
4. At the Project Director's signal, hold up the card with your strategy for the other participant to see.
5. Record the other participant's strategy choice and your practice points.
6. Repeat the procedure for the second and third practice decisions.
7. At the Project Director's signal, complete Questionnaire 1.
8. Questionnaire 1 will be collected.
9. Participants will receive their real point tables for study. The real point table you will receive will probably make decision-making more interesting than the practice example.
10. At the Project Director's signals, make your decisions for real.
11. If you have a question at any time, raise your hand to signal the Project Director and he will come to you. Speak softly so that no other participant will hear.
"WHY" DECISION SHEET

(Write out why you are making a particular choice for each decision)

(*) = Practice decision

* A

* B

* C

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23
**( = Practice decisions)**

<table>
<thead>
<tr>
<th>My Strategy</th>
<th>Other's Strategy</th>
<th>My Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td></td>
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<tr>
<td>3</td>
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<td>22</td>
<td>22</td>
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</tr>
<tr>
<td>23</td>
<td>23</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B
INSTRUCTIONS TO CONFEDERATES

The people on the other side are being tested. You are not being tested.

Ignore all instructions to the people on the other side of the screen and follow these:

For the practice decisions:

#A ----- CHOOSE T
#B ----- CHOOSE U
#C ----- CHOOSE T

For real decision #1, CHOOSE T

For all other real decisions:

If the other person chooses Y, Choose T for the next decision.

If the other person chooses Z, Choose U for the next decision.

You will be paid $2.25 at the end of the next week if you follow these instructions.

[Please do not speak about this decision project to anyone until you receive your money.]
QUESTIONNAIRE 1

In the statements to follow, you are asked to evaluate your feelings by circling one of the nine choices:

1 -- Very Strongly Agree
2 -- Strongly Agree
3 -- Agree
4 -- Slightly Agree
5 -- Neutral
6 -- Slightly Disagree
7 -- Disagree
8 -- Strongly Disagree
9 -- Very Strongly Disagree

<table>
<thead>
<tr>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSA</td>
<td>StA</td>
<td>A</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>SIA</td>
<td>N</td>
<td>SLD</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Std</td>
<td>D</td>
<td>Std</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>VSD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For example:

I would like to do well in this decision-making project.

When circling your opinions, circle the response that is the most truthful and not what someone might expect you to say. Answer the questions quickly, yet carefully.
1. The instructions are clear on how points are transferred to rankings and dollars.

2. I understand well the mechanics of how to make decisions.

3. I do not understand how the points are figured for myself and the other participant.

4. If I were to rank well in this decision project, it would be important for me to tell others how well I did.

5. Money is not a strong motivating factor for me for this decision project.

6. It is important for me to know how I performed in this decision project, just for the sake of knowing.

7. I feel pretty nervous about having to make the decisions coming up.

8. If I were to rank poorly, I would not want anyone else to know.

9. Fellow students told me a lot about how this decision project works.
APPENDIX D
Each participant has been paired with another student. One will act as a message sender and the other as a message receiver.

You are the message receiver and will receive, but cannot send, a written message. The message you receive is for real and is not a bluff.

Read the message carefully. The content of the message will be in effect for all future decisions.

Communication of any kind other than the one written message is not permitted.
Other Participant's Strategies

<table>
<thead>
<tr>
<th></th>
<th>$T$</th>
<th>$U$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Y$</td>
<td>300,300</td>
<td>100,400</td>
</tr>
<tr>
<td>$Z$</td>
<td>400,100</td>
<td>200,200</td>
</tr>
</tbody>
</table>

Your points are first in each box. The other participant's points are second.
APPENDIX E
QUESTIONNAIRE 2

In the statements to follow, you are asked to evaluate your feelings by circling one of the nine choices:

1 -- Very Strongly Agree
2 -- Strongly Agree
3 -- Agree
4 -- Slightly Agree
5 -- Neutral
6 -- Slightly Disagree
7 -- Disagree
8 -- Strongly Disagree
9 -- Very Strongly Disagree

 agreements

<table>
<thead>
<tr>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSA</td>
<td>Sta</td>
<td>A</td>
</tr>
<tr>
<td>S1A</td>
<td>N</td>
<td>S1D</td>
</tr>
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<td>D</td>
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<td>VSD</td>
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<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>

For example:

I would like to do well in this decision-making project.

When circling your opinions, circle the response that is the most truthful and not what someone might expect you to say. Answer the questions quickly, yet carefully. The questions start at 10.
<table>
<thead>
<tr>
<th></th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. This whole decision project makes me angry.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. I think my final rank will be high.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. I wish I could have been paired with someone else.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. I wish I could punish the other person.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. The other person will reward me whenever I do what he wants.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. The other person has a legitimate right to more points than me.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. I am going to be an expert. I really know the best decisions to make most of the time.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. The other person thinks we are a team.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. The other person is an expert. He has experience in these decision projects.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. The other person has legitimate authority to request certain decisions by me.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. I am really part of a team with the other person.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. I would not like to be identified as a friend of the other person.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. I will be punished whenever I do not do what the other person wants.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. The message was very upsetting to me.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td></td>
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<td></td>
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<td>1</td>
<td>2</td>
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<td>6</td>
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<tr>
<td>7</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

24. I will make more selfish decisions than if there were not any message.

25. The other person will make more selfish decisions than if there were not any message.

26. If I could send a message, rather than the other person, my ranking would be higher.
QUESTIONNAIRE 3

In the statements to follow, you are asked to evaluate your feelings by circling one of the nine choices:

1 -- Very Strongly Agree  
2 -- Strongly Agree  
3 -- Agree  
4 -- Slightly Agree  
5 -- Neutral  
6 -- Slightly Disagree  
7 -- Disagree  
8 -- Strongly Disagree  
9 -- Very Strongly Disagree  

Agree Neutral Disagree

VSA SIA A SIA N SLD D SLD VSD
1 2 3 4 5 6 7 8 9

For example:

I would like to do well in this decision-making project.

When circling your opinions, circle the response that is the most truthful and not what someone might expect you to say. Answer the questions quickly, yet carefully. The questions start at #27.
27. The instructions were clear on how points are transferred to rankings and dollars.

28. I understood well the mechanics of how to make decisions.

29. I did not understand how the points were figured for myself and the other participant.

30. If I were to rank well, it would be important for me to tell others how well I did.

31. Money was not a strong motivating factor for this decision project for me.

32. It was important for me to know how I performed in this decision project, just for the sake of knowing.

33. I felt pretty nervous making the decisions.

34. If I were to rank poorly, I would not want anyone else to know.

35. Fellow students have told me a lot about how this decision project works.

36. This whole decision project made me angry.

37. I think my final rank is high.

38. I wish I could have been paired with someone else.

39. I wish I could punish the other person.

40. The other person rewarded me whenever I did what he wanted.
<table>
<thead>
<tr>
<th></th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>41.</td>
<td>The other person was an expert. He had had experience in these decision projects.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>42.</td>
<td>I was an expert. I really knew the best decisions to make most of the time.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>43.</td>
<td>The other person thought we were a team.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>44.</td>
<td>The other person was an expert. He had had experience in these decision projects.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>45.</td>
<td>The other person had legitimate authority to request certain decisions by me.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>46.</td>
<td>I was really part of a team with the other person.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>47.</td>
<td>I would not like to be identified as a friend of the other person.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>48.</td>
<td>I was punished whenever I did not do what the other person wanted.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>49.</td>
<td>If I had the chance, I would volunteer for a similar project in the future.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>50.</td>
<td>If I had a choice, I would rather exchange written messages than talk with the other person.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>51.</td>
<td>I really just guessed every time I made a decision.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>52.</td>
<td>If there were no money paid out, I would have been more selfish in my decisions.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
</tr>
<tr>
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<td>----------</td>
</tr>
<tr>
<td>53. I was satisfied with my point total.</td>
<td>1  2  3  4  5  6  7  8  9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>54. It bothered me that I couldn't get all the points I wanted.</td>
<td>1  2  3  4  5  6  7  8  9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55. If the other person and I could have at least seen each other, my decisions would have been more cooperative.</td>
<td>1  2  3  4  5  6  7  8  9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>56. If I were a businessman, my decisions would still have been the same.</td>
<td>1  2  3  4  5  6  7  8  9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57. This decision project was fun.</td>
<td>1  2  3  4  5  6  7  8  9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58. If I were to start over again, I don't think I could rank any better.</td>
<td>1  2  3  4  5  6  7  8  9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>59. If the other person and I could have talked things over, we both would have made more points.</td>
<td>1  2  3  4  5  6  7  8  9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60. If I had the choice, I would rather send a message than receive a message.</td>
<td>1  2  3  4  5  6  7  8  9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61. If I had more than just two strategies, I would feel better.</td>
<td>1  2  3  4  5  6  7  8  9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>62. The uncertainty about what the other person would decide bothered me.</td>
<td>1  2  3  4  5  6  7  8  9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63. If the other person were a good friend, my decisions would have been more selfish.</td>
<td>1  2  3  4  5  6  7  8  9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td></td>
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<td>---------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>VSA</td>
<td>SIA</td>
<td>A SIA</td>
<td>N SLD</td>
</tr>
<tr>
<td>64. If there were money in the boxes rather than points, my decisions would still have been the same.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65. If I tried to be sneaky, the other person would make me pay for it.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66. I concentrated on getting the best for me overall, rather than any one particular decision.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>67. I tried to make the other person do what I wanted.</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>68. I was a very mean and tough decision maker.</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>69. I tried to cooperate with the other person whenever he tried to cooperate with me.</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>70. If I had to make future decisions with the same person, I would have been more cooperative in my decisions.</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>71. If I could send a message to the other person, the message would say:</td>
<td>(Write in message)</td>
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<tr>
<td>72. A message I would like to receive from the other person would say:</td>
<td>(Write in message)</td>
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<tr>
<td>73. The message was very upsetting to me.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
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<tr>
<td>74. I made more selfish decisions than if there were not any message.</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>Agree</td>
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<td>VHA</td>
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<td>A SIA</td>
<td>N SIA D SIA VSD</td>
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<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4 5 6 7 8 9</td>
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</table>

75. The other person made more selfish decisions than if there were not any message.

76. If I could send a message, rather than the other person, my ranking would be higher.
APPENDIX G
In the statements to follow, you are asked to evaluate your feelings by circling one of the nine choices:

1 -- Very Strongly Agree  
2 -- Strongly Agree  
3 -- Agree  
4 -- Slightly Agree  
5 -- Neutral  
6 -- Slightly Disagree  
7 -- Disagree  
8 -- Strongly Disagree  
9 -- Very Strongly Disagree

<table>
<thead>
<tr>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
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<tbody>
<tr>
<td>VSA</td>
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<td>S1A</td>
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<td>VSD</td>
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For example:

I would like to do well in this decision-making project.

When circling your opinions, circle the response that is the most truthful and not what someone might expect you to say. Answer the questions quickly, yet carefully. The questions start at #17.
<table>
<thead>
<tr>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>VSA</th>
<th>StA</th>
<th>A</th>
<th>SIA</th>
<th>N</th>
<th>S1D</th>
<th>D</th>
<th>S2D</th>
<th>VSD</th>
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<tbody>
<tr>
<td>77. The instructions were clear on how points are transferred to rankings and dollars.</td>
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<tr>
<td>78. I understood well the mechanics of how to make decisions.</td>
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<tr>
<td>79. I did not understand how the points were figured for myself and the other participant.</td>
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<td>80. If I were to rank well, it would be important for me to tell others how well I did.</td>
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<tr>
<td>81. Money was not a strong motivating factor for this decision project for me.</td>
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<tr>
<td>82. It was important for me to know how I performed in this decision project, just for the sake of knowing.</td>
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<td>83. I felt pretty nervous making the decisions.</td>
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<td>84. If I were to rank poorly, I would not want anyone else to know.</td>
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<td>85. Fellow students have told me a lot about how this decision project works.</td>
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<td>86. This whole decision project made me angry.</td>
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<td>87. I think my final rank is high.</td>
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<tr>
<td>88. I wish I could have been paired with someone else.</td>
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<td>89. I wish I could punish the other person.</td>
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<td>90. The other person rewarded me whenever I did what he wanted.</td>
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<td>Agree</td>
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<tr>
<td>91. The other person had a legitimate right to more points than me.</td>
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<td>92. I was an expert. I really knew the best decisions to make most of the time.</td>
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<td>93. The other person thought we were a team.</td>
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<td>94. The other person was dumb. He didn't know how to make decisions at all.</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>95. I had a legitimate right to more points than the other person.</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<td>96. I was really part of a team with the other person.</td>
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<td>97. I would not like to be identified as a friend of the other person.</td>
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<td>98. I was punished whenever I did not do what the other person wanted.</td>
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<td>99. If I had the chance, I would volunteer for a similar project in the future.</td>
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<td>100. If I had a choice, I would rather exchange written messages than talk with the other person.</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<td>101. I really just guessed every time I made a decision.</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>102. If there were no money paid out, I would have been more selfish in my decisions.</td>
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<td>103.</td>
<td>I was satisfied with my point total.</td>
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<tr>
<td>104.</td>
<td>It bothered me that I couldn't get all the points I wanted.</td>
<td>1 2 3 4 5 6 7 8</td>
<td>9</td>
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<tr>
<td>105.</td>
<td>If the other person and I could have at least seen each other, my decisions would have been more cooperative.</td>
<td>1 2 3 4 5 6 7 8</td>
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<tr>
<td>106.</td>
<td>If I were a businessman, my decisions would still have been the same.</td>
<td>1 2 3 4 5 6 7 8</td>
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<tr>
<td>107.</td>
<td>This decision project was fun.</td>
<td>1 2 3 4 5 6 7 8</td>
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<tr>
<td>108.</td>
<td>If I were to start over again, I don't think I could rank any better.</td>
<td>1 2 3 4 5 6 7 8</td>
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<tr>
<td>109.</td>
<td>If the other person and I could have talked things over, we both would have made more points.</td>
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<td>110.</td>
<td>If I had the choice, I would rather send a message than receive a message.</td>
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<td>111.</td>
<td>If I had more than just two strategies, I would feel better.</td>
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<tr>
<td>112.</td>
<td>The uncertainty about what the other person would decide bothered me.</td>
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<td>113.</td>
<td>If the other person were a good friend, my decisions would have been more selfish.</td>
<td>1 2 3 4 5 6 7 8</td>
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</tbody>
</table>
125. The other person made more selfish decisions than if there were not any message.

126. If I could send a message, rather than the other person, my ranking would be higher.
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