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COMPETITION AND INTERVENTION: THE DELEGATION OF DECISION-MAKING AUTHORITY

by
Ronald Dick Lambert

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Doctoral Committee:

Professor Dorwin Cartwright, Chairman
Assistant Professor Morris F. Friedell
Professor William A. Gamson
Professor Daniel Katz

Abstract

COMPETITION AND INTERVENTION: THE DELEGATION OF DECISION-MAKING AUTHORITY

by Ronald D. Lambert

The objective of this study is to inquire into some of the conditions underlying the delegation of decision-making authority. Two general questions were asked. First, what are the conditions under which parties to a competitive relationship will invite a Third Party (TP) to intervene? Second, what are the consequences for the ensuing interaction when one or both of the competitors reject TP?

A total of 234 males and females played a Prisoner's Dilemma (PD) game. Control Subjects (Ss) played one of two standard PD games for real money. The matrices differed only in what was offered for successful unilateral competition; in the Low Temptation matrix, $2.00 could be won, and in the High Temptation matrix, $5.00 could be won. Joint cooperation was rewarded by $1.25 apiece. Only one trial was played. Experimental Ss were given the additional option of inviting a TP to choose in their mutual behalf, thereby guaranteeing each party $1.00 apiece, or of rejecting TP and continuing to play a single trial of the PD in the standard fashion.

Although Ss believed they were interacting with one of the other Ss seated at a Bavelas board, they were in fact given fabricated feedback about their presumed partners' choices on the TP option and on the cooperative-competitive option. All of the Ss who invited TP were informed that their presumed partners had rejected TP. Of the Ss who rejected TP, one-half were told that their partners had invited him, and the others were told that their partners had rejected him. Feedback concerning the cooperative-competitive option was programmed to yield the least costly distribution of payoffs for the Experimenter in a set of experimental Ss. Finally, all Ss returned for a second session at which time they completed an extensive battery of personality inventories.

Major independent variables were: (1) Temptation level; (2) TP condition; (3) sex of S; (4) pattern of invitation-rejection; and (5) relevant personality measures. Major dependent variables were: (1) delegation and (2) level of competition.

Four major observations may be mentioned. First, the High Temptation matrix was no more likely to establish a need for and consequent invitation to TP, than was the Low Temptation matrix. Second, although the female and male Ss did not

differ significantly in their tendency to invite TP, the female Ss were clearly more likely to choose the cooperative response. Third, the greatest level of cooperation was found when Ss rejected TP and they believed that their partners had done so, too. And, fourth, the personality factors failed to have their expected effects on delegation of authority or upon the level of competition in the absence of TP, as well as upon several other dependent measures.

The above observations were taken to be theoretically problematic and were discussed from the point of view of certain properties of the experimental situation, properties of sex roles, the conditions under which expectancies are activated, and the interaction between Ss' definitions of the situation and personality factors. Finally, attention was given to the conduct of future research in a field setting based on a conceptual distinction between competitive and conflictual processes.

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I wish to thank the members of my thesis committee, each of whom has contributed uniquely and measurably to my thinking and to the research reported here. I am especially grateful to Dr. Dorwin Cartwright for his sustained interest in the problem throughout the past year or more, and for his many helpful suggestions at every stage of the thesis. I wish to thank Dr. Morris Friedell for his attentiveness to detail in the analysis of the data. Dr. William Gamson made a very special contribution in his prodding for greater theoretical integration, and for this I am most thankful. And I wish to thank Dr. Daniel Katz for his observations which at a number of critical points offered a way out of some perplexing theoretical problems.

I wish to thank two other people who have provided special assistance. Mr. Marvin Brown, a fellow graduate student, contributed much time and much patient instruction in programming the personality data for the computer. Mrs. Betty Jennings has provided an experienced touch in the preparation of the final manuscript of the thesis.

Finally, I wish both to thank and to dedicate this thesis to my wife, Marilyn, to our daughters, Kathryn and Marjorie, and to our parents.

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CHAPTER I

THE DELEGATION OF AUTHORITY

The objective of this thesis is to inquire into some of the conditions underlying the delegation of decision-making authority. We are interested in the conditions under which parties to competition will invite or reject the services of a mediator, arbitrator, or third party (TP). A further question asks about the effects upon ensuing interaction when one or both of the participants rejects TP.

While the impetus for the study is "real life," the approach is experimental. This means, of course, that the experimental conflict which we create will be an extremely simplified version of what we understand to be "real" conflict. We hope, however, to capture some of the skeletal features of a kind of conflict, and thereby to obtain some foothold on the phenomenon, however modest the foothold.

Consider briefly a "real life" conflict; in fact, a conflict which prompted interest in the phenomenon of intervention. During the late summer and early autumn of 1965, debate raged in the U.S.A. concerning the "real" intentions of the "enemy" in Vietnam--whether he really wanted peace, whether his reluctance to come to the bargaining tables belied his alleged desire to bring conflict in that nation to an end, whether his unwillingness to submit to United States intervention proved the "criminal" nature of his action, and so on. These questions were being asked, too, of the United States.

A number of considerations were introduced to explain the net failure of either side to negotiate directly or to submit to mediation, all of which served to underscore the multiple significance of these acts. For example, it was suggested that accession by the North Vietnamese to such a call would be a tacit concession of the legitimacy of American intervention in the internal affairs of Vietnam. Another "explanation" hinged on the status of the Viet Cong, the legitimacy of which the U.S.A. was unwilling to concede. With the passage of time, it appears that many of these reasons veiled the belief on either side that more might be gained without negotiations and without third party intervention than with either or both.

In spite of the richness of the situation just described, we assume that not all of its details are strictly relevant to an explanation of intervention. We are interested in what is generic to the initiation of mediation, to the act of delegation of decision-making authority, and not in what is peculiar to the Vietnamese conflict. Of course, what is judged to be relevant and what not is a decision upon which much of the success of the research will depend.

The Experimental Game

Consider briefly the gaming device which provided our data. The game, called the Prisoner's Dilemma, will be dealt with more fully in Chapter II. For the moment, we wish only to acquaint the reader with the kind of experimental conflict we wish to create before we discuss the complexities of real-life conflict and intervention.

The Prisoner's Dilemma (PD) is so named for the anecdote used to illustrate the logic of its payoffs. The anecdote is depicted in Table I-1 and is recounted by Rapoport & Chammah (1965) as follows.

> Two prisoners, held incommunicado, are charged with the same crime. They can be convicted only if either confesses. If both prisoners confess, their payoff is minus one. If neither confesses, it is plus one. If only one confesses, he is set free for having turned state's evidence and is given a reward of plus two to boot. The prisoner who holds out is convicted on the strength of the other's testimony and is given a more severe sentence than if he had confessed. His payoff is minus two. It is in the interest of each to confess no matter what the other does, but it is in their collective interest to hold out.

Figure I-1

The Prisoner's Dilemma

		Prisoner B: Don't Confess	Prisoner B: Confess
Prisoner A	Don't Confess	1, 1*	-2, 2
Prisoner A	Confess	2, -2	-1, -1

*The first number in each pair represents the payoff accruing to Prisoner A, and the second to Prisoner B.

It can be seen, then, that there is no entirely satisfactory solution. A variety of reasons recommend either alternative. But the dilemma can be made even more of a

dilemma by offering a greater payoff for unilateral confession relative to the cell in which both prisoners refuse to confess.

Throughout this thesis, the first of the two alternatives (Don't Confess) will be labeled "Red," and the second (Confess) "Blue." The choice will be referred to as the Red-Blue Option, or RBO. Control Subjects (Ss) will play a standard Prisoner's Dilemma. Experimental Ss will follow the same procedure as the Control Ss, except that the former will have an additional choice to make. This will be the Third Party Option, or TPO, which will precede RBO.

Intervention

Consider the broad spectrum of contexts within which intervention occurs: a dispute between siblings, a marital squabble, a disagreement between a worker and his employer or even his union, a strike threat posed by a union during contract negotiations, and the dispute between nations concerning a common boundary.

There is, in these examples, not only an increase in the scope of conflict, but also a change in the kind of social unit or actor involved. In one case there are two individuals, in a second case a sole individual at odds with a large organization, and in a third case, two organizations. A question to be answered is: are we dealing with the same phenomenon in all three contexts?

In the next section we will briefly review the state of knowledge in the area of intervention. Then, in the

remainder of the chapter, we will consider some theoretical aspects of the problem: (a) some theoretical apparatus--definitions, propositions, and hypotheses; (b) the multi-systemic nature of competition and conflict; (c) the functions which TP may serve in mediation; and (d) the strength, scope, and significance of mandates conferred upon TP.

Intervention in current writing. Rehmus (1965), in his review of the literature on the mediation of industrial conflict, contends that "mediation is perhaps the least studied subject in the field of industrial relations" (p.118). He echoes Cole's sentiment with approval that there is not even agreement to date on the nature and function of mediation. He quotes Cole's observation that "Hitherto, mediation has been helpful in a haphazard way largely because of the talents of certain individuals who themselves would find it difficult to say why they had been successful."

The most popular and oldest approach to mediation is to be found in desriptive studies, such as Peters' two volumes (1952, 1955) and Jackson's (1952) comparative study of labor and international relations. Thus, Peters recounts a number of episodes in labor negotiations which illustrate certain of the problems confronting mediators and which reveal some of the strategic considerations governing disputants' tactics. Rehmus qualifies Jackson's conclusion that the two spheres of labor and international relations are basically the same. As to our earlier question about whether we are dealing with essentially the same phenomenon of mediation in all areas of conflict between social units,

Rehmus notes that labor and management "must" come to some kind of an agreement, tacit if not explicit, as they cannot remain apart. Internationally, nations may simply "avoid" each other in the pursuit of their goals elsewhere, so that the causes of conflict are resolved by time, as it were, rather than by more direct means.

Still other studies have inquired into the character of the mediator. This approach assumes that there are some characteristics which make some mediators successful and others less so. Landsberger's (1960) work is representative of this approach. Rehmus' evaluation of the personality approach is very much to the point. He emphasizes that, to the extent that "personality" is critical, to that extent we can disregard the merits of different techniques. Such an emphasis would clearly miss the point of the distinction between mediation and arbitration, the legal freight which attends much intervention and which thereby circumscribes possible stratagems and outcomes, and the role of sanctions and process in bringing disputants to terms. In other words, it ignores the role of mediator and its manner of articulation with the remainder of the system.

Perhaps most promising are those studies which focus on intervention as process. Landsberger (1955) and McGrath (1963) have conducted the two major empirical studies so far done in this area. Douglas (1962) has approached the process from a descriptive point of view in her specification of three major phases through which negotiations move. At the same time, Douglas has managed to illuminate some of the

structural properties of the process as opposed to a simple consideration of the psychological inputs into the system.

Some Theoretical Apparatus

Throughout this thesis, we will be using two words, on occasion interchangeably. But we should be clear about their quite different meanings at the outset. By competition, we refer to actions whose intent or effect is to alter the distribution of rewards within a relationship. By conflict, we refer to actions whose intent or effect is to alter the distribution of power within a relationship. The two processes differ in the kinds of commodities affected: in the former case, utilities; in the latter case, facilities.

The distinction between utilities and facilities, or rewards and power, may tend to merge or blur in the extreme. At some point, the accumulation of rewards by one side seems to produce an imbalance of power. However, the distinction which we wish to make is rather that between consumer goods and capital goods. The emphasis in rewards is on their consummatory nature. By power we refer to the leverage associated with a position within a relationship enabling its incumbent(s) to affect the distribution of rewards. In a sense, then, power is primary and rewards are secondary or derivative.

Two extreme instances of competition and conflict may pose a problem. One solution to competition is dissolution of the relationship. In the extreme, one or both competitors may dissolve the relationship and look elsewhere for more

satisfying outcomes (cf. Thibaut & Kelley's discussion of comparison levels, 1959).

The extreme case of conflict is assumed by definitions of power in terms of the potential or actual infliction of harm upon an opponent, even his destruction. The destruction of one's opponent is the limiting case of conflict because it results in the maximization of differences in power between disputants.

Intervention is a particular form which the distribution of power within a relationship may take. It is for this reason that we talk of intervention as the sharing or delegation of decision-making authority or power. Accordingly, in the present study, we are considering the relationship between competition, conceived as attempts by two parties in interaction to effect a distribution of the available rewards, and the third party option, conceived as a means of altering the distribution of power within the relationship.

Proposition I — Intervention will be acceded to in a competitive relationship when TP is perceived to be the means to a more favorable distribution of rewards than could be achieved independently.

Proposition II — Intervention will be acceded to in a conflictful relationship when TP is perceived to be the means to a more favorable distribution of power than currently exists or could be achieved independently.

We propose to test only the first of these two propositions. Since we are employing but a single trial of the Prisoner's Dilemma, and since the players are parties to a

most egalitarian relationship whose structure cannot be changed, power is not at all problematic. A corollary of both propositions follows.

> Corollary 1 That TP will be most favored who is perceived to be the most effective means to a more favorable distribution of reward or power.

We have not chosen to make this corollary problematic. Future research might be conducted to test this assumption. In the present experiments, however, we have not varied any of the relevant characteristics of TP. We have held constant his attributes, his functions, his rule of invitation, and his mandate. A number of these factors will be discussed later.

The following assumption will be tested by Prediction 1. It is offered as an "empirical" assumption because it relates a theoretical construct to a particular operation, a reduction the wisdom of which we cannot merely assume. That is, the success of our predictions will be a function not only of such validity as our theoretical formulation may possess, but of the appropriateness of the empirical interpretation of the principal theoretical constructs. Even so, we shall essentially test only the assumption that the $5.00 matrix tempts defection more than does the $2.00 matrix. Validation of the relation between uncertainty and temptation, however, will be tested but indirectly as support of the predictions contributes to its construct validation. In retrospect, it would have been desirable to have obtained some more direct measures of perceived probability.

Empirical assumption a — The amount of uncertainty in the PD matrix will vary directly with the temptation to defect or to compete.

By temptation, we mean the difference between what a player can win by unilateral competition as opposed to what he can win by joint cooperation. In Figure I-1, Prisoner A can win plus 2 should he be the only one to confess. He wins plus 1 if both he and Prisoner B refuse to confess. The incentive to confess is plus 1, the difference between these two payoffs. There would be no temptation to defect if Prisoner A could win no more by unilateral competition than he could win by joint cooperation.* As the difference in payoffs increases in the direction of increased advantage for successful unilateral defection, temptation is said to increase.

We make the assumption that, as the temptation to defect increases, so does the uncertainty of partner's choice. As Ss engage in reciprocal and reflexive role-taking, the likelihood of other's choice is seen to fluctuate to the point where both responses are equally prominent.

Finally, we wish to formulate two general hypotheses which we will test via a number of predictions. Both of these hypotheses relate uncertainty to TPO and to RBO.

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*This is an oversimplification, however. There may have been a "falling-out" between the two prisoners, so that A not only desires to win as much as he can, but also wants to inflict some damage upon his partner-in-crime. So he may confess hoping thereby to see his partner be sentenced to jail. Such incentives are typically not represented in the payoffs appearing in the matrix, but it is apparent how such consideration would further complicate the picture. We will discuss such matters in Chapter II.

Hypothesis 1. The probability that a party will invite TP to intervene will vary directly as a function of the uncertainty of the outcomes.

Hypothesis 2. The probability that a party will compete (i.e., choose Blue) will vary directly as a function of the uncertainty of the outcomes.

The above is the essential theoretical structure supporting our principal experimental predictions. It has the virtue of economy of statement until data dictate otherwise. We will also be testing two assumptions having to do with individual differences, but these hardly need to be presented in propositional form. We assume that Ss will differ in their reactivity to uncertainty in the situation and the relationship and in their motivation to bias the distribution of rewards in their favor. Other analyses will be largely of an exploratory nature.

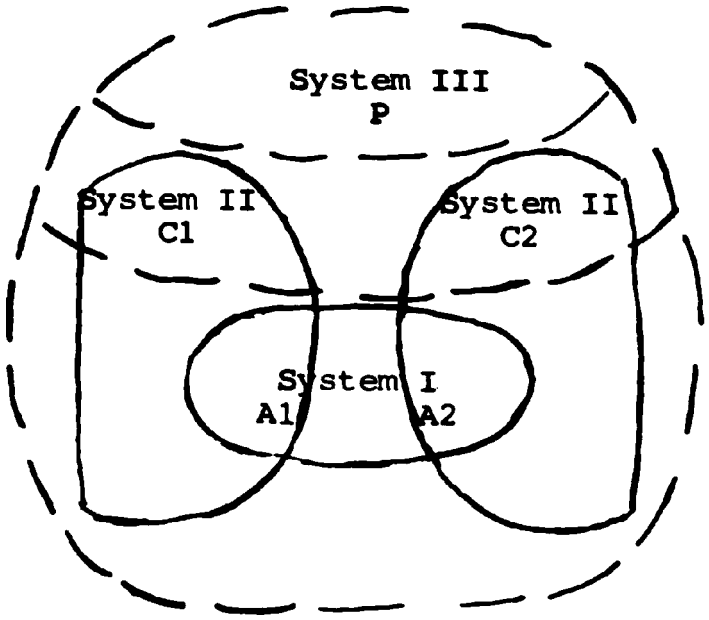
The Multi-systemic Nature of Competition and Conflict

The context within which competition or conflict takes place is depicted in Figure I-2. The course of conflict, through time, can be conceived of in terms of three interacting systems. In any instance, all three or fewer systems may be implicated. The effects of inter-systemic interaction are not prejudged. Some times, the effects of one system may be an increment in competitive or conflictful activity; and in other instances, the effects may be dampening of same.

In Figure I-2, System I, defined by A1 and A2, the operative units or actors, is the defining relationship.

Figure I-2

A Multi-systemic Representation
of Competitive and Conflictful Relationships



where: System I is the primary, defining competitive or conflictful relationship, defined by A1 and A2, the two principals; System II defined by C1 and C2, the two constituencies; System III defined by P, the "public."

The presence of this system makes problematic the interactive effects of Systems II and III. Systems II and III are "present" to the extent that they do interact with the primary system. It is the task of theory to specify the general circumstances under which these three systems will interact, in what ways, and with what effect.

It should be noted in Figure I-2 that the boundaries of System III may vary. Intra-nationally, where A1 and A2 are the negotiators for labor and management, System III embraces Systems I and II inasmuch as the actors in these two systems may also be activated in their roles of interested parties, e.g., consumers. Internationally, where A1

A2 are diplomats of two nations engaged in disarmament talks, there may be no effective System III other than some diffuse "world public opinion" or some agency of questionable significance in the calculations of A1 and A2, such as the United Nations.

In what sense can the systems be said to interact? A system interacts with another system when it provides inputs to it in the form of expectations, sanctions (or threat of) for performance, or means for conflict augmentation or reduction. For example, System II may rule out certain bargaining options from the range available to their agents in System I, e.g., a mandate from C1 to A1 to accept no settlement below a certain standard. The effectiveness or closeness of control exercised by C1 over A1 may vary, so that A1 may be required to validate his performance immediately by referendum, or he may simply report back every four or so years at election time. The form of interaction between Systems I and II is one of representation.

System III may interact with both Systems I and II, either separately, or with I indirectly via II. For example, in industrial relations, a government with jurisdiction may legislate certain requirements governing the selection of bargaining agents or their accountability to their constituents; or it may require certain signs of "good faith" bargaining.

From our vantage point, one way in which System III may interact with System I is through third parties. The

terms of intervention, in which power within I is redistributed so as to vest outside interests with some authority, will vary. Where System III enjoys at most some moral authority over System I, e.g., the United Nations, it may simply announce the availability of its good offices. Or where there is little cultural support for compulsory arbitration, e.g., in certain major industrial conflicts in the U.S.A., the government may be similarly limited. Not only is the rule of invitation, i.e., voluntary or compulsory problematic, but so is the kind of mandate extended. For example, arbitrators in Sweden have the responsibility of eliminating uncertainty or ignorance from labor negotiations through their power to examine all the relevant data entering into a compromise, e.g., company ledgers. These two factors will be dealt with more fully in later sections of this chapter.

We will offer a general proposition describing the conditions under which intervention will occur, although we will not test this assumption in the research reported here.

Proposition III — System III will interact with System I in such a way as to require some form of mediation under the following two circumstances:
1. When there is cultural and legal support for such action; and
2. when the leverage of System I within System III is such that the resolution of competition or conflict within I, or its delay, will so affect the distribution of rewards and/or power throughout System III as to endanger the positions of relatively advantaged groups.

The second condition posited in Proposition III points up the fact that interaction among systems is not one-way. Third parties are resorted to, as are any legal norms, when changes in the structure of System I threaten changes in the structure of System III.

It is difficult to think of a real-life example in which both Systems II and III are inoperative, for the simple reason that most significant conflict is important to someone besides those most directly involved. Where competitive or conflictful relations are recurrent and where their effects "matter," we can assume that one or the other, if not both, of Systems II and III will become implicated in the outcome. Perhaps the gaming procedure used in the experiments to be reported comes closest to the case in which II and III are inoperative, unless the Experimenter be considered to represent System III. In a somewhat circular way, however, we judge the kind of competition captured in the PD to be trivial because the players represent their own interests alone and no larger system takes cognizance of what transpires.

The Functions of Intervention

We argued that the effects of interaction between systems should not be prejudged. For this reason, we now consider some of the functions which intervention may serve; in some cases, to reduce competition and conflict; in other cases, to increase it; and, in still other cases, merely to prolong it.

A particularly troublesome issue involves the functions of mediation: real and imagined, intended and unintended, functional and dysfunctional (from the point of view of accommodation). Moreover, these functions may have little correspondence with what is claimed.

The following functions have been organized or grouped according to the structures or arrangements where the impact of intervention may be registered. At the same time, intervention will probably have multiple functions at any given instance and over time.

/1/ Task structure. The task which any competitive or conflictful relationship faces is some decision about the distribution of rewards and/or power. A1 and/or A2 may invite or reject TP to intervene for one of the following reasons. Or, they may invite TP for some other reason, but the effect of intervention may be one of the following. These are ways in which TP may relate to the task elements in the relationship.

1-1. Problem-assessment. A1 and A2 are not quite sure just what the nature of their problem is, and so they want TP to diagnose their ailment so that they can proceed either independently or with TP's continued assistance to solve it. For example, a married couple may be referred to a marriage counselor by the courts in the belief that their difficulties, whatever they may be, can be resolved. It is the responsibility of the counselor to explore with his clients the possible sources of discord.

Note, however, the strategic significance of this activity. A1 and A2 may seek the aid of a counselor, but each may "really" be looking for a redefinition of the problem to suit his own designs. This amounts to an attempt at collusion with TP, with or without his knowing consent, to establish a definition biased implicity in either's favor, something which was hitherto unsuccessful (cf. Schelling, 1960).

1-2. Problem-solving. A1 and A2 hope that TP can provide some solution to their impasse. They are looking for a prescription, not simply a diagnosis.

1-3. Procedural. TP, it is hoped, will assist A1 and A2 to establish some rules and procedures governing their relationship, so that they can proceed to deal with their problems in a more certain fashion. Agreement on ground rules may contribute to a solution, not directly, but indirectly, as they make possible the development of trust and other such interpersonal sentiments which must precede solution.

In industry, for example, it is often in the interest of both management and labor to establish grievance procedures and due process. By fostering the belief that justice is being done, it is more likely that the discord

generated by an offending event can be kept within bounds.

1-4. Temporizing. This is a peculiar function. On the one hand, A1 does not wish to reach a solution, at least for the present, and he may not be disposed to admit this. By involving TP, he hopes to deceive A2 and/or outsiders whose image of him and his intentions is strategic.

On the other hand, temporizing may be very functional for problem-solving. It is believed that so long as the disputants talk, they will not go to war; or that while they are engaged in mediation, conditions underlying their disagreement will have changed independently so that the problem will have "solved itself." For example, an arbitrator may be introduced into the relationship to provide a "cooling-off" period.

/2/ Communication and control structure. The significance of the functions considered here is that they bear on the relative ability of the principals to effect a decision favorable to their particular interests. The latter aspect of 1-1 is relevant here. The problem can be so defined as to give prominence to a solution more favorable to one side than to the other.

2-1. Liaison. A1 and A2 recognize that communications have been muddied somewhat through strategic misrepresentation and incomplete reporting.

TP is a partial answer to the need for a new and independent channel of communication. TP provides some kind of a check on the sometimes autistic constructions placed by the disputants upon their opponents' actions.

2-2. Intelligence. A1 cannot trust A2, so he wants TP to monitor A2's activity and to keep him informed. The emphasis here is on surveillance and detection of actions and intentions which might give one side an advantage which it would not otherwise possess.

For some years, the United States has sought a disarmament treaty with the Soviet Union which would include an inspection system to detect cheating. American intentions were challenged, however, on the grounds that she was seeking an intelligence system which she did not already have (and which the Soviets presumably did have).

2-3. Reinforcement. A1 is very weak relative to A2, so he believes he has little hope of holding his own in negotiations so long as he stands alone. In TP, he hopes to enlist a friend in court who will assert his minimal demands.

By the same token, the more powerful of the actors may still recognize that the weaker has sufficient destructive power to seriously damage him, albeit in defeat. The weaker party

can play the "spoiler." TP is a device allowing the stronger to concede more to the weaker than their relative positions warrant.

2-4. Executive. A1 and A2 are looking not only for someone to show them the way, but one who will implement it. TP can bridge the fateful gap between agreement and commitment. If TP hands down some judgment, there must be some guarantee that it will be binding on both sides, whomever it may appear to disadvantage. Either side may believe that he is prepared to accept an adverse decision. But he wants to ensure that the other side accepts this limitation, too.

2-5. Enforcement. What happens if one side reneges on the agreement? What happens if one nation secretly develops and produces offensive weaponry contrary to treaty? Who will monitor and enforce the terms of the treaty after the initial destruction of weapons? It is not enough to detect deception. Sanctions must follow and the terms of the treaty must be reinstated.

/3/ Dramatic structure. The functions included here might well have been discussed in the preceding section as it bears on communication and impression management. In this section, however, we are interested in the competitive and conflictful relationship oriented outwards as well as inwards. The leverage of System I within a wider system is acknowledged by the principals in their posturing and

deliberate efforts to control the impressions others have of them. The focus here is on the maintenance of face, the formation of images, and the dramatization of intentions and capacities.

From this perspective, the latter part of 2-3 might have been included here. Face is preserved by cloaking it in the drama of submission to the ground rules agreed upon by the disputants, with defeat reflecting not upon some shortcoming in the weaker, but in the very rules of the game which he has subscribed to in advance and to which he now graciously and honorably accedes.

3-1. Self-justification. A1 wishes to convince not only A2, but a viewing public of his good intentions and of his essential reasonableness. He wishes to demonstrate his good faith. To accomplish all this, he is willing to throw the merits of his case at the feet of an impartial TP.

3-2. Face-saving. A1 has taken a stand from which he believes he cannot retreat and yet maintain his public image and his credibility. Perhaps A2 recognizes A1's image trouble, and is willing to engage in the face-saving fiction provided by an independent TP. Having reached an impasse where he perceives that his position is no longer tenable, perhaps in the eyes of important legislators, A1 opts for the lesser evil represented by intervention.

> Some American Senators, for instance, suggested that a free election in Vietnam might serve such a function. By committing herself in advance to the outcome of an election, the U.S. would guarantee itself an honorable exit by which she might extricate herself from a hopeless mess if an unfriendly government should win.

The purpose of the above "catalog" is to stress the necessity of taking into account the motives of the participants and the point of intervention of TP if we are to understand success and failure in mediation. The success or failure of mediation will, in large measure, be a function of the role of TP in competitive or conflictful relationships.

Perhaps the basic working assumption behind this study is that the success of an intervention is to a considerable degree determined before the process of mediation even begins. It is assumed that the motives which lie behind A1 and A2's accession to outside aid, and the consequent powers which they accord TP, sharply circumscribe the kind of outcomes which can be hoped for or realistically expected.

What function do we see TP playing in our adaptation of the Prisoner's Dilemma? The role played by TP seems to be largely an executive one, at least among Ss who invite him. Ss who invite him are willing to cooperate, but they recognize the risk they are running. And so, they are willing to forego some small cost in the interest of "bridging the gap between agreement and commitment."

The mediator's mandate

At least two parameters of the act of delegation require specification. The first is the rule of invitation. This refers to the degree of unanimity which must be present if TP is to be invited on a collective basis. The rule of invitation pertains both to whether or not TP is to intervene at all and to the strength and scope of his mandate. In some instances, the rule will not even involve the parties to the conflictful relationship, as intervention is imposed by some outside agency, such as government. The rule of invitation adopted in the experiments to be reported is that it be voluntary and unanimous.

The second parameter is the strength and scope of mandate conferred. Three broad kinds of interventions have been distinguished: conciliation, mediation, and arbitration. In the case of conciliation, TP simply tries to keep both sides in contact with each other. He tries to prevent a complete rupture of communication. Mediation is a more active form of intervention. The mediator meets with each side separately and attempts to find a common ground where both can agree. An important function in the mediator's contribution to conflict resolution is to enable either side to divulge its relative strength and limits without fear of loss of face or of advantage which the other side does not require to reach a solution. Both mediation and conciliation are entirely voluntary so far as the principals are concerned. Acceptance of the intermediary's solution is not mandatory. This means that the techniques employed are essentially diplomatic in nature.

Arbitration is judicial in nature. That is, the arbitrator can call for evidence from both sides, listens to their respective arguments, and then hands down a judgment much in the manner of a judge at law. There are four kinds of arbitration. These are defined according to whether both sides are required initially to submit to arbitration and whether they are required to accept the arbitrator's judgment when rendered. In the research reported here, we are dealing with arbitration in the sense of a voluntary invitation and a binding judgment.

The Present Research in Review

The research reported in this thesis examines the relationship between competition, in the sense in which we have defined it, and the delegation of decision-making authority. Let us review briefly some of the restrictions imposed by the experimental procedure upon any generalizations to be drawn.

First, in using the Prisoner's Dilemma, we have limited the scope of the competition to System I. System II has been ruled out, and System III enters in only weakly in the role of the Experimenter. This means that we have not investigated the conditions under which potential mediators are made available, if not required, by the environing social system.

Second, the function of the mediator is only one of a potentially wide range of functions commonly served by mediation. We have conceptualized the role of the TP largely

in terms of the executive function. He operates mainly to reduce uncertainty of the outcomes by allaying suspicions and permitting the players to coordinate their actions.

Third, we are dealing only with the case where unanimous consent is required to invite TP and in which his judgment is binding on both sides. Perhaps the greatest departure from real-life is that A1 and A2 both know in advance what TP's judgment will be. And they are given no information concerning his "character" and other properties which would ordinarily be important, or at least taken into account by would-be inviters. In so doing, however, we focus on the determinants of opting behavior in (a) the situation or competitive relationship and (b) properties of the principals. Future research might vary TP along certain dimensions, either varying or holding constant determinants in the two classes considered here.

Why is the Prisoner's Dilemma the preferred method? A number of considerations have prompted this decision.

First, a number of potential tools were seriously considered during the pretest, especially tools which seemed, on the surface, to be more faithful to the multifaceted nature of industrial and international relations. These techniques were either games or simulations using the relevant languages or else role-playing devices. It was decided in our exploratory experiments to stay as far away as possible from the effects of subject ideology and identification with one of the parties involved, as well as commitments to the principle of individual responsibility and autonomy.

While these are no doubt important determinants of delegation, we preferred to obtain some baseline measures relating uncertainty to the dependent behavior. Presumably other factors, such as the representative function of players, can be built into future research.

Second, it is best to employ a standardized, explicit methodology whenever possible, other things equal. This feature of a study enables more informed comparisons with other research in the area, as well as some idea of possible artifacts in the instrument which should be controlled. Certain methodological innovations are introduced in the Experimental groups. But the Control groups adhere to standard procedure and so provide a baseline for comparison purposes.

The Prisoner's Dilemma, or any other standard instrument, would obviously be of little advantage if it did not capture at least some of the important properties of the pehnomenon under investigation. So our third reason for favoring the PD lay in certain of its properties. The PD matrix presents a problem for which there is no single a priori correct or most rational solution. This means that there is a degree of uncertainty concerning the wisest choice regardless of how "good" Ss' intentions may be. The PD is a situation in which interesting and relevant interpersonal states are generated. Distrust, suspicion, the opportunity for revenge, forgiveness, and so on, further compound the uncertainty built into the matrix (cf. Rapoport, 1964).

Given the uncertainty in the relationship, originating in the two sources mentioned, it seems reasonable to offer Ss a chance to hedge their cooperative intentions and doubts with a third party option. The TPO is a means, we assume, of reducing uncertainty and thereby promoting cooperation. As we argue in Chapter IV, the competitive response will be the favored response where uncertainty is greatest. In other words, we assume that Ss would willingly settle for the intermediate cooperative rewards if they could be assured that they would not be taken advantage of in so doing.

We will postpone presentation of our experimental predictions until Chapter IV, after we have discussed more fully the PD in Chapter II and described the method in Chapter III.

CHAPTER II

THE PRISONER'S DILEMMA

In Chapter I, we argued for the appropriateness of the PD for the present research. The research reviewed in this chapter is quite selective in its focus on the PD rather than on more substantive problems. We hold that research should bear not only on the problem which we wish to understand, but also on the instruments used.

One strategy in research is to study human behavior using one or more techniques. In this way, it is hoped that a body of empirically validated propositions describing human behavior will be assembled. Using a variety of techniques means that the researcher can capitalize on their relative merits and allow for their peculiar shortcomings. Such a strategy permits a kind of methodological triangulation (Campbell & Fiske, 1959).

Another strategy is to employ a single instrument and to explore the construct which it taps in a series of detailed studies. This has been done, in varying degrees, by Atkinson (1958) on the need for achievement and by Crowne & Marlowe (1964) on the approval motive, for example. The researcher tries to specify the properties of the construct measured by his instrument and to establish the boundaries of its applicability. In short, the aim is construct validation.

A variant of the second strategy is to study the instrument per se, rather than to assume its conceptual validity. Again, Atkinson's work on the projective measurement

of need achievement is instructive. Thus, generalizations apply as much to the instrument as a stimulus as to the responding subjects. By way of illustration, there is the husband who contends that he is not _really_ cruel, assertive, and disagreeable; rather, his wife simply _brings out_ the worst in him.

In this section, we consider the Prisoner's Dilemma (PD) from this last point of view, and we inquire about some of its properties as a stimulus to peoples' actions. What features of the PD account for the variety of psychological states and behaviors which it generates?

The present review of the literature on the PD, and its major variants, is brief and selective. More comprehensive reviews can be found in Gallo & McClintock (1965), Kelley (1965), Rapoport & Orwant (1962), and Rapoport (1966). The following topics are covered: 1. incentives; 2. instructions and format; 3. subject populations; 4. interpersonal factors. The first two categories have to do with the PD _per se_; and the last two categories have to do with the interactions between PD and attributes of the _S_s studied.

1. _Incentives_

(a) _Structure of the PD_. The PD is defined in terms of the relationships among its payoffs. The 2 x 2 matrix is described, but larger matrices are simple derivatives of it (see, for example, Pilisuk, _et al_., 1964, 1965). Each Subject (_S_) has two choices: if both _S_s try to maximize their gains, both lose; if one tries to maximize and one tries to cooperate, then the former in fact maximizes and

the latter loses; if both cooperate, they both gain an amount intermediate between the two extremes. The PD is referred to as a non-zero-sum game because one player's winnings are not, by definition, the other player's losses, and vice versa. The zero-sum game allows for only the second kind of outcome on any given trial.

The relationships among the outcomes are defined in Figure II-1. Rapoport & Chammah (1965) characterize the PD in more picturesque terms, as in Figure II-2.

Figure II-1

Definition of PD in Terms of Relative Magnitude of Payoffs

		Player B: Red	Player B: Blue
Player A	Red	x_1, x_1	x_2, x_3
	Blue	x_3, x_2	x_4, x_4

where:

1. $2x_1 > x_2 + x_2 > 2x_4$
2. $x_3 > x_1$
3. $x_3 > x_2$
4. $x_4 > x_2$

Many gaming studies do not actually use the PD, but variants of it. That is, one or another of the rules specified in Figure II-1 are relaxed, e.g., Scodel (1962), rule 2; McClintock, Galle & Harrison (1965), all four rules. In the study reported here, all four rules are adhered to in the Low Temptation matrix, where x_3=\$2.00. In the High Temptation matrix, however, rule 1 is violated, where x_3=\$5.00. Since we are not employing an iterated PD, this departure from the standard PD format is of little consequence.

Figure II-2

Definition of PD in Terms of
Rapoport & Chammah (1965)

		Player B: Red	Player B: Blue
Player A	Red	R, R	S, T
	Blue	T, S	P, P

where:

1. R=Reward for cooperating.
2. S=Sucker's payoff for having cooperated while partner competed.
3. T=Temptation to go for the big money, at the risk of getting P.
4. P=Punishment for having been so greedy (but P > S).

When this rule is violated in repeated play, Ss have two ways of cooperating: both can choose Red or they can alternate between Red-Blue and Blue-Red. In a single trial game, alternation is ruled out, so that Red-Red is the only way for Ss to cooperate (cf. Komorita, 1965). The two matrices employed in this study appear as Figure II-3.

Figure II-3

High and Low Temptation Matrices
Used in Thesis

		Player 2: Red	Player 2: Blue
Player 1	Red	$1.25/$1.25	$0.0/$5.00
	Blue	$5.00/$0.0	$.25/$.25

High Temptation

		Player 2: Red	Player 2: Blue
	Red	$1.25/$1.25	$0.0/$2.00
	Blue	$2.00/$0.0	$.25/$.25

Low Temptation

Oskamp & Perlman (1965) have reviewed some indices for comparing matrices. (i) Dominance of the competitive response: the competitive response is dominant when S can win more by making the competitive response than the cooperative response, whatever his partner chooses. In both matrices used in the present study, the competitive strategy is dominant. In the Low Temptation matrix, for instance, by choosing Blue, Player 1 wins $2.00 rather than $1.25 if Player 2 cooperates; and with the same choice, Player 1 wins 25¢ rather than nothing if Player 2 competes.

(ii) Index of competitive advantage: $x_3 - x_2$. In the Low Temptation matrix it is $2.00 and in the High Temptation matrix it is $5.00. (iii) Punishment effect: $x_4 - x_1$. This index does not distinguish the Low and High Temptation matrices. (iv) Average advantage of competition: assuming a number of trials and equal frequencies in each cell, this is the average payoff accruing to competition less the average payoff accruing to cooperation. In the Low and High Temptation matrices, these are 50¢ and $2.00, respectively. (v) Average payoff per trial: this index involves obtaining a mean of the four payoffs accruing to a player over a series of trials, given equality of responses in all cells. The index for each of the two tempation levels is 88¢ and $1.62.

These indices suggest some rather obvious predictions relating the attractiveness of competition to the incidence of competition. Some are tested by Oskamp & Perlman (1965) and by Rapoport & Chammah (1965).

(b) Kinds of payoffs. Researchers have typically used points, mills, or pennies as payoffs. Only rarely have "significant" rewards been employed. The question is whether the kind of payoffs affects the level of competition. It can be argued, for example, that the less significant the rewards and costs are, the less Ss have to "live with" their decisions, then the more competition will be exhibited.

Consideration of the effects of different kinds of payoffs leads to a distinction between the objective and the psychological environments. That is, the experimenter constructs a matrix which is non-zero-sum objectively or mathematically. Ss, however, may convert this matrix phenomenologically to a zero-sum matrix so that they disregard the Red-Red and Blue-Blue cells relative to the two mirror-image cells. The net effect of this conversion is for Ss to treat the game as a game and to compete for points with a view to outpointing their partners.

Two kinds of research lend support to this line of reasoning. McClintock, Gallo & Harrison (1965) used variants of the PD in which Ss could win 5¢ per trial by making a cooperative response or 1¢ for a competitive response. Nevertheless, they found a "substantial number" of competitive responses. "It appears that even when it is substantially more profitable in terms of absolute winnings to make a cooperative response, subjects continue to make a surprising proportion of competitive responses to ensure that they win more than the other player" (p. 323).

McClintock & McNeel (1966) used a variant of the PD which they call a "maximizing difference" game, i.e., 6,6;

0,5; 5,0; 0,0.* In this game, the cooperative response is dominant, so that competition is "unnecessary." They found that cooperation rarely exceeded 50 percent in any block of 10 trials. And a low reward condition produced significantly more competition than the high reward condition. In other words, the significant utilities were provided by the experience of bettering one's partner (competitor). We will return to this theme in discussing the role of instructions on PD behavior.

The second kind of evidence is cited by Gallo & McClintock (1965) in their review of findings by the first author showing that real money and imaginary money have opposite effects. Imaginary money promoted defection and competition so that Ss lost from $5.00 to $10.00 per dyad. Real money promoted cooperation in the amount of approximately $9.00 profit per dyad. Thus, although the objective properties of the game were the same, apparently the use of imaginary money encouraged Ss to define it psychologically as a zero-sum game (see also Gallo, 1966).

2. Instructions and format

The "kind of incentives" discussed in the preceding section could have been included here, too. They determine, as do the instructions and the format in which the game is presented to Ss, the peculiar ways in which the situation is defined for Ss. We assume some "definition of the situation" intervening between the objective external event and

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*These payoffs represent the four cells of the matrix in the order Red-Red, Red-Blue, Blue-Red, Blue-Blue.

the overt responses which S emits. Thus, using points or imaginary money is more likely to induce a game-orientation than is the use of real money, and so to dispose Ss to take chances and to compete in order to "beat the other guy."

(a) Instructions. A good place to look for an explanation of Ss' behavior is in what they are "told" to do, explicitly or otherwise. Deutsch (1958, 1960), for example, varied Ss' motive states by manipulating the instructions. His "cooperative instructions" were designed to orient Ss to the welfare of their dyad. "Individualistic instructions" encouraged Ss to win as many points as possible, regardless of what happened to their partners. And the "competitive instructions" were worded so as to motivate Ss to do better than their partners, regardless of the absolute score obtained. As predicted, the frequency of Blue-Blue responses increased from the first through the third condition. The studies by McClintock, et al. (1965) and McClintock & McNeel (1966) seem to imply that Ss tend to respond to implicit competitive instructions.

Komorita (1965) confirms the above findings. As predicted, his modified instructions (i.e., "Your task is not to win more points and beat the other person but simply to accumulate as many points as possible") had the effect of inducing more cooperation than did the standard PD instructions.

(b) Labeling. Researchers commonly mention that they avoid the use of "cooperation," "competition," "game," "player," and so on, so as not to encourage a game-orientation.

This has been our policy, too. But there is still a dearth of evidence bearing on this point.

Pilisuk, et al. (1965) found no differences between the distributions of hawks, doves, and mugwumps generated by their two "label" conditions. One was an abstract condition, in which Ss used poker chips on a board resembling a checkerboard. In their simulated condition, the language of the arms race and disarmament was used. Nor did Oskamp & Perlman (1965) find any effects attributable to defining the experiment as dealing with cooperation and competition.

(c) Format. The PD appears to be a very simple, straightforward situation. This has often been cited as its chief merit. Its simplicity is deceptive, though, and should not merely be assumed. A number of studies suggest the importance of Ss' understanding or grasp of the matrix and its implications.

Radlow (1965) gave a great deal of emphasis in his instructions to Ss to the correlation between their winnings, pointing out the association between the two sets of payoffs. He also indicated the total winnings per cell, as well as what each player stood to win. The result was a consistently higher level of cooperation in the detailed explanation condition over 98 trials than in the standard instructions condition.

Pruitt (1965) tested four different ways of describing a PD matrix to his Ss. Although all four ways were faithful to the basic structure of the matrix, consistently different levels of competition were obtained.

Evans & Crumbaugh (1966) compared a nonmatrix presentation of PD with a matrix presentation. They report much more understanding of the nonmatrix presentation as well as a higher level of cooperation over 50 trials in this condition.

3. Subject populations

(a) Sex. A number of studies have found females to be significantly more competitive than males (Bixenstine, Chambers & Wilson, 1964; Oskamp & Perlman, 1965; Rapoport & Chammah, 1965). Still other experiments yield no evidence of sex differences in PD play (Bixenstine, Potash & Wilson, 1964; Lutzker, 1960; Marlowe, 1959, cited in Bixenstine, et al., 1964). The finding of greater female competitiveness has proven rather intriguing and there has been some effort made to account for this tendency.

According to one view, males are simply more rational than females. By rational, it is suggested that men are more likely to heed the utilities in the matrix and to try to maximize. Women, in contrast, are more likely to attribute some interpersonal meaning to their partners' actions. Thus, Komorita (1965) posits two competing tendencies in PD play: a tendency to maximize vs. a tendency to be considerate and understanding. He suggests that this conflict is more pronounced for females and is more likely to be resolved in the latter direction.

Consistent with this view, Bixenstine, et al., interpret females' greater competitiveness as evidence that they are more sensitive to betrayal. They assume that women are

initially more trusting and more trustworthy when they begin PD play, but that they respond more competitively than men when they are occasionally betrayed by their partners. In other words, they are less forgiving. Rapoport & Chammah make essentially the same assumption. They find that women are more sensitive to defection (i.e., are more likely to compete following partner's competitive response) than they are to cooperation (i.e., to cooperate following partner's cooperative response). The opposite tendencies were found in male dyads. The different orientations to PD is evidenced by the fact that men are more likely to lock-in on the more rewarding Red-Red than are the women, who tend to lock-in on Blue-Blue.*

An alternative interpretation of sex differences is provided by an experiment conducted in one of the writer's undergraduate classes. Males and females were compared under two different conditions. One set of instructions was designed to promote a collective or dyadic orientation, and the second set was designed to promote a competitive (as opposed to an individualistic) orientation. As others have

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*In line with this explanatory hypothesis, Rapoport & Chammah report that differences between males and females on the first and second trials are not significant, i.e., sex differences develop over time. On the first trial, the respective proportions of cooperative responses for males and females were .53 and .48; and on the second trial, they were .53 and .49. It might be argued, however, that Ss were only choosing randomly on these first two trials. Not only do the sexes not appear to differ, but neither do the cooperative and competitive choices for either sex on either trial. In view of our discussion about the role of instructions and "understanding," caution in interpreting the apparent lack of sex differences in the first two trials seems to be in order.

found, females were more competitive than males, but only in the competitive instructions condition. This finding was reversed in the cooperative instructions condition. In this case, females were more cooperative than males.

The preliminary findings suggest that the level of cooperation or competition exhibited by females may be phenotypic expressions of a motivation to be good Ss (cf. Orne, 1962). In other words, when the instructions or format seem to suggest the desirability of either cooperation or competition, females are more likely to respond accordingly than are males. We will cite some data incidental to the research reported here supporting the view that females are "better" Ss than are males.

(b) Personality factors. A few studies have found some significant relationships between personality factors and competitive PD behavior. Deutsch (1960), Lutzker (1960), and Bixenstine, et al. (1963a, 1963b, 1964) report findings relating PD behavior to Authoritarianism, Internationalism, and Flexible-ethicality, respectively. The experience of Pilisuk, et al. (1965) is perhaps more typical, however. They looked for relationships involving Tolerance for Ambiguity, Self-acceptance, Internationalism, Monetary risk preference, and Social risk preference. Only Tolerance for Ambiguity seemed to have any predictive power.

We can conjecture that personality factors are relevant to gaming only in the initial trials. With each successive trial, Ss are getting feedback about the here-and-now relationship as it develops. Such feedback probably

washes out the effects of personality differences. In other words, personality is probably most potent when Ss are dealing with a novel and ambiguous situation. This is certainly not the case when Ss have reached trial 30 or 40 or more. The tendency for Ss to "lock-in" on Red-Red or Blue-Blue argues for the constraint imposed by the immediate situation.

Rapoport (1964) and Rapoport & Chammah (1965) offer an interesting alternative to the usual personality approach. They propose four parameters which they label "state-conditioned propensities" and which they suppose reflect still deeper psychological states of the players. These statistically defined properties appear to be less vulnerable to interaction effects.

Each trait or propensity is defined in terms of what a player does on a given trial as a function of what he did on the previous trial and whether he won or lost on that trial. Thus, Rapoport defines $\underline{x}$ as "the probability of cooperating on the next play, after having cooperated and been rewarded" (1964, p. 146). He suggests that this parameter be given the label "trustworthiness." The complement of $\underline{x}$, i.e., $1 - \underline{x}$, is labeled "perfidy." It is the probability of competing on the trial following joint cooperation. There are three other parameters, to which he affixes the following labels, with their respective complements bracketed: forgiveness (vengefulness), repentance (greed), and trust (distrust).

The above indices, and their corresponding psychological interpretations, can be used in a number of ways. For example, we can define an S's trustworthiness as the proportion of cooperative responses following trials on which both players cooperated within a block of 25 trials. We can then trace the time course for the growth or atrophy of trustworthiness in changes in this proportion over blocks of 25 trials. Or we can compare individuals or populations on the amount of the property which they evidence, then proceed to ask about the causes of these differences and about their implications.

4. Interpersonal factors

(a) Pre-existing relations. Harrison & McClintock (1965) had Ss engage in a task in which they were either rewarded or nonrewarded before playing a standard PD game. As predicted, Ss who had been rewarded in the pretest were more likely to cooperate in the PD when the game followed the pretest immediately than were Ss who had not been rewarded. Rewarded Ss tested after a one-week interval were as cooperative as rewarded Ss tested immediately after the pretest. However, delayed nonrewarded Ss were as cooperative as delayed rewarded Ss.

Oskamp & Perlman (1965) found that a small amount of interaction between Ss at the beginning of the experiment increased cooperation. Lest such a relationship seem too obvious, the same authors (1966) report a positive relationship between degree of friendship and amount of cooperation in one college sample and the opposite relationship in a second college sample.

(b) Ss' evolving relations. Scodel (1962) found a higher level of cooperation in response to a stooge who first competed, then switched to cooperation, than in response to a stooge who cooperated throughout. He suggests that the stooge's early hardline policy wins a degree of respect, then gratitude when the stooge switches. This finding has been reported by Bixenstine & Wilson (1963), too. The same logic seems to be supported by Solomon's (1960) finding that a "conditionally cooperative" S generates more cooperation than does an "unconditionally cooperative" S.

Shure et al. (1965) summarize some of their earlier research in which Ss were provided with threat potential. "The pairing of a cautious, well-intentioned bargainer with an aggressive bargainer led to greater loss and disruption of negotiations than occurred between pairs of equally belligerent bargainers." And in their 1965 study, they find a tendency for Ss to be encouraged to take advantage of a partner whom they perceive to be a pacifist (Quaker).

(c) Anticipated interaction. Marlowe, Gergen & Doob (1966) report some interesting findings bearing upon the interaction between anticipated future interaction and cooperation in the present. In the first of two experiments, they found that "when no personal information is available concerning the person with whom one is bargaining, and this other plays a predominantly cooperative game, there is a greater tendency to exploit this other when not expecting a later confrontation" (p. 211). It seems, then, that Ss

behave more "responsibly" or at least more cooperatively when they expect that they will be held "accountable" at a later date.

In their second experiment, the same authors found greater competition when the future interaction anticipated was with an egotistical partner. They suggest that Ss respond competitively in order to reduce a state of status imbalance generated by the partner's boastfulness. While their data do not permit a full test, it appears that Ss do not take advantage of a "humble" partner, in contrast to the Macchiavellian behavior of Ss reported by Shure, et al. (1965) and to the hard-line findings of Solomon (1960), Scodel (1962), and Bixenstine & Wilson (1963).

The import of these findings is that Ss develop some sort of an image of their partners and of themselves. It is in terms of these images and the relationship between partners that they interpret their cooperative and competitive responses. In other words, the payoffs in the matrix are not simple utilities. These utilities also bear an informational and relation-equilibrating function.

CHAPTER III

EXPERIMENTAL PROCEDURE

We describe in this chapter the Subjects, the two Prisoner's Dilemma matrices, the instructions, and the personality testing. But first, there follows a brief synopsis of the script followed in the experimental sessions.

Script

Ss were brought into the experimental room one at a time, as they arrived, and before they had an opportunity to talk with each other. They were seated in groups of four to six at a Bavelas board whose partitions prevented them from seeing each other. Ss were requested individually not to talk. When too few Ss showed up, or when an odd number arrived, stooges were recruited from the staff of the Institute for Social Research.

When a group was complete, E introduced himself and described the purpose of the experiment. The instructions were read and each S was given one of the two matrices (these appear as Forms A and B in Appendix A). Ss were reassured that the money offered in the matrix constituted a genuine offer. They were further requested to consider their options closely before proceeding.

The procedure was the same for Control and Experimental groups, with one major exception. This exception was the critical TPO manipulation which was introduced in the Experimental groups immediately preceding RBO. Otherwise,

the only differences were in the various forms administered, in that certain questions pertaining to TPO were omitted from the Control groups.

In the Control condition, Ss were handed a form on which they wrote their preference (Red or Blue) and their reasons for same (Form C). After all Ss had completed this form, E informed them individually of their earnings, distributed a postexperimental questionnaire (Form D), and then requested that they complete two personality inventories (Forms H and I). Ss were finally thanked for their participation, were asked not to discuss the experiment with others, and were promised feedback to be distributed some weeks later (Form K).

The TPO manipulation was introduced in the Experimental condition after Ss had been given the matrices and before RBO. They were told that they had an additional choice: to invite TP to choose in their mutual behalf, thereby guaranteeing a dollar apiece, or to reject TP and proceed to choose between Red and Blue themselves. Ss were given some time to consider TPO, then invitation forms (Form E) were distributed on which they indicated their decision whether to invite or to reject TP. When all Ss had completed filling out this form, which included some additional questions about the reasons for their choice, they were then informed privately, again on a standard form (Form F), what the decisions of their particular partners were. They were also told on the same form what their collective decision was, on the basis of Ss and his partner's individual decisions. In no case

did TP intervene, but Ss could not tell whether some other dyad had extended a collective invitation or not. All Ss then proceeded to indicate their choice of Red or Blue (Form F). From this point on, the procedure was the same as in the Control condition, except that a different post-experimental questionnaire was administered (Form G).

It should be emphasized that no S was in fact paired with another S. In the case of TPO: E informed all Ss who had invited TP that their respective partners had rejected his services; of those Ss who had rejected TP, one-half were informed that their partners had concurred, while the other one-half were led to believe that their partners had invited him. In the case of RBO: Ss were given false feedback, so that their payoffs were in line with their indicated choices while being the least costly distribution of payoffs for E within a group.

In the High Temptation condition, for example, if three Ss chose Red and three chose Blue within an experimental sextet, one was told that he had won $5.00 and another that he had won nothing (thus accounting for one Red-Blue combination), two were told that they had won 25¢ apiece (accounting for a Blue-Blue combination), and two were told that they had won $1.25 apiece (accounting for a Red-Red combination). Within these limits, winners and losers were chosen randomly.

Subjects

A total of 234 Ss were run, consisting of 148 males and 86 females. All were drawn from courses in Introductory

Psychology at The University of Michigan as part of their course requirements. Ninety-two or 62.2 percent of the males and 58 or 67.4 percent of the females were freshmen. Most of the remainder were sophomores plus a few juniors and seniors. Ss were selected from as many different sections of the introductory courses as possible, on a random basis, in order to minimize pre-experimental acquaintances.

The Matrices

The matrices have already been described in Chapter II. These were constructed to produce different levels of competition, an assumption which it will be necessary to establish empirically. The matrices differed only in what they promised for successful competition or defection: $5.00 in the High Temptation (to defect) matrix and $2.00 in the Low Temptation matrix.

Instructions

The following instructions were read to Ss, as designated. Bracketed monetary values refer to the different Temptation conditions.

> In order to maintain the instructions constant for all Ss, it will be necessary for me to read them to you. From this point on, please do not talk with each other. Do not ask me any questions until I ask for them.
>
> First, I will describe our interest in the experiment in which you are participating. We are interested in the process of decision-making; that is, what influences the choices people make. This problem has frequently been studied by psychologists. However, they have usually limited their attention to individual decision-making or how the individual, working independently of others, chooses among a number of of available alternatives.

In contrast, we are investigating how individuals choose among a set of alternatives when they are aware of, and have to take account of, the fact that another person is simultaneously making choices. How succesful a person is in the decision he makes depends both on the choice he makes and the choices others make.

I will now hand out a matrix to each of you. The money referred to in the matrix is real money. That is, any money which you earn is yours to keep.*

(A matrix was distributed to each S.)

In front of each of you is a simple matrix. Let me emphasize that all of you have the same matrix. Each of you has been paired with one of the others, which one, however, we cannot tell you. We have purposely designed the experiment so that you cannot find out who the other person is so that you cannot deliberately lose in the hope of splitting any prize money when you leave here.

Now, let me explain how the matrix works. What I say applies to each of you. First, locate the two alternatives available to you along the side of the matrix. These alternatives are labeled Red and Blue. Your partner's choices are at the top of the matrix and they are also labeled Red and Blue.

Consider your choices. If you choose Red, you will win either $1.25 or nothing, depending upon what your partner does. Thus, if he chooses his alternative Red, you win $1.25 and he wins $1.25. But if he chooses Blue, then you win nothing and he wins ($2.00) ($5.00).

However, if you choose Blue, you will win either ($2.00) ($5.00) or 25¢, again depending upon what your partner does. Thus, if he chooses his alternative Red, you win ($2.00) ($5.00) and he wins nothing. But if he chooses his alternative Blue, then you win 25¢ and he wins 25¢. So, you

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*On the basis of pretest experience, it was found to be necessary to assure Ss that real money was at stake, and that any winnings were really theirs to keep.

see, what you win or don't win depends not only on what you do or don't do, but also on what your partner does or doesn't do.

Are there any questions to this point?

All right, let me repeat. The matrix presents you with a dilemma. If each of you is willing to settle for $1.25 apiece, then the two of you will choose Red and will win this amount. But if one of you is willing to get $1.25 and the other wants to get a larger amount, then the one who chooses Red gets nothing and the one who chooses Blue gets ($2.00) ($5.00). And if both of you should try for the largest amount by choosing Blue, then both of you wind up getting 25¢ apiece. Of course, there is no way of knowing <u>for sure</u> what your partner's intentions are since you cannot talk with him.

(The following instructions were then given only to Experimental <u>S</u>s.)

Finally, one additional point.

On the basis of our observations of many peoples' behavior in this kind of situation, we have decided to give each of you a third alternative. Instead of choosing directly between Red and Blue yourselves, you may invite in a Third Party with the authority to choose for you. If both you and your partner invite in the Third Party, he will choose in your mutual behalf. That is, he will choose the <u>upper left cell</u> of the matrix, defined by Red-Red. However, should either or both of you decide you do not want the Third Party to choose for you, then both of you will proceed to choose between Red and Blue, as I have already described.

In view of the service which the Third Party makes available to you, we have decided to charge you 20% of what the two of you <u>will</u> win if he chooses in your behalf. That means that each of you would get $1.00 instead of $1.25.*

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*In a preliminary experiment, no fee was charged for TP's services. It was thought that the introduction of such a fee would make this option more "true to life." At the same time, it was hoped that a fee would imply something about TP: that his services were valuable, and so raise the attractiveness, i.e., invitations, of TP from its rather low pretest level.

Before I ask you whether you wish the Third Party to intervene or not, I will allow you some time to consider the alternatives open to you. Then I will give each of you an Invitation form on which you will invite or reject the services of the Third Party. Remember, if either of you rejects the Third Party, then he will not intervene. If he does not intervene, then you will proceed to choose between Red and Blue. Now please consider carefully the alternatives available to you.*

(The following instructions were given only to Control Ss.)

I will allow you some time to consider the alternatives open to you. Then, I will give each of you a form on which you will indicate your choice, Red or Blue.

(To Experimental Ss, after they had had approximately 1-1/2 minutes to think about the matrix and the Third Party option.)

I will now hand out the Invitation forms on which you will either invite or reject the Third Party. When you have finished with it, please raise your hand and I will pick it up. However, do not let me hurry you. Please answer the questions on this page as fully as you can.

(To Experimental Ss, after all the Invitation forms had been collected and Ss choices were recorded.)

I will now hand out a form indicating the collective decision of you and your partner whether to invite or to rejct the Third Party.

(To all Ss, after all Red-Blue choice forms had been collected, choices recorded, and money disbursed.)

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*The evidence for the role of S's understanding of the PD to explain his behavior is accumulating. We have touched on its significance in Chapter II. Ss were given approximately 1-1/2 to 2 minutes to ponder the situation so as to ensure that the conflict in the PD matrix was registered and so that the benefits of TP might be appreciated, even if rejected.

All those who have earned money have now received it. I will now hand out a questionnaire. Please answer it as fully as you can. When you have finished, please raise your hand and I will pick it up. (Again,) do not let me hurry you.

(To all Ss, after postexperimental questionnaires were completed.)

This is the last questionnaire. I would like to say two things about it. First, your answers to it are entirely confidential. That is, I am the only person who has access to them, and that only for purposes of analysis. It is administered so that I may examine it for any relationships between patterns of responses to it and what has already transpired in the experiment. Second, be sure to write your name at the top and to answer every item. It is important that every item be answered since a partially completed questionnaire is of only limited usefulness for analysis.

(To all Ss, as the first ones start to leave.)

Some of you have finished now and will be leaving. I would like to say two final things. First, towards the end of March, you will be receiving a memo describing the nature of this experiment in which you have participated, the specific predictions which were made, and the rationale for them.* Second, I would ask you not to discuss this experiment with others

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*Ss were given a complete account of the experiment, except that they were not told that they had had no partner and that their "partners" TPO and RBO had been programmed. Why the incomplete account? Although it is clearly desirable to dehoax Ss completely in psychological research, it was decided not to do so for the following reasons. First, many PD experiments have been conducted at The University of Michigan, so that the PD is becoming a part of the student culture. It was felt that knowledge of the rigged experiment would have only compounded the problem of an overly-sophisticated student population so far as future PD work is concerned. Secondly, in E's opinion, the nature of the deceptions was hardly so severe as to warrant any fears for the psyshological well-being of the Ss. Thirdly, withholding this information did not seriously detract from the educative function of the feedback.

at this time. Since more students will be participating in this experiment, and others like it, it is vital that they come not expecting to find anything in particular. So we would appreciate your not discussing this experiment until you receive your feedback later in the semester.

Thank you for your cooperation.

Personality Testing

Some weeks after the experiment was concluded, Ss were invited back for a second session, this time to fill out a battery of personality questionnaires. Males and females were tested separately in groups of 15 to 30. It was originally planned to conduct this portion of the study quite independently of the earlier session in order to minimize carry-over effects. Lack of resources, both financial and personnel, however, precluded this desirable feature, so that it was necessary for E to administer the tests himself. Approximately 45 minutes were required by Ss to answer these tests.

The battery of tests included scales tapping the following: Machiavellianism-IV, Tacit Communication and Tacit Bargaining (Schelling, 1960), Rokeach's Rigidity scale, Tolerance for Ambiguity, a ten-item version of the California Authoritarianism scale (controlling for direction of wording), a Human Nature scale, Cornell Anomie, Resentment, Suspicion, and Guilt. These were in addition to measures of Internal-External Control and Approval Motive which were taken at the conclusion of the experimental hour. All of the foregoing scales were included because of their previously

demonstrated and/or theoretical relevance to the problematic behaviors, i.e., TPO and RBO.

The Human Nature and Anomie scales were combined because they seemed to be getting at the same factor, that of a feeling that people are uncooperative and unhelpful. The Resentment and Suspicion scales were likewise combined, providing an index of general hostility or antagonism.

A scoring procedure was developed for the two Tacit Communication and Bargaining sets of problems. In each case, a response to a problem was given a weight corresponding to its frequency of emission in the test sample. This means that there were typically a number of "right answers" to each item, although some answers were "more right" than other answers. A person's score on an item reflected the extent of his agreement with other respondents. S's total score on each scale was the sum of the weights assigned to each of his answers, so that the scale measured the degree to which he was in the majority over all problems.

It was also possible to obtain for almost all of the Ss their scores on the Opinion, Attitude and Interest Survey (Fricke, 1965). This inventory is administered to all incoming freshmen and transfer students at The University of Michigan. The OAIS yields the following scores: 1. Three response bias scores: (a) Set for True, (b) Infrequent Response, and (c) Social Undesirability; 2. Three academic promise scores: (a) Achiever Personality; (b) Intellectual Quality, and (c) Creative Personality; 3. Three psychological adjustment scores: (a) Social Adjustment, (b) Emotional

Adjustment, and (c) Masculine Orientation; and 4. Five educational-vocational interest scores: (a) Business, (b) Humanities, (c) Social Science, (d) Physical Science, and (e) Biological Science.

Some Final Comments on the Procedure

Every effort was made to ensure that the design remained as straightforward, "simple," and tidy as possible. In the absence of previous experimental research attacking the problem of delegation of authority, it was felt desirable to obtain reasonably secure baseline measures of what is going on in the test situation. At the same time, the PD provides an important link to what is already known. We hope, too, that the present study will afford some important clues of a methodological sort relative to the theoretical problem.

We have also tested an extensive array of personality factors against several dependent behaviors. Perhaps we will be able to say with some confidence just how important "personality" is in determining the events under investigation. Although no definitive answers are expected, our battery of tests should yield considerable clues to the fruitfulness of the "personality approach" than has hitherto been possible because of the very few scales typically used.

We turn in the next chapter to a consideration of the specific predictions relating the principal independent variables to the two dependent behaviors, TPO and RBO. The present chapter represents a commitment of our ideas to a

set of empirical operations. In the next chapter we will indicate how these operations should theoretically relate to each other.

CHAPTER IV

HYPOTHESES AND PREDICTIONS

The predictions to be tested in this thesis, and their supporting hypotheses, are presented in this chapter. One set of predictions relates the major experimental manipulations to a number of dependent measures. A second set of predictions relates a variety of personality factors to Ss' experimental behavior.

We have expressed some reservations concerning a number of the predictions. This is in line with our general policy to adhere to the predictions which we originally entertained. Further consideration of the issues involved and an attempt to introduce some theoretical order have qualified several predictions; but it seems better to retain them more or less in their original form and to revise them later in the light of the experimental evidence. The thesis, then, represents a "growing with" the problem which prompted it.

Prediction 1. The High Temptation matrix will generate more competition than the Low Temptation matrix. This prediction will be tested with only the Control groups because we are assuming that TPO will have some impact on the level of competition in the Experimental groups. This is a critical assumption requiring confirmation before we test other predictions about the determinants of invitations to TP. The latter predictions assume that the structure of one matrix is more competitive than the other matrix.

Prediction 2. Female Ss will be more competitive than male Ss in the High Temptation condition. The warrant for this prediction is largely empirical in nature, rather than theoretical. A number of studies cited in Chapter II have found that women tend to be more competitive than men. We will consider this prediction in some more detail in Chapter VI because it is by no means as "secure" as it first appeared.

The next two predictions are also concerned with sex differences, but this time in respect to how Ss behaved in the light of what they expected to happen. We defined four "kinds" of Ss according to whether they invited or rejected TP as a function of what they believed would likely occur if TP did not intervene. These definitions are summarized in Table IV-1.

TABLE IV-1

Four Kinds of Ss, as Defined by Their TPO and Predicted Joint RBO

	Predicted Joint RBO: Red-Red / Blue-Red	Predicted Joint RBO: Blue-Blue / Red-Blue
S Invites TP	cautious	pessimistic
S Rejects TP	optimistic	risky

Let us consider "who" the Ss are in Table IV-1. Some Ss invited TP, even though they predicted a Red-Red or Blue-Red outcome if he did not intervene. We have called these people "cautious" because they were willing to forego some

gain in order to guarantee winning $1.00 each. At the other extreme are the Ss who rejected TP, even though they predicted a Blue-Blue or Red-Blue outcome. We have called them "risky" because they opted for a course of action which they had little hope would prove successful.

"Pessimists" and "optimists" occupy the cells of the other diagonal. The "optimists" were Ss who rejected TP in the belief that they would profit without him. The "pessimists" were Ss who invited TP because they were afraid of what would happen if left to their own devices.

The analysis of data bearing upon this taxonomy will be largely exploratory. It will be interesting to note, for instance, the relative incidence of cautious as opposed to risky Ss. We will test two complementary predictions, however.

Prediction 3. Female Ss will be more "cautious" than male Ss.

Predicition 4. Male Ss will be more "risky" than female Ss.

It is hoped that the labels employed here prove to be less misleading than an earlier attempt to label Ss according to the "rationality" their behavior was presumed to exhibit. According to a criterion of simple maximization which ignored variation in subjective probabilities, "cautious" and "risky" Ss were labeled "irrational," and "pessimistic" and "optimistic" Ss were labeled "rational." That is, a rational S was one who invited TP if he believed that he would lose without his assistance. A rational S was also one who

rejected TP if he believed that he could do better without him. Irrational Ss invited TP even though they predicted that they would do better without him; or they rejected TP although they predicted that they would lose without him. We will discuss the problem of labeling in more detail in Chapter VI. The purpose of the revised labels is simply to capture more faithfully four different ways Ss had of dealing with uncertainty.

Prediction 5. Ss in the High Temptation condition will be more likely to invite TP than Ss in the Low Temptation condition. This prediction assumes that Prediction 1 is confirmed; that is, that the High Temptation matrix does in fact generate more competition. If so, we assume that there is a greater "need" for the services of TP in the High Temptation condition, that Ss will be more likely to recognize this need, and that they will more likely act in a way to reduce it. They should, therefore, find TP more attractive than the Ss in the Low Temptation condition.

We assume that TPO is a means of reducing uncertainty in the situation, which is itself a function of the lack of information and distrust. The critical assumption is that when Ss are confronted with a high degree of uncertainty, they will respond with the "safer" alternative, i.e., the Blue response which guarantees 25¢. Ss should turn to TP because he is essentially a less expensive way of reducing uncertainty.

Prediction 6. The availability of TP will have the net effect of increasing the level of cooperation in the

Experimental groups. We assume that TPO is a resource enabling Ss to sound out their partners' intentions and to establish their own. TPO is a means of communication, i.e., of reducing uncertainty.

But what is communicated? Is certainty being reduced? An equally convincing case can be made for a prediciton in the opposite direction. Our experimental groups contain no successful efforts to obtain outside help. In all cases in which Ss invited TP, a collective invitation failed to materialize.

Contrary to Prediction 6, we might assume that dyads in the Experimental groups which rejected TP thereby created problems of coordination for themselves. Having rejected TP, they will have greater difficulty "getting together" on a mutually rewarding pair of choices. Ss will be suspicious of their partners and will have to choose between cooperating and running the risk of losing to a competitive partner who may have rejected TP in order to win the individual prize; or they may refuse to be exploited and so compete, hoping thereby to win the individual prize for themselves. There may even be some question whether Ss who have originally invited TP will abide by this cooperative gesture in the face of their partners' unwillingness to settle for $1.00.

To appreciate the basis for these predictions, it is necessary to imagine the likely phenomenology of the situation as it unfolds for S. It is necessary to appreciate that rejection does not necessarily imply either a cooperative or a competitive orientation, just as an invitation does not

necessarily imply a later cooperative choice given a partner's rejection of TP. According to this rationale, then, the original dilemma is only further compounded: whether an invitor will stay (cooperate) or switch (compete), and whether a rejector will stay (compete) or switch (cooperate). The net effect of TPO is assumed to increase uncertainty, and not to reduce it.

Prediction 7. Competition will be greatest in dyads where both parties reject TP. It will be least in dyads where S rejects TP and his partner is reported to have invited TP.

Let us consider the first part of Prediction 7, first. We assume that rejection of TP will most likely be interpreted as a competitive gesture. On the assumption that the difference in utility between $1.00 and 25¢ is greater than the difference between $1.00 and $1.25, we hypothesize that the act of rejection will tend to increase the uncertainty of a mutually advantageous outcome. Ss will accordingly select the safer Blue alternative in response to their partners' rejection.

The foregoing argument takes care of the comparison between unanimous rejection and the two discrepant patterns. The order of the two discrepant patterns is based on two assumptions: (a) the meaning of invitation (cooperation) will be less equivocal than rejection (competition); and (b) one's own reasons for rejection will be less equivocal for oneself than will one's partner's. When the simulated partner invites TP, S can be reasonably sure of the meaning and

implication of his invitation, i.e., that he desires to cooperate, and of his own rejection, whatever that may be. When the simulated partner rejects TP, in contrast, S can be sure only of his own reasons for inviting TP and must guess the meaning of his partner's rejection.

Predictions of TPO and RBO from Personality Constructs

Our first seven predictions have related certain objective properties of the experimental situation to TPO and RBO. We have employed the concept of uncertainty as an intervening variable relating Temptation to our major dependent variables and patterns of TPO's to RBO, in particular.

Personality constructs are accorded the theoretical status of independent variables in this section. Although a large number of variables were tested, this does not mean that a "shotgun" approach to research has been followed. Instruments were included only if the constructs which they tapped seemed relevant to the problematic behaviors. This strategy seemed desirable in view of the rather spotty success enjoyed by previous attempts to discover personality determinants of PD play. And we have argued for the special relevance of one-trial play for such hypotheses in Chapter II.

Constructs were chosen because they seemed to be getting at some of the important ways in which people (a) process information, especially interpersonal information, and (b) are motivated to deal with such information behaviorally, once it has been processed. That is, we are interested in individual differences in Ss' reactions to uncertainty, as

this is incorporated in variations in the PD matrix and in TPO, in Ss' propensities to trust, and in Ss' tendencies to react to cooperative or competitive behavior in others in similar or opposite fashion.

Prediction a-1. External-Control Ss will be more likely to invite TP.

Prediction a-2. High Rigidity Ss will be less likely to invite TP.

Prediction a-3. High Authoritarian Ss will be less likely to invite TP.

Prediction a-4. Ss who are relatively Intolerant of Ambiguity will be more likely to invite TP.

Prediction a-5. Ss who score high on Masculine Orientation will be less likely to invite TP.

It is assumed, in the first prediction, that External-Control Ss will be more likely to perceive the PD situation as lying outside their personal control, as basically a "chancey" affair so far as its outcome can be predicted and controlled. Accordingly, they will be more likely to delegate authority than to rely upon their own judgment. We assume that Internal-Control Ss will be more likely to attribute a logic to the situation which dictates their choice of Red or Blue, and so they will have less "need" for TP's assistance.

Rigid Ss in a-2 will react to the novel approach represented by TP by rejecting it. They will stick to their own efforts, no matter how unsuccessful their behavior in previous such situations may have been. The same sort of

reasoning rationalizes a-3. The rationale for these two predictions seems, in retrospect, to be rather tenuous. Although the concepts of Rigidity, Authoritarianism, and Intolerance of Ambiguity are usually treated as synonymous, a case can be made for their conceptual independence so that in some empirical situations, they will operate in the same way (have the same effect upon dependent behavior), and in other situations they will operate differentially.

In line with the above reasoning, the three constructs might not have the same effect upon TPO. Let us briefly review the meanings we attribute to these concepts. By Rigidity, we refer to the relative inability of people so characterized to assimilate novel information into their cognitive structures. Authoritarianism has more to do with legitimate authority or power than with novelty. It pertains to people's preference for highly structured situations where the lines of command are clearly indicated. It refers to the pattern of deference exhibited by Authoritarian individuals when they are in subordinate positions and dominance when they are in superior positions. Intolerance of Ambiguity is nearer to the concept of Rigidity than it is to that of Authoritarianism. It has to do with people's tendency to seek closure in an ambiguous situation, to impose structure where "none" exists. Of course, one kind of structure which such people may wish to impose is an authority relationship upon an egalitarian relationship where coordination of activities is required.

According to our reconsidered constructs, a more plausible case might be made for the prediction that

Authoritarian Ss will invite TP to intervene, as they try thereby to introduce an authority structure into an otherwise ambiguous context. Ss who are Intolerant of Ambiguity will invite TP because this is a means of reducing uncertainty and of determining the outcome so that nothing is left to chance.

We assume, in Prediction a-5, that Ss with a Masculine Orientation will be more likely to prefer to "go it alone." A number of reasons for rejecting TP present themselves, such as a desire to gamble for the maximum prize, to play the dominant strategy, and a desire to choose for oneself unaided by outsiders. We have already argued, in Prediction 2, that female Ss will be more competitive than male Ss. Here, however, we are arguing that rejection of TP does not signify competitive intent, but rather a desire to retain one's independence.

Prediction b-6. Ss who score high on Machiavellianism will be more likely to choose Blue following their partners' invitation to TP.

Prediction b-7. Ss who score high on Rigidity will be more likely to choose Blue following their partners' rejection of TP.

Prediction b-8. Ss who score high on Authoritarianism will be more likely to choose Blue following their partners' rejection of TP.

It is assumed in b-6 that Machiavellians and non-Machiavellians, alike, will interpret their partners' invitations as a cooperative gesture. But Machiavellians will be

more likely to exploit their cooperative partners than will the non-Machiavellians. This is a straightforward derivation from the kinds of interpersonal dispositions ascribed to the Machiavellian.

Predicitons b-7 and b-8 share the same logic. Rigid and Authoritarian Ss are assumed to be less likely to entertain the hypothesis that rejection of TP need not signify a competitive intent, but that it may mean that their partners intend to cooperate without TP.

Predictions b-6 through b-8 are addressed to some of the ways in which personality factors may condition Ss' interpretations of, and consequent reactions to, their partners' TPO. Predictions c-9 through c-15 ignore the contaminating effects of TPO and focus exclusively on RBO.

Prediction c-9. Ss high on Rigidity will be more likely to choose Blue.

Prediction c-10. Ss high on Authoritarianism will be more likely to choose Blue.

Prediction c-11. Ss who are relatively Intolerant of Ambiguity will be more likely to choose Blue.

Prediction c-12. Ss who tend to see the social world as uncooperative will be more likely to choose Blue.

Prediction c-13. Ss who tend to be generally hostile will be more likely to choose Blue.

Prediction c-14. Ss oriented to Business will be more likely to choose Blue.

Prediction c-15. Ss oriented to the Humanities will be more likely to choose Red.

The first three predictions are in line with earlier research findings relating Rigidity, Authoritarianism, and Intolerance for Ambiguity to PD behavior. Ss so characterized will not be disposed to compromise with others, will be less trusting, will be unwilling to risk a potentially unprofitable cooperative response, and will be more sensitive to being "suckered."

Predictions c-12 and c-13 assume that Ss will deal with the world in a manner consistent with the way they believe it deals with them. It is a tit-for-tat, revengeful stance which guides these Ss, so that they are prepared to incur loss rather than risk being unfairly treated or exploited.

The Business-oriented Ss in c-14 are assumed to be more responsive to certain relationships among the payoffs in the matrices. They will be more likely to choose the dominant strategy as the more rational one in its promise of a higher average expected payoff, not to mention that it guarantees a return regardless of their partners' choice. The Humanities-oriented Ss in c-15 are assumed to be the optimists, irrational by the criterion just mentioned. They will be moved by a sense of fairness and justice, as well as by an aversion to the defeatism implied by Blue-Blue.

Finally, we will consider a number of personality breaks on the rudimentary taxonomy of Ss presented in Table IV-1. This scheme and the one entertained earlier, in which Ss were categorized as rational or irrational, dramatize most vividly the peculiar biases which a set of labels imposes. Those Ss, now labeled as "pessimists" and "optimists," but

formerly labeled as "rational," activate different images and different expectations about their behavior. When called "rational," the predictions that they would be less Rigid and more Business-oriented seemed fairly secure. It now seems wiser to avoid taking any set of labels too seriously. Rather than trading in on their connotations, it is more appropriate to treat any analyses based on these four "kinds" of Ss as frankly exploratory.

CHAPTER V

EXPERIMENTAL RESULTS

All of the findings reported in this chapter bear on the effects of the independent variables which were manipulated experimentally. Data showing the effects of personality factors will be treated separately in Chapter VII.

The experimental results are organized in the following way. First, we consider the relationships between temptation and sex, as independent variables, and competition, as the principal dependent behavior. The second section is devoted to a consideration of some of the determinants of intervention and, in particular, to the relationship between temptation and the act of delegation. TP did not intervene at any time; and so we inquire into some of the consequences of nonintervention. Fourth, we supplement some of the purely behavioral relationships reported in the first three sections and ask about their phenomenological accompaniments. These are to be found in Ss' reasons for their decisions. The fifth and final section is given to an analysis of some possible sources of experimental bias.

Temptation, Sex, and Competition

Prediction 1. The High Temptation matrix will generate more competition than the Low Temptation matrix.

The data testing this assumption are summarized in the bottom half of Table V-1. The test involves only the male Ss (because the female Ss were administered only the

High Temptation matrix) and the Control condition (because the TPO or experimental condition represents a "contaminated" or modified PD game).

Twenty-one of 31 Ss, or 67.7 percent, chose Blue, the competitive response, in the High Temptation condition. Thirteen of 30, or 43.3 percent chose Blue in the Low Temptation condition. This difference is significant at near the .05 level. In passing, it is of interest to note that the differences between the Temptation levels are even more pronounced in the Experimental condition ($p < .01$) and overall ($p < .01$).

TABLE V-1

Competition as a Function of Temptation Level and Third Party Condition (Male Ss Only)

	Treatment: High Temptation	Treatment: Low Temptation	
Condition: Experimental	38/47 80.9%	18/40 45.0%	56/87 64.4%
Condition: Control	21/31 67.7%	13/30 43.3%	34/61 55.7%
	59/78 75.6%	31/70 44.3%	90/148 60.8%

We can also test this prediction to some extent by considering the three Experimental groups in terms of Ss' predictions about what their RBO would likely be in the absence of TP. Such a comparison provides some basis for assessing (a) the stability of the rates of competition

reported in Table V-1 and (b) any possible contamination of RBO by TPO. These data are summarized in Table V-2.

TABLE V-2

Competitive Orientation of Experimental Ss as a Function of Temptation Level and Sex*

		Treatment	
		High Temptation	Low Temptation
Sex	Males	33/47 70.2%	17/40 42.5%
	Females	17/57 29.8%	not run

Comparing the High Temptation Male Controls in Table V-1 with the High Temptation Males in Table V-2, we note that there is very little difference between the two rates of competitiveness, i.e., 67.7 percent versus 70.2 percent, a difference of only 2.5 percent. There is an even smaller difference between the Low Temptation Males in the same two tables, i.e., 0.8 percent. So far as the males are concerned, then, the rates of competitiveness between the real choices made in the Control groups and the purely hypothetical choices predicted by Ss in the Experimental groups are virtually the same. Apparently the experimental manipulation did not destroy the "realness" of the PD situation for the Ss in question because they responded much as they might have had TPO not

*Orientation was inferred from Ss answers to a question asking what they would choose (Red or Blue) if TP were not to interfere.

been introduced. Combining the actual and hypothetical choices for male Ss, the two Temptation levels differ significantly ($p < .01$).

Female Ss exhibited a larger discrepancy between their actual RBO's in the Control group and their hypothetical choices in the Experimental group. Whereas 41.4 percent of the High Temptation Female Controls competed (Table V-3), only 29.8 percent High Temptation Female Experimental Ss reported that they would likely compete (Table V-2). Even so, this difference does not reach statistical significance.

Remaining close to the data, we can safely conclude the following. First, the two matrices did generate different rates of competition as we had hoped they would. Second, the introduction of the TPO *per se* appears to have had no undue effect on the relation between Temptation and competition, neither raising nor lowering the rates of competition.

The next three predictions are all concerned with sex differences. The first of these predictions relates sex to competitiveness. The other two make certain statements about the incidence of the sexes in respect to how they relate TPO to RBO.

Prediction 2. Female Ss will be more competitive than male Ss in the High Temptation condition.

Prediction 3. Female Ss will be more "cautious" than male Ss.

Prediction 4. Male Ss will be more "risky" than female Ss.

We can test Prediction 2 using the data which appear in Table V-3. Comparing the "pure-PD" Control groups, we find

that 67.7 percent of the males and 41.4 percent of the females chose the Blue response, a difference opposite to the predicted direction ($p < .05$). This trend is even more strongly demonstrated in the Experimental groups ($p < .01$). It is, therefore, safe to conclude that females are significantly more cooperative than males, with cr without TP.

TABLE V-3

Competition as a Function of TPO Condition and Sex

		Condition: Experimental High Temptation	Condition: Control High Temptation	
Sex: Males		38/47 80.9%	21/31 67.7%	59/78 75.6%
Sex: Females		27/57 47.4%	12/29 41.4%	39/86 45.3%
		65/104 62.5%	33/60 55.0%	

Before we review the findings bearing on Predictions 3 and 4, it should be helpful to briefly review our definitions of the four instrumental postures. Cautious Ss were defined to be S who invited TP even though they expected they would win either cooperatively or competitively. Risky Ss rejected TP while simultaneously expecting that they would lose on their own. Optimistic Ss rejected TP on the assumption that they did not need him as they could win on their own. And pessimistic Ss invited TP because they

felt they would lose if left to their own devices. Table V-4 summarizes the distributions of the four kinds of Ss.

TABLE V-4

Incidence of Different Instrumental Orientations, by Sex and Temptation

A
Males
High Temptation
S predicts:

	Red-Red / Blue-Red	Red-Blue / Blue-Blue	Sum
S Invites TP	cautious 7 53.8%	pessimistic 6 46.2%	13 100%
S Rejects TP	optimistic 18 52.9%	risky 16 47.1%	34 100%

B
Males
Low Temptation
S predicts:

	Red-Red / Blue-Red	Red-Blue / Blue-Blue	Sum
S Invites TP	cautious 4 40.0%	pessimistic 6 60.0%	10 100%
S Rejects TP	optimistic 24 80.0%	risky 6 20.0%	30 100%

Table V-4 (cont'd)

C
Females
High Temptation
S predicts:
Red-Red Red-Blue
Blue-Red Blue-Blue

			Sum
	cautious	pessimistic	
S Invites TP	8	4	12
	67.0%	33.0%	100%
	optimistic	risky	
S Rejects TP	36	9	45
	80.0%	20.0%	100%

D
Males and Females
High and Low Temptation
S predicts:
Red-Red Red-Blue
Blue-Red Blue-Blue

			Sum
	cautious	pessimistic	
S Invites TP	19	16	35
	54.3%	45.7%	100%
	optimistic	risky	
S Rejects TP	78	31	109
	71.6%	28.4%	100%

In order to test Prediction 3 and to benefit as much as possible from sample size, we compare Table V-4A and B (summed) with Table V-4C. Eleven of 23 males, or 47.8 percent of them, were cautious in their invitations to TP. This compares with 8 of 12 females, or 67.0 percent of them, who invited TP "to be sure." Although this difference fails to reach statistical significance, it is in the predicted direction.

We test Prediction 4 in the same manner and also controlling on Temptation because there is the same proportion

of males in the Low Temptation condition as there are females in the High Temptation condition. In other words, we test Prediction 4 twice. In the first test, 9 of 45 females, or 20.0 percent, were risky as we have defined the term. This figure compares with 22 of 64 males, or 34.4 percent. The difference is in the predicted direction, though not significantly so. In the second test, the proportion of females who were risky remains the same, but now there are 16 of 34 males, or 47.1 percent, a difference which almost reaches the .02 level of significance.

It is necessary to test only the relative incidence of cautious and risky Ss. To the extent that females are more cautious than males, then, by definition they are less pessimistic. And to the extent that females are less likely to gamble than males, then again by definition, they are more optimistic.

It seems fair to conclude that females, at least by our procedures, are both less competitive and less risky than males.

It is interesting to note the extent to which the sexes differ in their attribution of competitive intent to their partners.* Table V-5 summarizes the relevant data.

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*There was a significant tendency for Ss to "balance." That is, when S said he was likely to choose Red (in the absence of TP), he attributed this same preference to his partner. It is of some interest that, of the 30 of the 144 Ss who did not balance, 25 attributed a cooperative orientation to their partners, at the same time saying that they themselves would likely compete. In other words, Ss were more likely to see themselves defecting than their partners among the minority who did not assume similar orientation.

These data are taken from Ss' predictions about what would probably transpire in the assumed absence of TP. Male Ss in the High Temptation condition tended to split in the amount of cooperation versus competition attributed to their partners. In contrast, the females--over three-quarters of them--attributed a cooperative intent to their partners. This sex difference is significant at near the .01 level. We conclude, then, that not only are women more cooperative than men, but their perceptions of others shows a corresponding difference.

TABLE V-5

Attribution of Cooperative versus Competitive Orientations to Partners by High Temptation Ss, as a Function of Sex

		Prediction of Partner's Choice		
		Red	Blue	
Sex	Male	25 53.2%	22 46.8%	47 100%
	Female	44 77.2%	13 22.8%	57 100%
		69	35	

Determinants of Intervention

Prediction 5. Ss in the High Temptation condition will be more likely to invite TP than Ss in the Low Temptation condition.

We have assumed that the more uncertain the outcomes are, the more competitive the relationship, the more likely will Ss resort to outside assistance. The data used to test

this prediction are presented in Table V-6. Since this test requires a comparison of levels of Temptation, we are limited to the male Ss.

We observe in Table V-6 that 13 of 47, or 27.7 percent, of the High Temptation Males invited TP to intervene. This figure compares with 10 of 40, or 25.0 percent of the Low Temptation Males, a difference which is both extremely small and nonsignificant. We must conclude that Prediction 5 is not sustained.

Sex of S appears to have little effect upon the attractiveness of TP. Only 21.2 percent of the female Ss requested intervention. This figure is lower than for either of the male Experimental groups, but in neither case is it significantly so.

TABLE V-6

Invitations to TP as a Function of Temptation Level and Sex

Sex	Temptation: High	Temptation: Low	
Males	13/47 27.7%	10/40 25.0%	23/87 26.4%
Females	12/57 21.2%	not run	
	25/104 24.0%		

Another way of relating the attractiveness of TP to hypothetical RBO's is contained in Table V-7. First, let us

formulate a post hoc prediction. The most "needful" psychological state should be evidenced by Ss who anticipate (or "fear") a Red-Blue outcome in the absence of TP. This is the situation in which S is exploited and wins nothing. Such Ss should be most likely to invite TP. At the opposite extreme should be Ss who anticipate a Blue-Red or Red-Red outcome. Either of these combinations promises some winnings to S, and so there should be less need for TP. There is no basis for predicting a difference between these two combinations. In between the two extremes should be Ss who expect a Blue-Blue outcome. This outcome is less profitable than the Red-Blue combination.

TABLE V-7

Attractiveness of TP as a Function of Anticipated Outcome in the Assumed Absence of TP

	Anticipated Joint Outcome				
	Red-Red	Red-Blue	Blue-Red	Blue-Blue	Sum
Invite TP	13 17.5%	3 60.0%	6 24.0%	13 31.0%	35
Reject TP	59 82.5%	2 40.0%	19 76.0%	29 69.0%	109
Sum	72 100%	5 100%	25 100%	42 100%	144

As predicted, the Red-Blue prediction was accompanied by the greatest rate of invitations. There were only five predictions of a Red-Blue outcome, but three of these, or 60 percent were associated with an invitation to TP. At the

other extreme, 17.5 percent of the Red-Red and 24 percent of the Blue-Red predictions were accompanied by invitations. We did not predict a difference between these two patterns, and the obtained difference is not significant. Finally, we predicted the Blue-Blue pattern to occupy an intermediate position, and this appears to be the case. Although none of the differences reached statistical significance, the order is in the predicted direction and in accord with the rationale which generated Prediction 5. This finding should be regarded as suggestive rather than conclusive, however.

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Consequences of Nonintervention

A continuing relationship is a system in which events occurring at one point in time have consequences which are felt later in time. The competitive relationship which we study is a feedback system, so that the implications of invitations and rejections are problematic. Two predictions concerning some of these implications are tested in this section.

By way of introduction, let us first ask what the rejection of TP means behaviorally. Does rejection of TP mean that S is contemplating competing for the big money and so does not wish to settle for the smaller amount which TP promises? Or does he believe he will cooperate anyway, and so has little need for TP? More specifically, under what conditions does rejection mean a competitive orientation and under what conditions does it mean a cooperative orientation?

We labeled those Ss who rejected TP according to their orientation: cooperative or competitive. Orientation was

inferred from Ss predictions of what they themselves would do in the absence of TP. There were 109 Ss who rejected TP, of whom 61 had a cooperative orientation. This figure does not depart significantly from 50 percent. We conclude, then, that rejection of TP generally signified neither cooperation nor competition.

But let us consider this "nonrelationship" more closely. Nineteen of 30 and 32 of 45 Ss in the female and the Low Tamptation male groups, respectively, rejected TP so that they might cooperate. These figures compare with only 10 of 34 males in the High Temptation group who were similarly oriented. A chi square value significant at less than the .01 level is obtained when we compare the two male groups. We conclude that rejection of TP meant competition in the High Temptation male group and cooperation in the Low Temptation group of the same sex.

Prediction 6. The availability of TP will have the net effect of increasing the level of cooperation in the Experimental group.

The import of this prediction is whether the effects of the option itself were beneficial or detrimental from the point of view of reducing competition. The data used to test for the predicted relationship are summarized in Tables V-1 and V-3. Comparing Experimental and Control conditions within each Temptation level in the first of these tables, we see that the availability of TP did not reduce competition. In fact, TPO may have had the opposite effect, especially in the High Temptation condition. The rates of

competition in the High Temptation Experimental and Control groups were 80.9 percent and 67.7 percent, respectively (n.s.).

Females are compared in the second of the two tables. Again, the difference is small and not statistically significant, but, it, too, is in the direction of higher competition in the Experimental condition. We conclude that there is no evidence that TPO tends in any way to dampen competition.

Prediction 7. Competition will be greatest in dyads where both parties reject TP. It will be least in dyads where S rejects TP and his partner is reported to have invited TP.

The data used to test this prediction are contained in Table V-8. It can be seen in Table V-8D that the highest level of competition develops when S invites TP and he is told that his partner rejects TP. The lowest level of competition occurs when both S and his partner reject TP. These two patterns generate significantly different levels of competition ($p < .01$). We must therefore consider the first part of Prediction 7 to be in error, and significantly so.

The second portion of Prediction 7 pertains to the order of the two discrepant TPO patterns. It should be remarked, first, that neither of the two comparisons in Table V-8D (reject-reject versus reject-invite and reject-invite versus invite-reject) is statistically significant, but both differences are in the predicted direction. Second, all of the constituent summaries (Tables A through C) are in general

agreement with the overall summary (Table D). The only exception is in Table A where the reject-invite pattern has produced an extremely high level of competition. We seem to be dealing with a ceiling effect in the High Temptation male group.

TABLE V-8

Competition as a Function of Patterns of Invitations and Rejections

Experimental Group

A
Males
High Temptation
Partner:

	Invites	Rejects
S Invites	not run	12/13 92.3%
S Rejects	16/17 94.1%	10/17 58.8%

B
Males
Low Temptation
Partner:

	Invites	Rejects
S Invites	not run	6/10 60.0%
S Rejects	7/15 46.7%	5/15 33.0%

C
Females
High Temptation
Partner:

	Invites	Rejects
S Invites	not run	9/12 75.0%
S Rejects	10/23 43.5%	8/22 36.4%

D
Males and Females
High, Low Temptation
Partner:

	Invites	Rejects
S Invites	not run	27/35 77.1%
S Rejects	33/55 60.0%	23/54 42.6%

In general, then, we can say that Prediction 7 was contradicted in its first statement, and confirmed in its second statement.

At the beginning of this section, we considered the behavioral significance of S's rejection of TP. Prediction 7 was concerned with the effect of TPO patterns on competition. We attempt, now, to tie together these several strands in an analysis of how Ss interpreted their partners' TPO's. How S interprets his partner's invitation or rejection of TP, we assume, will be determined by whether he himself intended to cooperate or to compete. We define S's interpretation of or reaction to his partner's TPO by the choice he makes at RBO. The relevant data appear in Table V-9.

TABLE V-9

Reactions to Partner's TPO as a Function of Ss' Cooperative Versus Competitive Orientation

		Partner	
		Invites TP	Rejects TP
Rejector's (S) Orientation	Cooperative	Blue: 7 (24.1%) Red: 22	Blue: 3 (9.1%) Red: 30
	Competitive	Blue: 26 (100%) Red: 0	Blue: 21 (95.5%) Red: 1

Inspection of Table V-9 prompts the following observations. First, competitively-oriented Ss did not react differentially to their partners' TPO's. This suggests that they either simply ignored their partners' decisions, or that

they followed a simple minimax principle. Thus, when partner invited TP, S chose Blue as the way to capitalize on an agreeable partner; and when partner rejected TP, S chose Blue as the way to guarantee a profit of 25¢. Second, cooperatively-oriented Ss seem to be more likely to shift to a competitive response when paired with a partner who invites TP than when paired with a partner who rejects him. But this difference is not significant.

We have attempted in this section to infer something about the activation of expectancies within the context of a competitive relationship. In the next section, we rely more directly upon what Ss said were their reasons.

Phenomenology and its Relation to Experimental Behavior

The data reported in this section were elicited by two open-ended questions: (a) What was the reason for your decision above? (whether to invite or to reject TP); and (b) Why did you choose the alternative you circled? (Red vs. Blue).*

Ss' reasons for inviting or rejecting TP are summarized in Table V-10. It is interesting to note that at least one-fifth of the Ss in each condition who rejected TP cited "responsibility" as a reason. For example: "I would rather trust my own decision even though perhaps it is safer to have a TP"; "If I lose, it will be my fault"; "I have always tried to make decisions based on my own judgment of the

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*Intercoder reliability on a 30% random sample of Experimental Ss was 94%.

situation without resorting to help from someone else"; "I made that decision because I would rather make my own choice. I'm not afraid to be responsible for my own success or failure. In fact if I should be a success in any way, I would rather it be my success and not a stranger's."

TABLE V-10

Reasons Given by Experimental Ss for Invitations to and Rejections of TP

Reasons for Rejection	Male, High Temptation	Male, Low Temptation	Female, High Temptation
The responsibility is mine	7* 20.6%	6 20.0%	11 24.4%
Want to gamble for the works; nothing to lose	16 47.1%	10 33.3%	13 28.9%
For interest sake; see what happens	5 14.7%	1 3.3%	7 15.6%
Don't need him because going to cooperate anyway	5 14.7%	9 30.0%	14 31.1%
Don't want to surrender 20% charge for TP	4 11.8%	10 33.3%	10 22.2%
Reasons for Invitation			
To guarantee $1.00; to be safe	12 92.3%	10 100.0%	9 75.0%
Fairness and justice necessitates TP	0 0.0%	0 0.0%	2 16.7%

*Cell entries refer to frequencies and proportions of Ss who mention the reason in question; columns do not sum to 100% as some Ss mentioned more than one reason. However, percents in cells are based on 34, 30, and 45 Ss in each of the three Experimental groups (Rejection) and 13, 10, and 12 in each of these same groups (Invitation).

The reasons involving gambling and cooperation parallel what has already been reported concerning the level of competition in the various conditions. We observe that the 20 percent charge for TP had an inhibiting rather than a facilitating effect. As an inhibitor, it was relatively more prominent in the groups where the rate of cooperation was high (female High Temptation and male Low Temptation). Not unexpectedly, safety was the dominant motive for Ss who invited TP.

What do the reasons Ss give for rejecting TP "mean" in the light of their later actions? Tabulations of RBO per reason and Experimental group are given in Table V-11. It is of some interest to note, for example, that Ss who prize the exercise of their responsibility tend to compete. This relationship is particularly true for the High Temptation males who account for the overall trend. All seven High Temptation males who said they did not wish to invite TP because the responsibility was their own proceeded to compete. Unwillingness to surrender 20 percent of one's earnings to TP does not appear to be an excuse for going after the big money; at least, this is what 19 of 24 Ss seem to imply. Can we accept self-proclaimed gamblers and cooperators at their word? In general, yes, although gamblers are not as consistent as cooperators are. Twenty-nine of 39 gamblers follow through, as opposed to 26 of 28 cooperators.

In the analysis of the second open-ended question we are particularly interested in the significance attached by

S to his partner's invitation or rejection of TP, as well as his own, in deciding between Red and Blue. Table V-12 presents the incidence of acknowledgements of TPO as a function of the three patterns of invite-reject.

TABLE V-11

Reasons for Rejecting TP and Later RBO

Reasons for Rejection		Male, High Temptation	Male, Low Temptation	Female, High Temptation	Sum
The responsi- is mine	RED	0	3	5	8
	BLUE	7	3	6	16
Want to gamble	RED	3	2	5	10
	BLUE	13	8	8	29
For interest sake	RED	1	1	5	7
	BLUE	4	0	2	6
Cooperate anyway	RED	3	9	14	26
	BLUE	2	0	0	2
Won't pay 20%	RED	3	7	9	19
	BLUE	1	3	1	5

TABLE V-12

TPO as a Consideration in RBO, as a Function of TPO Pattern

		TPO Patterns				
		Rej/Rej	Inv/Rej	Rej/Inv	Sum	%
Experimental Group	Male, Hi Tempt	3	8	10	21/41	51.2
	Male, Lo Tempt	2	1	6	9/34	26.5
	Female, Hi Tempt	2	6	8	16/57	28.1
	Sum	7/48	15/30	24/54	46/132	
	%	14.6	50.0	44.4		

To what extent did TPO figure in RBO? First, we note that 46 of 132, or 34.9 percent of all Experimental Ss indicated that the decision of one or other or both of them to invite or to reject TP was a factor in their choice of Red or Blue. Second, it is clear that the most competitive group, the High Temptation males, was much more likely to acknowledge TPO in RBO. The Low Temptation males and the High Temptation females were not only much alike in level of competition, but also in acknowledgement of TPO. Third, we mentioned earlier in this chapter that the reject-reject pattern was least competitive. We observe now that it also was least likely to generate mention of TPO. Moreover, the pattern which had proved most competitive, that is, the invite-reject pattern, is now seen to have prompted the highest incidence of references to TPO in RBO.

We are left with the conclusion that there appears to be a clear relationship between acknowledgement of TPO and competition. But we can specify a little farther the relations among partners' TPO, Ss' RBO, and reasons given.

How did Ss interpret their partners' TPO? What did this act signify? There were 23 Ss who reported that their partners' invitations to TP was a factor in their own RBO. Of these, 20 or 87.0 percent believed that their partners would proceed to choose Red. Given their belief that they were dealing with a cooperative partner, 6 of the 20, or 30 percent proceeded to choose Red. In other words, 70 percent of the Ss who believed they had cooperative partners on the basis of TPO went on to compete. This finding is accounted for largely by the males.

Consider the meaning of partners' rejections of TP. There were only 17 such cases, 9 in the Male High Temptation and 8 in the Female High Temptation conditions. No S in the Male Low Temptation condition entertained his partner's rejection of TP. Of the 17, 14 or 82.4 percent believed their partners would likely choose Blue. In all cases where an S interpreted his partner's rejection to betoken a competitive orientation, he proceeded to choose Blue himself.

In summary, invitations to TP were generally interpreted to mean cooperation; and rejections of TP were almost equally uniformly interpreted as a competitive gesture. Again, a minimax strategy seemed to characterize our Ss. When they believed a partner was about to compete, they adopted the safest course of action, namely choosing Blue and so guaranteeing a win of 25¢. When they believed a partner was about to cooperate, they were inclined to exploit him and choose Blue, thereby hoping to win the largest prize.

This concludes our account of the major experimental findings. The next section is of some interest because it reports data checking for possible experimental bias. Whether Ss' answers to the questions checking on bias represent merely post hoc rationalizations of their own actions, or are actually indicators of possible bias, is a question we will not attempt to answer at the moment.

Experimental Bias

Ss were asked at the two major choice points in the experimental procedure what they supposed E's preferences

to be in respect to each. Table V-13 summarizes the data bearing on the first of these choice points, TPO.

TABLE V-13

TPO Preference Attributed to E*

	S believed E's preference to be:			
	Invite	Reject	?	Sum
S Invited TP	6	1	28	35
S Rejected TP	21	10	78	109
	27 18.8%	11 7.6%	106 73.6%	144 100.0%

*All Experimental Ss, male and female, High and Low Temptation.

Thirty-eight of 144, or 26.4 percent of all Experimental Ss attributed some preference to E concerning TPO. Of these 38, 27 or 71.0 percent believed E favored inviting TP. So the option seems to have "said" something to the Ss. Invitors and rejectors, however, did not differ significantly either in their attribution of some preference or of the direction of the attributed preference.

The relevant data for the second choice point, RBO, appear in Table V-14. We note that only 35 of 234 or 15 percent of all Ss, Experimental and Control, expressed a belief that E had some sort of preference for RBO. Of the 15 percent, insignificantly more attributed a Red-preference to E. It is interesting to observe that those who chose Blue were significantly more likely to project some preference

to E than were those who chose Red ($p < .01$). There is no clear evidence, though, of a marked difference between the preferences that these two groups attributed to E, as both seemed to think that E preferred Red somewhat more than Blue.

There is evidence that TPO generated more attributed preferences than did RBO ($p < .01$). There is no indication of a sex difference in respect to attributed preferences nor of direction of preference at either choice point.

Finally, consider data bearing on Ss' understanding of the instructions which established TPO. Twenty-two of 144, or 15.2 percent of the Experimental Ss said they had difficulty understanding the option. Fortunately, "lack of understanding" was not significantly associated with either sex or whether S invited or rejected TP.

TABLE V-14

RBO Preference Attributed to E*

	S believed E's preference to be:			
	Red	Blue	?	Sum
S chose Red	6	2	97	105
S chose Blue	15	12	102	129
Sum	21 9.0%	14 6.0%	199 85.0%	234

*All Experimental and Control Ss.

Summary of Findings

Let us briefly summarize some of the major findings reported in this chapter.

First, the matrices did differ empirically in the predicted direction. The High Temptation matrix was, indeed, more competitive than the Low Temptation matrix. It was of considerable interest to find that the rates of competition evidenced by the males in the Control groups were also found in the hypothetical choices of the Experimental groups.

Second, femals Ss were significantly more cooperative than male Ss. Not only were they more cooperative, but they were also more likely to perceive their partners as cooperative. Our female Ss were also more cautious or less risky in their decision, in the first instance, to invite TP; and, in the second instance, to reject his services.

Third, the data used to test the determinants of the act of delegation of decision-making authority proved to be rather inconclusive. There was no evidence supporting the prediction of a positive relationship between competitiveness of matrix and attractiveness of TP. But there was some slight evidence that TP was more attractive to Ss who anticipated a losing RBO.

Fourth, rejection of TP seemed to mean that S was about to cooperate anyway, except in the case of High Temptation males. There was a tendency in the latter case for Ss to reject TP and then choose Blue.

Fifth, the pattern in which S and his partner both rejected TP produced the lowest amount of competition.

The highest amount of competition developed out of the invite-reject pattern. There was also a marked tendency for acknowledgements of TPO at RBO to vary directly with the competitiveness of the group and of the TPO pattern.

Finally, the reasons given by Ss for their particular choices were analyzed and related to various of the above observations. Some questions exploring the possibility of experimenter bias suggest that such bias was generally very small and not distributed in a manner correlated with the principal dependent variables.

CHAPTER VI

INTERPRETATION OF RESULTS

A number of questions raised by the findings of this study remain to be considered. First, why was the TP so unpopular? Approximately 25 percent of all the Experimental Ss requested his intervention. We are troubled not only by the failure of the Temptation variable to have its expected effect, but by the very low attractiveness of TP.

Second, what sort of model can account for the distribution of Red and Blue which we obtained? Expected-value theory would predict the choice yielding the highest expected utility (subjective probability times incentive value). How appropriate is the concept of subjective probability? How do such psychological states develop and how do they decay?

Third, what is the role of sex in the Prisoner's Dilemma? Are there reliable sex differences, and if so, what do they mean?

Fourth, we consider the problem of labels and the blind spots which they induce. Our remarks are not unique to the PD, but they do seem to have a special relevance because of the rather extensive set of labels which various researchers have coordinated to different classes of PD play.

Finally, we tie together a few of the strands introduced in the above sections and ask about the relevance of the PD as we have employed it for the substantive problems of intervention and mediation. We will raise a number of

issues which seem to require additional attention, but this time in the field.

The Unpopular TP

The attractiveness of TP varied between a low of 21 percent invitations extended by High Temptation females to a high of 28 percent invitations by High Temptation males. Obviously, Ss felt no great need for TP when only one-fifth to one-quarter of them asked for his assistance.

Approximately one-quarter of the male Ss in the pilot experiment invited TP. At that time, it was felt that a fee for TP's services should be introduced. Paying tor TP would imply that there was some genuine need for him and that his services would prove beneficial. It was thought that such a fee would imply that Ss might reasonably expect to do less well without him. Such a charge would also be more faithful to "real life."

Contrary to expectations, the fee did not increase the overall attractiveness of TP. In fact, a third of the Low Temptation males and a fifth of the High Temptation females specifically declared that they did not wish to surrender 25¢ to TP, especially as they were going to cooperate anyway, so a number of these Ss said. Only a tenth of the High Temptation males mentioned the fee as a deterrent to inviting TP. Apparently the 25¢ fee was less salient at the higher Temptation level.

It appears that TP was unpopular because he was too expensive, because Ss were going to cooperate anyway and so felt that they did not need him (particularly in the female

group), because of the belief in personal responsibility and desirability of choosing for oneself (approximately one-fifth of all Ss), and because of a simple desire to gamble for the big money (nearly one-half of the High Temptation males said they wanted to "go for broke"). As expected, those who did invite TP were motivated principally by a desire for security.

How could TP be made more attractive? For one thing, it would be necessary to make unsuccessful competition or unsuccessful cooperation more costly. After all, the PD is a game, and observing Ss at play does not dispel this impression. They must need a TP. Ss must be made to feel that they cannot afford to be without a TP.

Before we ask whether we have learned anything about intervention from the present research, we must ask whether the TPO manipulation "took." If it failed to take, of course, this tells us little, if anything, about the conditions of intervention, although it might tell us something about the limits of the PD as a research tool for such problems.

By way of assessing whether TPO "took," let us consider three questions: first, whether Ss had a meaningful conception of TP; second, whether TPO was introduced in an extraneous and obviously artificial way; and third, whether there was any genuine instrumental relevance of TP for the distribution of rewards.

Ss were asked whether they had a "meaningful conception of the Third Party so that this option was plausible."

As we noted in the last chapter, only 15 percent of them said they did not. The 22 Ss who made up this 15 percent were not distinguished according to whether they invited or rejected TP, i.e., 11.4 percent of the invitors and 16.5 percent of the rejectors said they had difficulty understanding TPO. Although the evidence suggests that Ss did, in general, understand this option, it would have been desirable had none of the invitors said they lacked a meaningful conception of TP. Nevertheless, the answer to the first question seems to be in the affirmative.

Ss might have understood what they were being asked, but they might have thought that the alternative posed was artificial, arbitrary, unnecessary, and even implied a lack on their part. This is the second criterion: whether TPO was perceived as integral to the procedure. Unfortunately, we lack any direct evidence on this point. We must, therefore, rely upon a logical argument in the absence of data. There is no reason to think that the Ss did not simply regard this manipulation as part of the general procedure. As such, it was invested with the same plausibility and reasonableness as the remainder of the experimental procedure. Ss had no independent criterion for judging this manipulation relative to the remainder of the procedure. Within the peculiar reality imposed by the experiment, there was little to distinguish this manipulation as unreal.

On the third criterion, however, our procedure is vulnerable to criticism. There is some basis for saying that our manipulation did not take in the sense that we did

not succeed in creating a "need" for TP. Comparing only the two male Experimental groups, 25.0 percent in the Low Temptation condition and 27.7 percent in the High Temptation condition requested intervention. Presumably the incentive value for $1.00 in either condition was approximately the same. But in the High Temptation condition, the $5.00 prize was simply a much greater incentive both to reject TP and to choose Blue. With nothing to lose, the male Ss in the High Temptation condition tended merely to perceive the situation as a gambling situation. For them, TPO was not a viable option because it promised so little.

Expected-value Theory

Contemplation of the strange fluctuations in inferences in the PD prompts an examination of the appropriateness of the probability concept. As a player, what is probable? The more one ponders the probabilities involved, the more ephemeral they seem as they grow and decay in alternation. Consider the following.

Blue is obviously the better response in the High Temptation matrix. It promises the higher average payoff, not to mention the assurance of at least some profit. Because Blue is so obviously the better choice, a player must reasonably expect to settle for 25¢, rather than $5.00. At least if he assumes a modicum of intelligence on the part of his partner. Blue is then no longer so attractive when compared to the possibility of $1.25 via Red. Again, there is no reason to suppose that this logic is not apparent

to one's partner. At least here two people's greed and reason can converge. Now that Blue seems unwise and has become less probable, fickle reason argues that, indeed, there is a reasonable chance of winning $5.00 while the partner does the reasonable thing in choosing Red. But if . . .

We are in a conflict between different rationales, two different sets of assumptions and probabilities. What is problematic is the basis for our choice between competing rationales. We fluctuate between them, much as we perceive one aspect of the Necker cube foremost, then another, and so on. Which rationale do we act upon? What are the operative mechanisms? It is these sorts of considerations, of course, which makes the examination of personality factors so reasonable.

Let us suppose that the more assumptions which a decision-maker introduces, as we did above, the less likely he is to converge with his partner either to his own or to their mutual advantage. Some light is cast on this suggestion by the results relating patterns of invitation-rejection to level of competition and salience of TPO in RBO.

There was clear evidence that rejection of TP was generally interpreted to mean that the rejector intended to compete. Somewhat over 80 percent of those Ss who acknowledged their partners' rejection of TP as a consideration in their RBO attributed a competitive orientation to them. According to this finding, we would predict that the reject-reject pattern would generate the most rather than the least competition.

Yet the unanimous rejection pattern was found to be least likely to prompt consideration of TPO in RBO. Apparently disagreement on the desirability of TP made problematic own and partner's interpretation of the situation and their respective intentions. Disagreement led Ss to make certain attributions to partners which, in turn, led to increased competition.

In other words, so long as Ss had no reason to think that their partners perceived matters differently, they were less inclined either to go on the offensive, as in the reject-invite pattern, or to go on the defensive, as in the invite-reject pattern. In the former case, Ss believed they could outwit their partners who had signaled their cooperative intent by inviting TP. In the latter case, Ss believed they would have to settle for nothing or 25¢ because their partners had signaled their competitive intent by rejecting TP. The effect of either line of reasoning was to produce a competitive response.

This interpretation suggests an explanation for the somewhat higher level of competition registered in the Experimental groups, especially the High Temptation groups, as opposed to the Control groups. About two-thirds of the Ss in the Experimental groups were party to the discrepant TPO patterns. These two patterns more than counteracted the single unanimous pattern, thereby inflating the overall level of competition.

It is interesting to compare the levels of competition between the Control groups and the three TPO patterns.

The data for these comparisons are summarized in Table VI-1. In every case, the level of competition in the Control groups is higher than in the reject-reject pattern and lower than in both the invite-reject and reject-invite patterns. We have already suggested why the Control levels were lower than the two discrepant TPO patterns, i.e., these patterns either prompted Ss to take liberties with their partners (trying to exploit them) or to respond defensively to their competitive intent (to ensure 25¢).

TABLE VI-1

Levels of Competitive Responses as a Function of TPO Patterns, Control Groups

		Control Group	Inv/Rej	Rej/Inv	Rej/Rej
Experimental Group	High Tempt, Males	21/31 67.7%	12/13 92.3%	16/17 94.1%	10/17 58.8%
	Low Tempt, Males	13/30 43.3%	6/10 60.0%	7/15 46.7%	5/15 33.0%
	High Tempt, Females	12/29 41.4%	9/12 75.0%	10/23 43.5%	8/22 36.4%

The Meaning of Sex

Contrary to studies which either fail to demonstrate any sex differences overall (e.g., Lutzker, 1960) or fail to find any on the first few trials (e.g., Rapoport & Chammah, 1965), we have found clear evidence that females are indeed more cooperative than males, at least on the initial trials. If female competitiveness is, in fact, attributable to their unwillingness to forgive after they have been betrayed, we have

no way of knowing on the basis of the present study. Although women were more cooperative, however, they were no more inclined to invite TP than the men in either of the two Temptation conditions.

It was suggested in Chapter II that women may be more competitive or more cooperative, depending upon what the instructions "imply." Thus, for example, women would be more competitive than men if the instructions were biased in this direction. The same relationship would be true when the instructions were biased in the other directions. According to this view, women are simply more obedient or "better" Ss. That is, they seem to be more sensitive to cues from E and/or to act upon them.

Females in this study appeared to E to be much more cooperative as Ss than did the males. In order to ensure the attendance of a six-man group, seven Ss were typically scheduled. In order to obtain 148 Ss actually run, about 170 had to be scheduled, some of them several times. This procedure was followed initially for the female Ss, but after all seven showed in each of the first few groups, it was decided to economize on Ss and to schedule only six at a time. This faith in the females was not misplaced.

Ss were categorized according to their cooperativeness. Uncooperative Ss were people who failed to appear on two or more occasions or who created great obstacles to their being scheduled. The remainder were judged cooperative, by exclusion. Approximately 12 percent of the males (21) and 1 percent of the females (1) were judged to be uncooperative according to these criteria.

The Problem of Labels

Although the remarks in this section may be regarded as a methodological or theoretical aside, they are addressed to a recurring problem in the social sciences and certainly in gaming research. It is customary to label the actions described in matrix form in an effort to capture what appears to the researcher to be the essence of the behavior. Typically, common language terms are employed, such as cooperation and competition or defection.

Two examples which illustrate some of the dangers inherent in common language labeling are cited from the present research. The notion is prevalent among researchers using the PD that women have been found to be more competitive than men. Indeed, not a few studies have found this to be the case. Most of these studies, however, have found that this sex difference develops over trials. Bixenstine, et al. (1964) and Rapoport & Chammah (1965) have found this tendency which has been explained as evidence that women are less forgiving than men when they have been betrayed.

To say that women are "more competitive" than men in the PD seems to do scant justice to the context out of which this "competiveness" develops. By our definition, competition refers to actions whose intent or effect is to alter the distribution of rewards in a relationship. If women's competitive behavior is what has been suggested, that is, a response to betrayal, then women are engaging in what might be referred to as revengeful or disciplinary behavior. They are motivated by considerations quite different from those

offered in the matrix. Thus, the term "competition" seems to subsume a number of genotypically quite distinct motive states. Nor is this hairsplitting. From the point of view of experimental inquiry into the determinants of competitive behavior, it seems especially important to try to isolate these different states and to explain not only their arousal, but also their distribution by sex.

The second example of the effects of common language labeling is provided by our earlier taxonomy of rational-irrational behavior. The Ss whom we have labeled "cautious" and "risky" were originally labeled "irrational" because they did not maximize. For instance, some Ss were called irrational, and later risky, because they rejected TP even though they predicted that their particular dyads would likely select Blue-Blue or Red-Blue. For some analyses, we kept the two kinds of irrational Ss separate. For other analyses, they were pooled. The same was true of the rational Ss.

So long as we had labeled our Ss as either rational or irrational, some predictions seemed quite reasonable. But when we reconsidered our labels and adopted a new set which we believe to be more accurate, a rather different set of predictions seemed obvious. As we have already noted, however, we have made an effort to avoid taking these labels too seriously.

The Prisoner's Dilemma and the Delegation of Authority

Let us briefly review the more serious limitations on our experimental procedure which sharply limits the validity

of any generalizations we may wish to make to real-life settings. First, as we have already discussed, we managed to produce significantly different levels of competition in our two Temptation conditions. But we failed to create a situation in which there was a definite "need" for outside assistance. Second, our Ss knew in advance what TP's judgment would be. Therefore, they were able to invite or to reject him on the basis of his knowledge which is presumably unavailable in real-life.

Granted these limitations, though, we can proceed to spell out some directions which future research on the problem might take. We would propose two other procedures to be used. It would be advisable to employ a simulation or a role-taking procedure so that we can systematically get at the role of ideology in delegation and so that the important parameters of the real-life setting could be represented. The second approach should be a field one. We will assume such field studies in what follows.

Six problematic events are described in Table VI-2 in terms of two relationships (competitive and conflictful) and three settings (marital, industrial, and international). For example, when the spouse's mother moves in with the young couple, the distribution of power, i.e., the ability to influence collective decisions, becomes problematic. And when a baby is born, the distribution of rewards, in the forms of attention and affection, becomes problematic.

We will suggest a number of questions which a piece of research might try to answer. First, are parties in

conflict more or less likely than parties in competition to seek for, invite, or accept intervention by a third party. We might predict, for example, that the parties would be more disposed to accept intervention as a means of affecting the distribution of rewards than of altering the distribution of power. This may be due to the long-run implications of shifts in power as it affects future distribution of rewards. The answer to the next question will probably condition the answer to this one.

TABLE VI-2

Examples of Problematic Events

		Relationship	
		Competition: Distribution of Rewards Problematic	Conflict: Distribution of Power Problematic
Setting	Marital	Child is born.	Wife's mother moves in.
	Industrial	Labor, management negotiate a new wage contract.	Company tries to have union decertified.
	International	U.S.A. commences tariff negotiations with E.C.M.	Majority ethnic population in Cyprus agitates for union with Greece

Second, how are the parties' dispositions to accede to intervention conditioned by their relative power positions in the relationship? We might predict, for example, that the more powerful party will be favorably disposed to intervention in a competitive relationship, but less so in a

conflictful relationship. In the former case, he will expect the unequal distribution of power to be reflected in any judgment concerning a distribution of rewards. In the latter case, he will be less disposed to intervention because the most he can expect is preservation of the status quo. More likely the judgment will tend to blunt his advantage. We would predict the opposite interaction in the case of the less powerful party.

Third, are participants in a relatively new relationship more or less likely to accede to external interference than participants in a more long-lived relationship? It might be, for example, that members of a long-lived relationship may be more disposed to seek or accept such assistance, on the assumption that they have a greater common investment in the relationship because of its age. On the other hand, there might be more rather than less reluctance in such relationships because the parties fear that a power equilibrium which has been achieved over a long period of time may be endangered.

Fourth, we would be interested in whether such relationships found to prevail at one level of analysis, such as the interpersonal, might not also hold at the organizational.

No single methodology will likely suffice in answering all of the questions we would like to ask. However, the validation of whatever is learned about the conditions underlying the delegation of authority in competitive and conflictful relationships must at some point go out into the field. The experimental setting can be a source of fruitful hypotheses. The present study represents a first effort at this goal.

CHAPTER VII

POPULATION DIFFERENCES

The population differences in which we are interested in this chapter are generally dimensions of personality. Three sets of predictions are tested. The first set of predictions tap hypotheses relating Internal-External Control, Rigidity, Authoritarianism, Intolerance for Ambiguity, and Masculine Orientation, conceived as independent variables, with the tendency to invite or to reject TP, as the dependent variable.

Prediction a-1. External-Control Ss will be more likely to invite TP.

Prediction a-2. High Rigidity Ss will be less likely to invite TP.

Prediction a-3. High Authoritarian Ss will be less likely to invite TP.

Prediction a-4. Ss who are relatively Intolerant of Ambiguity will be more likely to invite TP.

Prediction a-5. Ss who score high on Masculine Orientation will be less likely to invite TP.

The data testing these five predictions are presented in Tables VII-1 through VII-5. The data are decidedly barren of any significant support for the predictions. Only in the case of the Rigidity dimension is there any suggestion of a relationship. In this case, there is a strong positive relationship between Rigidy and the likelihood that S will reject TP, but this holds true only for the males. In all other cases, the t values for males and for females are less than 1.00.

TABLE VII-1

Comparisons of Invitors Versus Rejectors on Internal-External Control

Sex	Group	N	Mean	Sigma	t	p
Male	Invitors	23	9.74	3.98	.92	ns
	Rejectors	63	8.87	3.83		
Female	Invitors	13	9.92	3.75	-.55	ns
	Rejectors	44	10.64	4.21		
Pooled	Invitors	36	9.81	3.85	.27	ns
	Rejectors	107	9.60	4.07		

TABLE VII-2

Comparisons of Invitors Versus Rejectors on Rigidity

Sex	Group	N	Mean	Sigma	t	p
Male	Invitors	23	10.22	3.46	-3.06	.01
	Rejectors	63	12.68	3.25		
Female	Invitors	13	12.77	5.53	.72	ns
	Rejectors	44	11.70	4.39		
Pooled	Invitors	36	11.14	4.42	-1.50	ns
	Rejectors	107	12.28	3.77		

TABLE VII-3

Comparisons of Invitors Versus Rejectors on Authoritarianism

Sex	Group	N	Mean	Sigma	t	p
Male	Invitors	22	4.45	2.24	-.43	ns
	Rejectors	61	4.67	1.96		
Female	Invitors	12	4.25	1.86	-.48	ns
	Rejectors	41	4.56	1.99		
Pooled	Invitors	34	4.38	2.09	-.62	ns
	Rejectors	102	4.63	1.96		

TABLE VII-4

Comparisons of Invitors Versus Rejectors on Intolerance of Ambiguity

Sex	Group	N	Mean	Sigma	t	p
Male	Invitors	23	8.30	2.82	-.81	ns
	Rejectors	62	8.89	3.01		
Female	Invitors	13	8.23	2.45	.79	ns
	Rejectors	42	7.52	2.91		
Pooled	Invitors	36	8.28	2.66	-.10	ns
	Rejectors	104	8.34	3.03		

TABLE VII-5

Comparisons of Invitors Versus Rejectors on Masculine Orientation

Sex	Group	N	Mean	Sigma	t	p
Male	Invitors	22	51.64	28.57	.85	ns
	Rejectors	55	45.58	27.93		
Female	Invitors	12	42.75	26.61	-.98	ns
	Rejectors	43	51.91	29.01		
Pooled	Invitors	34	48.50	27.82	.03	ns
	Rejectors	98	48.36	28.44		

Prediction b-6. Ss who score high on Machiavellianism will be more likely to choose Blue following their partners' invitation to TP.

Prediction b-7. Ss who score high on Rigidity will be more likely to choose Blue following their partners' rejection of TP.

Prediction b-8. Ss who score high on Authoritarianism will be more likely to choose Blue following their partners' rejection of TP.

The analyses testing Predictions b-6 through b-8 are summarized in Tables VII-6 through VII-8. Again, the data reveal no definite trends. There is no evidence for any relationships between Machiavellianism, Rigidity, or Authoritarianism and how S responds to his partner's invitation to or rejection of TP.

TABLE VII-6

Comparisons of Ss on Machiavellianism According to Their Reactions to Partners' TPO

Sex	Comparison*	Group	N	Mean	Sigma	t	p
Male	1 vs. 2	1	9	6.78	3.56	-.12	ns
		2	23	6.96	3.75		
	3 vs. 4	3	21	6.95	3.17	.12	ns
		4	32	6.84	3.10		
Female	1 vs. 2	1	12	7.00	2.95	.37	ns
		2	10	6.50	3.47		
	3 vs. 4	3	17	5.41	2.72	-.37	ns
		4	17	5.88	4.51		
Pooled	1 vs. 2	1	21	6.90	3.14	.09	ns
		2	33	6.82	3.62		
	3 vs. 4	3	38	6.26	3.04	-.34	ns
		4	49	6.51	3.64		

*Group 1: Ss who choose Red when their partners invite TP.
2: Ss who choose Red when their partners reject TP.
3: Ss who choose Blue when their partners invite TP.
4: Ss who choose Blue when their partners reject TP.

TABLE VII-7

Comparisons of Ss on Rigidity According to Their Reactions to Partners' TPO

Sex	Comparison	Group	N	Mean	Sigma	t	p
Male	1 vs. 2	1	9	14.00	2.55	1.24	ns
		2	23	12.39	3.54		
	3 vs. 4	3	22	12.45	3.50	1.63	ns
		4	32	10.91	3.37		
Female	1 vs. 2	1	13	12.85	3.69	.86	ns
		2	10	11.50	3.75		
	3 vs. 4	3	17	12.47	4.69	.82	ns
		4	17	11.00	5.77		
Pooled	1 vs. 2	1	22	13.32	3.26	1.26	ns
		2	33	12.12	3.57		
	3 vs. 4	3	39	12.46	4.01	1.70	ns
		4	49	10.94	4.29		

TABLE VII-8

Comparisons of Ss on Authoritarianism According to Their Reactions to Partners' TPO

Sex	Comparison	Group	N	Mean	Sigma	t	p
Male	1 vs. 2	1	9	4.78	2.33	.14	ns
		2	22	4.68	1.46		
	3 vs. 4	3	21	4.86	2.17	.81	ns
		4	31	4.35	2.23		
Female	1 vs. 2	1	11	5.09	1.22	.84	ns
		2	10	4.50	1.96		
	3 vs. 4	3	16	4.88	2.31	1.61	ns
		4	16	3.69	1.85		
Pooled	1 vs. 2	1	20	4.95	1.76	.69	ns
		2	32	4.63	1.60		
	3 vs. 4	3	37	4.86	2.20	1.56	ns
		4	47	4.13	2.11		

Prediction c-9. Ss high on Rigidity will be more likely to choose Blue.

Prediction c-10. Ss high on Authoritarianism will be more likely to choose Blue.

Prediction c-11. Ss who are relatively Intolerant of Ambiguity will be more likely to choose Blue.

Prediction c-12. Ss who tend to see the social world as uncooperative will be more likely to choose Blue.

Prediction c-13. Ss who tend to be generally hostile will be more likely to choose Blue.

Prediction c-14. Ss oriented to Business will be more likely to choose Blue.

Prediction c-15. Ss oriented to the Humanities will be more likely to choose Red.

The analyses testing Predictions c-9 through c-15 appear in Tables VII-9 through VII-15. There are two major observations to be made regarding the findings in this set. First, Ss who choose Red tend to score higher on scales measuring Rigidity and Authoritarianism. These trends are more pronounced for the females. Second, although statistically nonsignificant in every case, there is a hint that Ss who choose Red may regard people as rather uncooperative and may be more generally hostile towards others. So far as demonstrating any relationships, even contrary ones, prediction of RBO seems to be the most promising area.

TABLE VII-9

Comparisons of Ss Choosing
Red Versus Blue on Rigidity

Sex	Group	N	Mean	Sigma	t	p
Male	Red	57	12.72	3.58	1.25	ns
	Blue	87	11.97	3.53		
Female	Red	47	12.51	3.93	1.95	<.05
	Blue	39	10.67	4.86		
Pooled	Red	104	12.63	3.72	2.06	.05
	Blue	126	11.56	4.01		

TABLE VII-10

Comparisons of Ss Choosing
Red Versus Blue on Authoritarianism

Sex	Group	N	Mean	Sigma	t	p
Male	Red	54	5.00	2.08	1.58	ns
	Blue	83	4.43	2.02		
Female	Red	44	4.82	1.97	2.21	.05
	Blue	36	3.83	2.01		
Pooled	Red	98	4.92	2.02	2.41	.05
	Blue	119	4.25	2.03		

TABLE VII-11

Comparisons of Ss Choosing Red Versus
Blue as a Function of Intolerance of Ambiguity

Sex	Group	N	Mean	Sigma	t	p
Male	Red	56	9.09	2.91	.86	ns
	Blue	87	8.64	3.10		
Female	Red	47	7.77	2.76	1.19	ns
	Blue	37	7.03	2.92		
Pooled	Red	103	8.49	2.91	.80	ns
	Blue	124	8.16	3.13		

TABLE VII-12

Comparisons of Ss Choosing Red Versus Blue on Tendency to Regard Others as Uncooperative

Sex	Group	N	Mean	Sigma	t	p
Male	Red	45	3.98	2.19	.39	ns
	Blue	72	3.83	1.79		
Female	Red	44	3.55	2.57	1.10	ns
	Blue	38	3.00	1.76		
Pooled	Red	89	3.76	2.38	.73	ns
	Blue	110	3.55	1.82		

TABLE VII-13

Comparisons of Ss Choosing Red Versus Blue on General Hostility

Sex	Group	N	Mean	Sigma	t	p
Male	Red	52	5.31	3.44	1.41	ns
	Blue	83	4.53	2.89		
Female	Red	43	4.79	3.06	1.51	ns
	Blue	36	3.86	2.24		
Pooled	Red	95	5.07	3.27	1.82	ns
	Blue	119	4.33	2.72		

TABLE VII-14

Comparisons of Ss Choosing Red Versus Blue on Business Orientation

Sex	Group	N	Mean	Sigma	t	p
Male	Red	52	32.73	23.06	-.43	ns
	Blue	80	34.75	28.23		
Female	Red	42	21.98	17.38	-.56	ns
	Blue	34	24.53	22.28		
Pooled	Red	94	27.93	21.30	-1.10	ns
	Blue	114	31.70	26.91		

TABLE VII-15

Comparisons of Ss Choosing
Red Versus Blue on Humanities Orientation

Sex	Group	N	Mean	Sigma	t	p
Male	Red	52	32.73	23.06	-.43	ns
	Blue	80	34.75	28.23		
Female	Red	46	41.09	25.11	-.51	ns
	Blue	36	44.19	30.07		
Pooled	Red	93	36.91	25.69	-1.05	ns
	Blue	110	41.12	30.38		

Finally, we report some analyses in which we compare our four "types" of Ss. We labeled them as cautious, pessimistic, optimistic, and risky. We have declined to frame some predictions, but rather simply to check a few hunches. Comparisons using Rigidity, Intolerance of Ambiguity, and Business Orientation are presented in Tables VII-16 through VII-18. Again, interesting differences fail to materialize.

The findings reported in this chapter are easily and briefly summarized. Fifteen predictions were tested on each sex, making a total of 30 tests. In only three cases did we obtain statistically significant results: a-2, c-9, and c-10. In the first of these three instances, Rigid males were more likely to reject TP. In the second and third instances, Rigid and Authoritarian females were more likely to choose Red, the cooperative response.

Since so few predictions were sustained, it is best to regard them with some suspicion. Nevertheless, we will consider why so many nonfindings comprise our principal finding in a later chapter. Because of the paucity of positive

findings and because such a large number of instruments were employed, a number of correlation matrices and summaries of factor analyses are presented in Appendix B.

TABLE VII-16

Comparisons of Ss, Defined by Their TPO and Hypothetical RBO, on Rigidity

Sex	Comparison*	Group	N	Mean	Sigma	t	p
Male	1 vs. 2	1	11	9.82	2.82	-.52	ns
		2	12	10.58	4.06		
	3 vs. 4	3	42	12.79	3.17	.35	ns
		4	21	12.48	3.46		
Female	1 vs. 2	1	8	14.13	5.06	.83	ns
		2	4	11.25	6.85		
	3 vs. 4	3	36	12.00	4.35	1.16	ns
		4	9	10.11	4.40		
Pooled	1 vs. 2	1	19	11.63	4.37	.58	
		2	16	10.75	4.64		
	3 vs. 4	3	78	12.42	3.76	.81	ns
		4	30	11.77	3.85		

*Groups: 1-cautious; 2-pessimistic; 3-optimistic; 4-risky.

TABLE VII-17

Comparisons of Ss, Defined by Their TPO and Hypothetical RBO, on Intolerance of Ambiguity

Sex	Comparison	Group	N	Mean	Sigma	t	p
Male	1 vs. 2	1	11	7.45	1.75	-1.42	ns
		2	12	9.08	3.42		
	3 vs. 4	3	41	8.78	2.75	-.39	ns
		4	21	9.10	3.52		
Female	1 vs. 2	1	8	8.25	2.92	-.32	ns
		2	4	8.75	1.50		
	3 vs. 4	3	35	7.46	2.87	-.15	ns
		4	8	7.63	3.11		
Pooled	1 vs. 2	1	19	7.79	2.27	-1.35	ns
		2	16	9.00	3.01		
	3 vs. 4	3	76	8.17	2.87	-.78	ns
		4	29	8.69	3.42		

TABLE VII-18

Comparisons of Ss, Defined by Their TPO and Hypothetical RBO, on Business Orientation

Sex	Comparison	Group	N	Mean	Sigma	t	p
Male	1 vs. 2	1	11	22.64	27.68	.56	ns
		2	11	17.55	12.14		
	3 vs. 4	3	37	35.49	26.27	-.57	ns
		4	17	40.12	30.90		
Female	1 vs. 2	1	6	22.67	27.45	.30	ns
		2	3	17.00	23.39		
	3 vs. 4	3	33	23.64	16.30	-.73	ns
		4	8	29.13	28.38		
Pooled	1 vs. 2	1	17	22.65	26.73	.66	ns
		2	14	17.43	14.05		
	3 vs. 4	3	70	29.90	22.78	-1.16	ns
		4	25	36.60	29.98		

CHAPTER VIII

INTERPRETATION OF POPULATION DIFFERENCES

This chapter might also be titled "The irrelevance of personality." Before too much validity to this claim be conceded, let us first consider such relationships as were found to be significant. It was found, contrary to what we expected, that female Ss who scored high on Rigidity and Authoritarianism were more likely to choose Red. Although not significant, the data for the male Ss were in the same direction. Our problem is to explain these peculiar findings.

It warrants repeating to say that social scientists are as much given to thinking in terms of images as anyone else. They tend to "balance," too. Good traits and good behaviors go together. Bad traits and bad behaviors go together. So people who are high on Authoritarianism are more likely to be distrustful and untrustworthy (Deutsch, 1958, 1960), people who are Intolerant of Ambiguity are more likely to be hawks than doves (Pilisuk, et al., 1965), Isolationists are more likely to compete than are Internationalists (Lutzker, 1960), and competitive behavior is related to Flexible-Ethicality (Bixenstine, et al., 1963, 1964). It is disconcerting, therefore, when in the midst of generally nonsignificant trends we find several which are significant, but which violate the natural order.

It is our position that such significant findings as were obtained occurred by chance alone. But let us entertain the notion for the moment that the finding described

above actually means something. We would assume that a "responsive" or flexible person is one who "adapts" to new situations and to the limits which they impose. Stimulus variance has its counterpart in response variance. Such a person responds to the particularity of the present rather than arbitrarily subsuming it under some favored operational assumption. And this is what the Rigidity and Authoritarianism scales tap. We would explain the present findings by arguing that highly Rigid and Authoritarian Ss are just those people who ignore the fact that Blue dominates and yields the higher average expected payoff, and instead choose Red. The flexible person, by contrast, sees the limitations on the choices open to him. He may not like what he sees, but nevertheless he chooses accordingly.

All of this rationalizing of the couple of significant trends in the data should not obscure the main finding, that being the prevalence of "nonfindings." The common failure to obtain a consistent picture of personality-behavior relationships in the PD can usually be explained in terms of the usually large number of trials or games. The feedback effects of the relationship tends, over trials, to wash out what would otherwise be attributable to differences in personality. As Rapoport & Chammah (1965) observe, personality differences are erased to the extent that Ss come to mirror each other over trials and to lock-in on either cooperation or competition.

We had supposed, however, that the present experiment would capitalize on personality determinants when and where

they should be most potent, i.e., on TPO and RBO, the only two trials. Certainly TPO in the Experimental groups and RBO in the Control groups were free from any feedback effects.

Why were there not more significant relationships? One answer, of course, is that the predictions were inappropriately applied to the current situation. That is, certain assumptions underlying the construct(s) in question were not satisfied operationally. It is true that the warrant for some of the predictions is not entirely convincing, but part of the problem lies with the specification of the properties of the construct in the research literature. In any event, the writer is not struck with any gross deficiencies in the formulation of the hypotheses. Even if incorrectly formulated, we might expect a few more relationships in one direction or the other.

Another obstacle is the instruments themselves. Any construct is obviously qualified by the metric company it keeps. Again, all that can be said is that almost all of the instruments employed here have been employed before, in a variety of circumstances and with a variety of results. The only really new use of an instrument was in the case of Schelling's Tacit Bargaining and Tacit Communication scales. These proved to be of no predictive power whatsoever.

Perhaps the subject population was at fault. After all, freshmen and sophomores are a relatively homogeneous group. The lack of spread on certain scales, e.g., Internal-External Control, means that any "real" differences which

may be there in a more heterogeneous population do not have a good opportunity to manifest themselves.

We would like to make one final suggestion to explain the prevalence of nonfindings. It is now understood in the area of projective testing that we cannot merely assume that a personality trait will operate in all circumstances. It is necessary to activate a motive state or to engage an expectancy in a person. Nor can we merely assume the direction which an instrumental act will take. The net effect, then, is that we fail to obtain significant relationships between eminently reasonable personality constructs and the principal dependent variables.

Consider, for example, our failure to demonstrate any relationship between Machiavellianism and Ss' responses to their partners' decision to invite or not to invite TP. It would have been desirable to have had some measure of how Ss defined the PD situation. Thus, there is reason to suppose that a good proportion of the High Temptation males defined it as a "gambling" situation. We might suppose that they would respond to their partners' behavior quite differently than Ss who may have defined the situation as basically "interpersonal" in nature. We would predict that Ss who defined the situation as interpersonal would yield the predicted relationship between Machiavellianism and the dependent behavior. Gamblers would not. Several attempts were made to conduct such analyses, but unfortunately we lacked the kinds of questions which would provide a valid indicator of S's definitions.

Even so, additional data (correlation matrices and factor analyses) are included in Appendix B.

CHAPTER IX

SUMMARY AND CONCLUSIONS

We have reported findings from a study of 234 males and females, using a modified Prisoner's Dilemma game. A number of hypotheses relating experimental manipulations to behavior and dimensions of personality to behavior were tested.

Control Ss played one of two standard PD games for real money. Experimental Ss were given, in addition, the opportunity to invite or to reject a mediator to choose in their mutual behalf. Ss were run in groups of four to six and were led to believe that their partners were present in the group. In fact, Ss were all paired with E who responded according to a prearranged schedule.

All Ss in the Experimental groups who invited TP were told that their partners did not wish to invite him. Of the Ss who rejected TP, half were told that their partners had invited him and the others that their partners had rejected him. In no case did TP actually intervene, a fact unknown to the Ss.

The major hypothesis of the study was not sustained. Although the two matrices generated significantly different levels of competition, the High Temptation (high competition) matrix did not result in more invitations to TP. Males and females did not differ in their invitations to TP, although females were found to be significantly more cooperative and less risky than males.

In spite of the fact that invitations and rejections tended to be interpreted as cooperative and competitive gestures, respectively, the reject-reject pattern produced the lowest rate of competition in all three Experimental groups. This pattern was also found to be least likely to give rise to speculation about the meaning of TPO for RBO.

On the basis of our findings, we are in no position to say much conclusively about the first question which we set out to answer. That is, we know little more now than when we started about the conditions under which people will invite or reject external aid. The competitiveness of the matrices had little impact on TPO. We conclude that we did not create the necessary "need" for TP to make this a viable option for more than a minority of the Ss. The smallness of the rewards, and particularly the absence of any significant possibility of suffering loss, seemed to be responsible for this failure. The dominant interpretation given by the High Temptation males was that the situation was a gambling one, rather than an interpersonal one.

We can say a bit more in answer to the second question. We were interested in the feedback effects of collective rejections of TP. These findings were interpreted in terms of an activation model.

Finally, an extensive set of personality variables was tested against the major dependent variables. Very few significant relationships were found, so that these were interpreted as occuring by chance.

A number of questions were posed about the conditions under which intervention will be favored by parties to competitive and/or conflictful relationships.

APPENDIX A

EXPERIMENTAL INSTRUMENTS AND PERSONALITY INVENTORIES

Form A - High Temptation matrix.

Form B - Low Temptation matrix.

Form C - Red-Blue Option sheet (RBO; Control groups).

Form D - Postexperimental Questionnaire (Control groups).

Form E - Invitation to the Third Party (TPO; Experimental groups).

Form F - Collective Invitation to the Third Party and RBO (Experimental groups).

Form G - Postexperimental Questionnaire (Experimental groups).

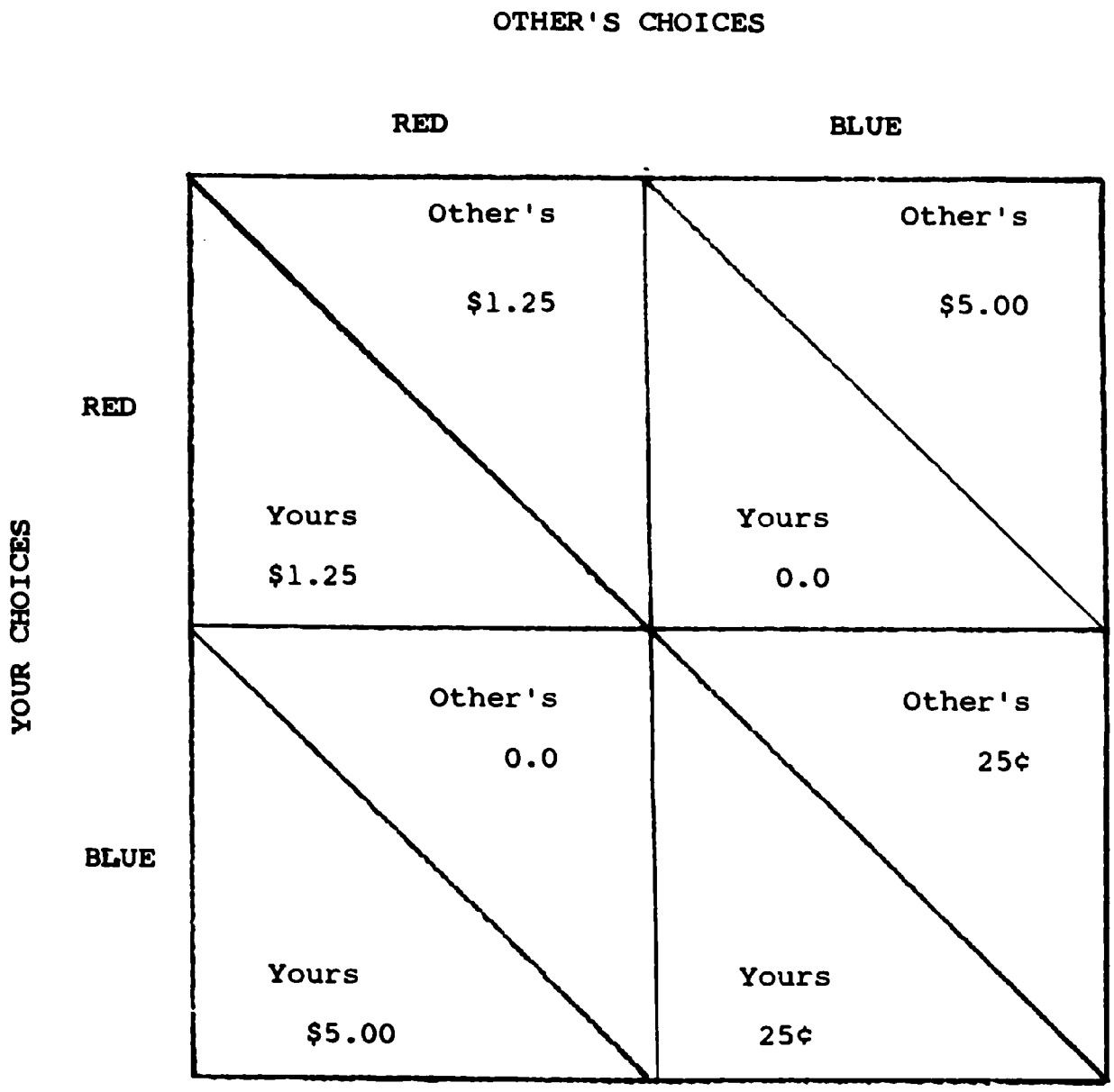
Form H - Personal Reaction Inventory (Marlowe-Crowne Approval Motive scale).

Form I - Social Reaction Inventory (Internal - External Control scale).

Form J - Attitude Inventories (Tacit Communication; Tacit Bargaining; Machiavellianism-IV; Rigidity; Authoritarianism; Human Nature; Anomie; Intolerance of Ambiguity; Resentment; Suspicion; Guilt).

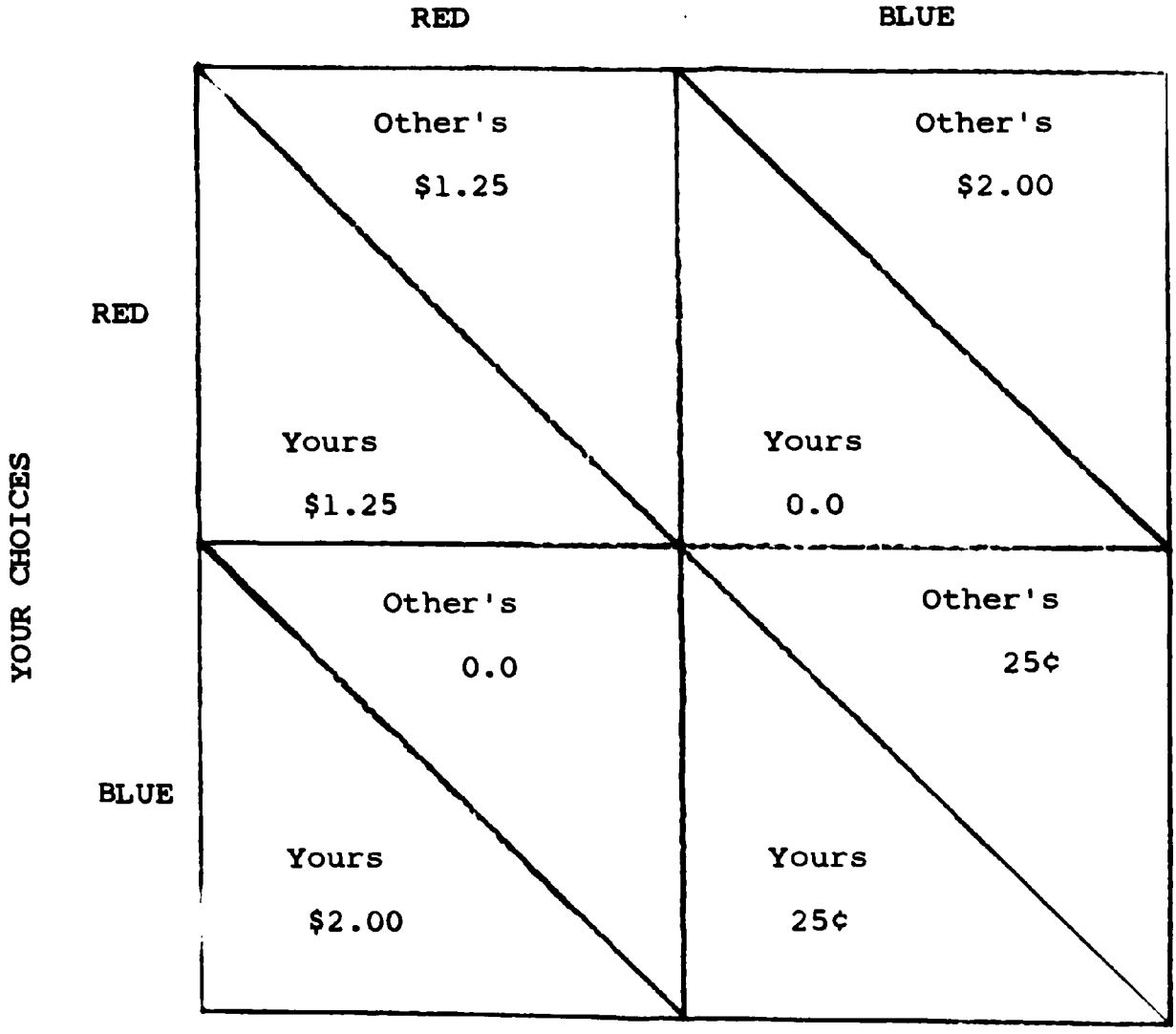
Form K - Feedback to Subjects.

Scoring Keys for Personality Measures.


OTHER'S CHOICES
RED
BLUE
YOUR CHOICES
RED
BLUE
Other's
$1.25
Yours
$1.25
Other's
$5.00
Yours
0.0
Other's
0.0
Yours
$5.00
Other's
25¢
Yours
25¢

(FORM A)

OTHER'S CHOICES



(FORM B)

Please circle your choice below:

RED **BLUE**

signed.....

Why did you choose the alternative you circled?_____

_____

_____

_____

_____

_____

_____

_____

(FORM C)

POSTEXPERIMENTAL QUESTIONNAIRE Name.....

1. Did you experience any difficulties understanding the instructions? (Circle one) YES NO

   If YES, at what point in the instructions?_____

_____

_____

_____

2. (a) Did the Experimenter seem to want you:

   to choose Red? _____

   to choose Blue? _____

   don't know _____

   (b) Explain your answer in (a). _____

_____

_____

_____

_____

_____

3. Please express any feelings you may have about the experiment, the Experimenter, or the procedure.

_____

_____

_____

_____

_____

_____

_____

_____

(FORM D)

INVITATION TO THE THIRD PARTY

Check one of the following statements:

1. I would like to invite the Third Party to intervene. _____

2. I do not wish to invite the Third Party to intervene. _____

Signed . . . . . .

1. What was the reason for your decision above? _____

_____

_____

_____

_____

_____

2. What do you suppose your partner decided? (Circle one)

To invite the Third Party Not to invite the Third Party

3. What do you suppose was the reason for your partner's decision?

_____

_____

_____

_____

_____

4. If the Third Party does not intervene, which alternative (Red or Blue) do you think you would choose? (Circle one)

Red Blue

5. If the Third Party does not intervene, which alternative (Red or Blue) do you think your partner would choose? (Circle one)

Red Blue

(FORM E)

COLLECTIVE INVITATION TO THE THIRD PARTY

Your Invitation YES NO

Partner's Invitation YES NO

Under the rule that the weaker invitation shall prevail, the collective decision is

to invite the Third Party _____

not to invite the Third Party _____

In accordance with your collective decision, proceed to Section ___, below.

Section A

In accordance with the Instructions, the Third Party chooses the top left cell of the matrix in behalf of you and your partner.

The Instructions also state that there is a charge of 20% to be deducted.

Therefore, you and your partner each receive $1.00.

If you had this choice to do over again, would you invite the Third Party to intervene? Why? (Answer on back of this page.)

Section B

Since the collective decisions of you and your Partner is not to invite the Third Party to intervene, you will proceed to choose between Red and Blue. Circle your choice below.

RED BLUE

Why did you choose the alternative you circled? (Answer on back of this page.)

signed.....

(FORM F)

POSTEXPERIMENTAL QUESTIONNAIRE

1. How did you interpret your partner's acceptance or rejection of the Third Party? (Circle the one which applies.)

2. How do you suppose your partner interpreted your acceptance or rejection of the Third Party? (Circle the one which applies.)

3. Did you have a sufficiently meaningful conception of the Third Party so that this option was plausible? (Circle one.) YES NO

   IF NO, please explain

4. Did you experience any difficulties understanding the instructions? (Circle one.) YES NO

   IF YES, at what point in the instructions?

(FORM G)

Page 2 of Form G

5. (a) Did the Experimenter seem to want you:

to accept the Third Party? _____

to reject the Third Party? _____

don't know _____

(b) Explain your answer in (a). _____

6. (a) If the Third Party did not intervene, so that you and your partner played the matrix yourselves, did the Experimenter seem to want you:

to choose Red? _____

to choose Blue? _____

don't know _____

(b) Explain your answer in (b(a). _____

7. Please express any feelings you may have about the experiment, the Experimenter, or the procedure.

PERSONAL REACTION INVENTORY

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you personally. Indicate your response by making an "X" in the appropriate box beside each statement.

T	F		
( )	( )	1.	Before voting I thoroughly investigate the qualifications of all the candidates.
( )	( )	2.	I never hesitate to go out of my way to help someone in trouble.
( )	( )	3.	It is sometimes hard for me to go on with my work if I am not encouraged.
( )	( )	4.	I have never intensely disliked anyone.
( )	( )	5.	On occasion I have had doubts about my ability to succeed in life.
( )	( )	6.	I sometimes feel resentful when I don't get my way.
( )	( )	7.	I am always careful about my manner of dress.
( )	( )	8.	My table manners at home are as good as when I eat out in a restaurant.
( )	( )	9.	If I could get into a movie without paying and be sure I was not seen, I would probably do it.
( )	( )	10.	On a few occasions, I have given up doing something because I thought too little of my ability.
( )	( )	11.	I like to gossip at times.

Page 2 of Form H

T	F		
( )	( )	12.	There have been times when I felt like rebelling against people in authority even though I knew they were right.
( )	( )	13.	No matter who I'm talking to, I'm always a good listener.
( )	( )	14.	I can remember "playing sick" to get out of something.
( )	( )	15.	There have been occasions when I took advantage of someone.
( )	( )	16.	I'm always willing to admit when I make a mistake.
( )	( )	17.	I always try to practice what I preach.
( )	( )	18.	I don't find it particularly difficult to get along with loud-mouthed, obnoxious people.
( )	( )	19.	I sometimes try to get even, rather than forgive and forget.
( )	( )	20.	When I don't know something I don't at all mind admitting it.
( )	( )	21.	I am always courteous, even to people who are disagreeable.
( )	( )	22.	At times I have really insisted on having things my own way.
( )	( )	23.	There have been occasions when I felt like smashing things.
( )	( )	24.	I would never think of letting someone else be punished for my wrongdoings.

Page 3 of Form H

T	F		
( )	( )	25.	I never resent being asked to return a favor.
( )	( )	26.	I have never been irked when people expressed ideas very different from my own.
( )	( )	27.	I never make a long trip without checking the safety of my car.
( )	( )	28.	There have been times when I was quite jealous of the good fortune of others.
( )	( )	29.	I have almost never felt the urge to tell someone off.
( )	( )	30.	I am sometimes irritated by people who ask favors of me.
( )	( )	31.	I have never felt that I was punished without cause.
( )	( )	32.	I sometimes think when people have a misfortune they only get what they deserved.
( )	( )	33.	I have never deliberately said something that hurt someone's feelings.

SOCIAL REACTION INVENTORY

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief: obviously there are no right or wrong answers.

In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned. Also try to respond to each item independently when making your choice; do not be influenced by your previous choices.

Remember: Be sure to find an answer for every choice. Select that alternative which you personally believe to be more true.

(FORM I)

Page 2 of Form I

I more strongly believe that:

1. a. Children get into trouble because their parents punish them too much.
   b. The trouble with most children nowadays is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to bad luck.
   b. People's misfortunes result from the mistakes they make.

3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
   b. There will always be wars, no matter how hard people try to prevent them.

4. a. In the long run people get the respect they deserve in this world.
   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. a. The idea that teachers are unfair to students is nonsense.
   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks one cannot be an effective leader.
   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try some people just don't like you.
   b. People who can't get others to like them don't understand how to get along with others.

8. a. Heredity plays the major role in determining one's personality.
   b. It is one's experiences in life which determine what they're like.

9. a. I have often found that what is going to happen will happen.
   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. a. In the case of the well-prepared student there is rarely if ever such a thing as an unfair test.
    b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

Page 3 of Form I

I more strongly believe that:

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
    b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence in government decisions.
    b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. When I make plans, I am almost certain that I can make them work.
    b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyway.

14. a. There are certain people who are just no good.
    b. There is some good in everybody.

15. a. In my case getting what I want has little or nothing to do with luck.
    b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
    b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
    b. By taking an active part in political and social affairs the people can control world events.

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
    b. There really is no such thing as "luck."

19. a. One should always be willing to admit his mistakes.
    b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.
    b. How many friends you have depends upon how nice a person you are.

21. a. In the long run the bad things that happen to us are balanced by the good ones.
    b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

Page 4 of Form I

I more strongly believe that:

22. a. With enough effort we can wipe out political corruption.
    b. It is difficult for people to have much control over the things politicians do in office.

23. a. Sometimes I can't understand how teachers arrive at the grades they give.
    b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.
    b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.
    b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don't try to be friendly.
    b. There's not much use in trying too hard to please people, if they like you, they like you.

27. a. There is too much emphasis on athletics in high school.
    b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.
    b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29. a. Most of the time I can't understand why politicians behave the way they do.
    b. In the long run the people are responsible for bad government on a national as well as on a local level.

DEPARTMENT OF PSYCHOLOGY

ATTITUDE INVENTORIES

This booklet consists of a number of attitude inventories. Working at average speed, they require approximately 50 to 60 minutes to complete.

As with all such forms administered by members of the Department of Psychology, your answers are confidential. Only the principal researcher has access to them, and this only for purposes of analysis.

It is important that you **ANSWER EVERY ITEM** and **WORK ALONE.**

When you have answered the background questions below, please turn to the first Section and work through the booklet, answering each Section and each item in turn.

NAME. . . . . **BIRTH DATE**. . . . . .

HOME ADDRESS. . . . . .

Father's Occupation . . . . . .

What kind of work does he do? . . . . . .

. . . . . .

Ages of older brothers: . . . Ages of younger brothers: . .

Ages of older sisters:. . . . Ages of younger sisters:. . .

Circle ages of brothers and sisters (older and younger) who were <u>still living at home</u> when you finished high school.

Academic major (or field of major interest if you have not yet declared a major):. . . . . Do you plan to pursue academic work beyond the Bachelor degree level?

YES NO

What are your career goals? (What kind of work do you hope to pursue following university?). . . . . .

. . . . . .

. . . . . .

Page 2 of Form J

SECTION I

We are interested in the extent to which people can agree in their answers in the absence of communication between them. The prizes referred to are imaginary.

1. Name "heads" or "tails." If you and your partner name the same, you both win a prize.

---

2. Circle one of the numbers listed in the line below. You win if you all succeed in circling the same number.

7 100 13 261 99 555

3. Put a check mark in one of the sixteen squares. You win if you all succeed in checking the same square.



4. You are to meet somebody in Ann Arbor. You have not been instructed where to meet; you have no prior understanding with the person on where to meet; and you cannot communicate with each other. You are simply told that you will have to guess where to meet and that he is being told the same thing and that you will just have to make your guesses coincide.

---

5. You were told the date but not the hour of the meeting in no. 4; the two of you must guess the exact minute of the day for meeting. At what time will you appear at the meeting place that you elected in no. 4?

Page 3 of Form J

6. Write some positive number. If you all write the same number you win.

_____

7. Name an amount of money. If you all name the same amount, you can have as much as you named.

_____

8. You are to divide $100 into two piles, labeled A and B. Your partner is to divide another $100 into two piles, labeled A and B. If you allot the same amounts to A and B, respectively, that your partner does, each of you gets $100; if your amounts differ from his, neither of you gets anything.

A _____ B _____

9. On the first ballot, candidates polled as follows:

Smith	19	Robinson	29
Jones	28	White.	9
Brown	15		

The second ballot is about to be taken. You have no interest in the outcome except that you will be rewarded if someone gets a majority on the second ballot and you vote for the one who does. Similarly, all voters are interested only in voting with the majority, and everybody knows that this is everybody's interest. For whom do you vote on the second ballot?

_____

Page 4 of Form J

SECTION II

We are interested in the extent to which people can come to agreements in the absence of communication between them. The prizes referred to are imaginary.

1. A and B are to choose "heads" or "tails" without communicating. If both choose "heads," A gets $3 and B gets $2; if both choose "tails," A gets $2 and B gets $3. If they choose differently, neither gets anything. You are B; which do you choose? (Note that if both choose at random, there is only a 50-50 chance of successful coincidence and an expected value of $125 apiece--less than either $3 or $2.)

---

2. You and your two partners (or rivals) each have one of the letters A, B, and C. Each of you is to write these three letters, A, B, and C, in any order. If the order is the same on all three of your lists, you get prizes totaling $6, of which $3 goes to the one whose letter is first on all three lists, $2 to the one whose letter is second, and $1 to the person whose letter is third. If the letters are not in identical order on all three lists, none of you gets anything. Your letter is C: write here the three letters in the order you choose.

_____, _____, _____

3. You and your partner (rival) are each given a piece of paper, one blank and the other with an "X" written on it. The one who gets the "X" has the choice of leaving it alone or erasing it; the one who gets the blank sheet has the choice of leaving it blank or writing an "X" on it. If, when you have made your choices without communicating, there is an "X" on only one of the sheets, the holder of the "X" gets $3 and the holder of the blank sheet gets $2. If both sheets have "X's" or both sheets are blank, neither gets anything. Your sheet of paper is the blank one; do you leave it blank or write an "X"?

---

4. You and your partner (rival) are to be given $100 if you can agree on how to divide it without communicating. Each of you is to write the amount of his claim on a sheet of paper; and if the two claims add to no more than $100, each gets exactly what he claimed. If the two claims exceed $100, neither of you gets anything. How much do you claim?

$_____

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5. You and your partner are each to pick one of the five letters, K, G, W, L, or R. If you pick the same letter, you get prizes; if you pick different letters, you get nothing. The prizes you get depend on the letter you pick; but the prizes are not the same for each of you, and the letter that would yield you the highest prize may or may not be his most profitable letter. For you the prizes would be as follows:

K $4	L $2
G $3	R $5
W $1	

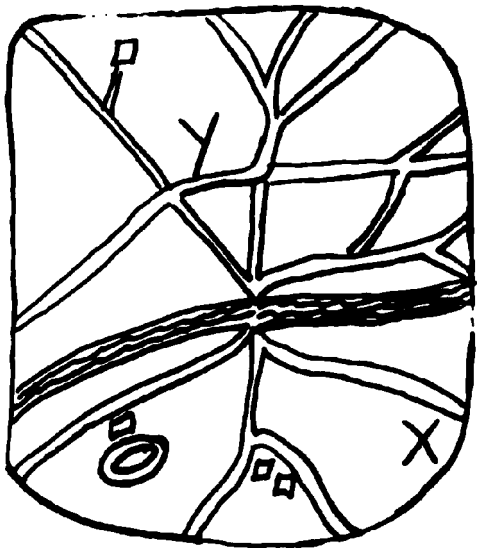
You have no idea what his schedule of prizes looks like. You begin by proposing to him the letter R, that being your best letter. Before he can reply, the master of ceremonies intervenes to say that you were not supposed to be allowed to communicate and that any further communication will disqualify you both. You must simply write down one of the letters, hoping that the other chooses the same letter. Which letter do you choose?

---

6. Two opposing forces are at the points marked X and Y in the map below. The commander of each force wishes to occupy as much of the area as he can and knows the other does too. But each commander wishes to avoid an armed clash and knows the other does too. Each must send forth his troops with orders to take up a designated line and to fight if opposed. Once the troops are dispatched, the outcome depends only on the lines that the two commanders have ordered their troops to occupy. If the lines overlap, the troops will be assumed to meet and fight, to the disadvantage of both sides. If the troops take up positions that leave any appreciable space unoccupied between them, the situation will be assumed "unstable" and a clash inevitable. Only if the troops are ordered to occupy identical lines or lines that leave virtually no unoccupied space between them will a clash be avoided. In that case, each side obtains successfully the area it occupied, the advantage going to the side that has the most valuable area in terms of land and facilities. You command the forces located at the point marked X. Draw on the map the line that you send your troops to occupy.

(Map on next page.)

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River Road Building Pond

7. A and B have incomes of $100 and $150 per year, respectively. They are notified of each other's income and told that they must begin paying taxes totaling $25 per year. If they can reach agreement on shares of this total, they may share the annual tax bill in whatever manner they agree on. But they must reach agreement without communication; each is to write down the share he proposes to pay, and if the shares total $25 or more, each will pay exactly what he proposed. If the proposed shares fail to add up to $25, however, each will individually be required to pay the full $25, and the tax collectors will keep the surplus. You are B; how much do you propose to pay?

$_____

8. A loses some money, and B finds it. Under the house rules, A cannot have the money back until he agrees with the finder on a suitable reward, and B cannot keep any except what A agrees to. If no agreement is reached the money goes back to the house. The amount is $16, and A offers $2 as a reward. B refuses, demanding half the money for himself. An argument ensues, and the house intervenes, insisting that each write his claim, once and for all, without further communication. If the claims are consistent with the $16 total, each will receive exactly what he claims; but if together they claim more that $16, the funds will be confiscated by the house. As they sit pondering what claims to write, a well-known and respected mediator enters and offers to help. He cannot, he says, participate in any bargaining, but he can make a "fair"

proposal. He approaches A and says, "I think a reasonable division under the circumstances would be a 2-1 split, the original owner getting two-thirds and the finder one-third, perhaps rounded off to $11 and $5, respectively. I shall make the same suggestion to him." Without waiting for any response, he approaches the finder, makes the same suggestion, and says that he made the same suggestion to the original owner. Again without waiting for any response, he departs. You are A; what claim do you write?

$_____

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SECTION III

This Section contains a number of statements concerning a variety of beliefs. Your task is to indicate the degree to which you agree or disagree with each of these statements.

If you:	Circle:
Strongly Agree	SA
Agree but not strongly	A
Neither agree nor disagree (or don't know)	N
Disagree but not strongly	D
Strongly Disagree	SD

1.	Never tell anyone the real reason you did something unless it is useful to do so.	SA	A	N	D	SD
2.	The best way to handle people is to tell them what they want to hear.	SA	A	N	D	SD
3.	One should take action only when sure it is morally right.	SA	A	N	D	SD
4.	Most people are basically good and kind.	SA	A	N	D	SD
5.	It is safest to assume that all people have a vicious streak and it will come out when they are given a chance.	SA	A	N	D	SD
6.	Honesty is the best policy in all cases.	SA	A	N	D	SD
7.	There is no excuse for lying to someone else.	SA	A	N	D	SD
8.	Generally speaking, men won't work hard unless they're forced to do so.	SA	A	N	D	SD

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9.	All in all, it is better to be humble and honest than to be important and dishonest.	SA	A	N	D	SD
10.	When you ask someone to do something for you, it is best to give the real reasons for wanting it rather than giving reasons which might carry more weight.	SA	A	N	D	SD
11.	Most people who get ahead in the world lead clean, moral lives.	SA	A	N	D	SD
12.	Anyone who completely trusts anyone else is asking for trouble.	SA	A	N	D	SD
13.	The biggest difference between most criminals and other people is that the criminals are stupid enough to get caught.	SA	A	N	D	SD
14.	Most men are brave.	SA	A	N	D	SD
15.	It is wise to flatter important people.	SA	A	N	D	SD
16.	It is possible to be good in all respects.	SA	A	N	D	SD
17.	Barnum was wrong when he said that there's a sucker born every minute.	SA	A	N	D	SD
18.	It is hard to get ahead without cutting corners here and there.	SA	A	N	D	SD
19.	People suffering from incurable diseases should have the choice of being put painlessly to death.	SA	A	N	D	SD
20.	Most men forget more easily the death of their father than the loss of their property.	SA	A	N	D	SD

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SECTION IV

The items in this Section are statements which may or may not describe you. Please circle "T" (True) or "T > F" (Somewhat More True than False) or "F > T" (Somewhat More False than True) or "F" (False) in answer to each question.

1.	I am often the last one to give up trying to do a thing.	T	T > F	F > T	F
2.	There is usually only one best way to solve most problems.	T	T > F	F > T	F
3.	I prefer work that requires a great deal of attention to detail.	T	T > F	F > T	F
4.	I often become so wrapped up in something I am doing that I find it difficult to turn my attention to other matters.	T	T > F	F > T	F
5.	I dislike to change my plans in the midst of an undertaking.	T	T > F	F > T	F
6.	I never miss going to church.	T	T > F	F > T	F
7.	I usually maintain my own opinions even though many other people may have a different point of view.	T	T > F	F > T	F
8.	I find it easy to stick to a certain schedule, once I have started it.	T	T > F	F > T	F
9.	I do not enjoy having to adapt myself to new and unusual situations.	T	T > F	F > T	F
10.	I prefer to stop and think before I act even on trifling matters.	T	T > F	F > T	F
11.	I try to follow a program of life based on duty.	T	T > F	F > T	F
12.	I usually find that my own way of attacking a problem is best, even though it doesn't always seem to work in the beginning.	T	T > F	F > T	F

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13.	I am methodical in whatever I do.	T	T > F	F > T	F
14.	I think it is usually wise to do things in a conventiional way.	T	T > F	F > T	F
15.	I always finish tasks I start, even if they are not very important.	T	T > F	F > T	F
16.	I often find myself thinking of the same tunes or phrases for days at a time.	T	T > F	F > T	F
17.	I have a work and study schedule which I follow carefully.	T	T > F	F > T	F
18.	I usually check more than once to be sure that I have locked a door, put out the light, or something of the sort.	T	T > F	F > T	F
19.	I have never done anything dangerous for the thrill of it.	T	T > F	F > T	F
20.	I believe that promptness is a very important personality characteristic.	T	T > F	F > T	F
21.	I am always careful about my manner of dress.	T	T > F	F > T	F
22.	I always put on and take off clothes in the same order.	T	T > F	F > T	F

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SECTION V

This Section contains a number of statements concerning a variety of beliefs. Your task is to indicate the degree to which you agree or disagree with each of these statements.

If you:	Circle:
Strongly Agree	SA
Agree but not strongly	A
Neither agree nor disagree (or don't know)	N
Disagree but not strongly	D
Strongly Disagree	SD

1.	The most important thing to teach children is absolute obedience to their parents.	SA	A	N	D	SD
2.	You can't be too careful in your dealing with people.	SA	A	N	D	SD
3.	There's little use in writing to public officials.	SA	A	N	D	SD
4.	People tend to place too much emphasis on respect for authority.	SA	A	N	D	SD
5.	It may well be that children who talk back to their parents actually respect them more in the long run.	SA	A	N	D	SD
6.	Human nature is fundamentally cooperative.	SA	A	N	D	SD
7.	Any good leader should be strict with people under him in order to gain their respect.	SA	A	N	D	SD
8.	It seems almost everything these days is a racket.	SA	A	N	D	SD

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9.	These days a person does not really know whom he can count on.	SA	A	N	D	SD
10.	I seldom have any enthusiasm for respect and obedience for authority.	SA	A	N	D	SD
11.	There are two kinds of people in the world: the weak and the strong.	SA	A	N	D	SD
12.	No one is going to care much what happens to you when you get right down to it.	SA	A	N	D	SD
13.	Often when I'm with people I feel lonely.	SA	A	N	D	SD
14.	Since life is so short we might as well eat, drink, and be merry.	SA	A	N	D	SD
15.	Prison is too good for sex criminals. They should be publicly whipped or worse.	SA	A	N	D	SD
16.	If you don't watch yourself people will take advantage of you.	SA	A	N	D	SD
17.	It would be preferable if there were less enthusiasm about strict discipline, rugged determination, and the will to work and fight for family and country.	SA	A	N	D	SD
18.	No decent man can respect a woman who has had sex relations before marriage.	SA	A	N	D	SD
19.	These days I often find myself giving up hope of amounting to anything.	SA	A	N	D	SD
20.	Most people are inclined to look out for themselves and are not inclined to help others.	SA	A	N	D	SD
21.	I would not myself consider patriotism and loyalty to be the first requirements of a good citizen.	SA	A	N	D	SD

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SECTION VI

The items in this Section are statements which may or may not describe your feelings and be - liefs. Please circle "T" (True) or "T > F" (Somewhat more True than False), "F > T" (Somewhat more False than True) or "F" (False) in response to each question.

1.	I often wish people would be more definite about things.	T	T > F	F > T	F
2.	I don't seem to get what's coming to me.	T	T > F	F > T	F
3.	I know that people tend to talk about me behind my back.	T	T > F	F > T	F
4.	The few times I have cheated, I have suffered unbearable feelings of remorse.	T	T > F	F > T	F
5.	There is more than one right way to do anything.	T	T > F	F > T	F
6.	It is always better to have a definite course of action than to be vacillating among several possibilities.	T	T > F	F > T	F
7.	The best leaders give specific enough instructions so that those under them have nothing to worry about.	T	T > F	F > T	F
8.	Other people always seem to get the breaks.	T	T > F	F > T	F
9.	I don't like to undertake any project unless I have a pretty good idea as to how it will turn out.	T	T > F	F > T	F
10.	When I look back on what's happened to me, I can't help feeling mildly resentful.	T	T > F	F > T	F
11.	A smart person gets his life into a routine so that he is not always being bothered by petty details.	T	T > F	F > T	F

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12.	I tend to be on my guard with people who are somewhat more friendly than I expected.	T	T > F	F >T	F
13.	There are a number of people who seem to dislike me very much.	T	T > F	F >T	F
14.	I don't like things to be uncertain and unpredictable.	T	T > F	F >T	F
15.	I sometimes have had thoughts which make me feel ashamed of myself.	T	T > F	F >T	F
16.	People who shirk on the job must feel very guilty.	T	T > F	F >T	F
17.	Nobody can have feelings of love and hate toward the same person.	T	T > F	F >T	F
18.	It is annoying to listen to a lecturer who cannot seem to make up his mind as to what he really believes.	T	T > F	F >T	F
19.	Almost every week I see someone I dislike.	T	T > F	F >T	F
20.	There are a number of people who seem to be jealous of me.	T	T > F	F >T	F
21.	It is better to take a chance on being a failure than to let your life get into a rut.	T	T > F	F >T	F
22.	Our thinking would be a lot better off if we would just forget about words like "probably," "approximately," and "perhaps."	T	T > F	F >T	F
23.	It depresses me that I did not do more for my parents.	T	T > F	F >T	F
24.	I sometimes have the feeling that others are laughing at me.	T	T > F	F >T	F
25.	I am concerned about being forgiven for my sins.	T	T > F	F >T	F

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26.	People who seem unsure and uncertain about things make me feel uncomfortable.	T	T > F	F >T	F
27.	I don't know any people that I downright hate.	T	T > F	F >T	F
28.	My motto is "Never trust strangers."	T	T > F	F >T	F
29.	I commonly wonder what hidden reason another person may have for doing something nice for me.	T	T > F	F >T	F
30.	I used to think that most people told the truth but now I know otherwise.	T	T > F	F >T	F
31.	It is better to keep on with the present method of doing things than to take a way that might lead to chaos.	T	T > F	F >T	F
32.	I do many things that make me feel remorseful afterwards.	T	T > F	F >T	F
33.	Failure gives me a feeling of remorse.	T	T > F	F >T	F
34.	If I let people see the way I feel, I'd be considered a hard person to get along with.	T	T > F	F >T	F
35.	Perfect balance is the essence of all good composition.	T	T > F	F >T	F
36.	I have no enemies who really wish to harm me.	T	T > F	F >T	F
37.	Straightforward reasoning appeals to me more than metaphors and the search for analogies.	T	T > F	F >T	F
38.	When I do wrong, my conscience punishes me severely.	T	T > F	F >T	F
39.	At times I feel I get a raw deal out of life.	T	T > F	F >T	F
40.	A man can be well informed even if there are many subjects upon which he does not have a definite opinion.	T	T > F	F >T	F

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41.	I seldom feel that people are trying to anger or insult me.	T	T	F	F	T	F
42.	I don't like modern art.	T	T	F	F	T	F
43.	I often feel that I have not lived the right kind of life.	T	T	F	F	T	F
44.	Although I don't show it, I am sometimes eaten up with jealousy.	T	T	F	F	T	F

COMPETITION AND INTERVENTION

This mailing consists of: a brief memo describing the purpose of two research hours in which you participated as part of your course requirements in psychology; a card to be mailed to the Subject Pool; and an invitation to contact the author should you wish more information concerning the study: Mr. Ronald D. Lambert, 5619 Haven Hall, telephone 764-5561.

The study in which you participated is the first in what will hopefully be a series of inquiries into the use of third parties as a mode of conflict resolution. We are interested in the process by which people delegate authority for decision-making.

The phenomenon of intervention is well documented. Marital, industrial, and international relations are contexts within which mediation frequently occurs. However, it is probably unsuccessful as often as it is successful. This fact should sensitize us to the complexity of the phenomenon and to differences as well as to similarities among different instances of mediation.

The present study is an attempt to abstract, in an elementary fashion, some of the principal components of a conflictful relationship. This is the first time the experimental approach has been employed to get at the initiation or preconditions of third party intervention. The best research, to date, on the process of mediation has been conducted by McGrath and his co-workers at the University of Illinois.

The matrices. Most of you were confronted with one of two matrices. We can call these the $2.00 and $5.00 matrices. The former is what we judged to be a low temptation matrix. That is, relative to the $5.00 matrix, there is less temptation for a subject to compete (choose the blue alternative) and try to win the largest prize ($2.00) than to cooperate (choose the red alternative) and thereby settle for $1.25. In other words, subjects should be more tempted to risk choosing blue in the high temptation matrix (hoping to win $5.00, perhaps settling for 25¢), than to settle for red (hoping to win $1.25, but running the risk of getting nothing should his partner choose blue).

The third party option. Some of you were in the experimental group. That is, you were offered the opportunity to invite in a third party, rather than choose directly between the

red and blue alternatives yourself. You were told that the third party would choose in your mutual behalf, i.e., the cell of the matrix in which each of you wins $1.25. There was a 20% fee for this service, so that each of you won $1.00. Those of you who did not wish the third party to intervene indicated this and then proceeded to choose between red and blue yourselves. There was an experimental, low temptation group and an experimental, high temptation group. For comparison purposes, there were two control groups, a low temptation one and a high temptation one. The two control groups differed from their respective experimental groups only in that there was no third party option.

Sex. The above description (high and low temptation groups; experimental and control groups) applies to the male subjects. Part of this design was repeated with female subjects. Only the high temptation experimental and control groups were run in the female experiment.

Personality inventories. All of you filled out two standard personality inventories the day of the experiment. You were also invited back for a second hour, at which time you filled out a more extensive set of inventories. The purpose of these measures is to permit a more detailed analysis of what individual subjects did in the experimental session.

Some Predicitions and Findings

Only a portion of the data has been analyzed. However, it may be helpful to consider some of the predictions which were formulated in advance of the experiment and what some preliminary examination of the data indicates. Unfortunately, space does not permit us to elaborate fully the rationale underlying the various predictions. You should note that the first two predictions are contradictory. That is, there is reason to predict a relationship in opposite directions. Obviously, this is a happy circumstance since we may have the chance of choosing between them on the basis of what the data "say."

Prediction I. The overall level of cooperation (choosing red) will be higher in the experimental groups than in the control groups.

Prediction II. The overall level of cooperation will be higher in the control groups than in the experimental groups.

Prediction III. There will be more cooperation where both subjects reject the third party than where one invites the third party and the other rejects him.

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Prediction IV. The frequency of invitations to the third party will vary directly with the temptation level of the matrix. That is, subjects confronted with the $5.00 matrix will be more likely to invite the third party than subjects confronted with the $2.00 matrix.

Prediction V. On the basis of previous research using similar matrices, females will be more competitive than males.

Some results. First, there is slightly more cooperation, in general, in the control groups than in the experimental groups. This difference is most pronounced in the case of the high temptation matrix, there being scarcely any difference in the low temptation condition. In other words, Prediction II seems to be favored, although the differences may not be stable.

Second, in both the high and low temptation male experimental groups and the high temptation female experimental group, there is much less competition evidenced by subjects when both have rejected the third party than where they disagree on whether to invite him. So there is strong support for Prediction III.

Third, Prediction IV is not borne out. The amount of opting differs by less than 3% between the two temptation levels, even though there is clear evidence that the high temptation matrix does generate significantly more competition than the low temptation matrix, i.e., 75.6% vs. 44.3% (males).

Fourth, Prediction V can be safely rejected. The data from this study clearly indicate that women are much more cooperative than males. Comparing the sexes in the high temptation condition, 75.6% of the male responses are competitive as opposed to 45.3% of the female responses.

Much else could be cited. What we have done is to present some results bearing on the more obvious questions which we put to the data. We will be looking more closely at some differences among subjects within some of the experimental categories. For example: One of the scales used is called the Machivellianism scale, developed on the basis of Machiavelli's "The Prince." This scale purports to get at certain manipulative tendencies in people. Thus, we can ask the following question. Are subjects who score high on Machiavellianism more likely to choose blue (the competitive response) when they have been informed that their partners have invited the third party to intervene than subjects who score low on this trait? The rationale for this prediction includes the assumption that Machiavellians are more likely to take advantage of apparent cooperativeness in others (i.e., inviting the third party).

Scoring Keys for Personality Measures

Form H		Marlowe-Crowne Approval Motive 1T, 2T, 3F, 4T, 5F, 6F, 7T, 8T, 9F, 10F, 11F, 12F, 13T, 14F, 15F, 16T, 17T, 18T, 19F, 20T, 21T, 22F, 23F, 24T, 25T, 26T, 27T, 28F, 29T, 30F, 31T, 32F, 33T.
Form I		Internal-External Control 2a, 3b, 4b, 5b, 6a, 7a, 9a, 10b, 11b, 12b, 13b, 15b, 16a, 17a, 18a, 20a, 21a, 22b, 23a, 25a, 26b, 28b, 29a.
Form J,	Section I	Tacit Communication Responses weighted according to frequency of emission in Subject sample; summed.
	Section II	Tacit Bargaining Same as Section I.
	Section III	Machiavellianism-IV 1A, 2A, 3D, 4D, 5A, 6D, 7D, 8A, 9D, 10D, 11D, 12A, 13A, 14D, 15A, 16D, 17D, 18A, 19A, 20A.
	Section IV	Gough-Sanford Rigidity All items scored in the "True" direction.
	Section V	Authoritarianism 1A, 4D, 5D, 7A, 10D, 11A, 15A, 17D, 18A, 21D.
		Human Nature 2A, 6D, 9A, 16A, 20A.
		Anomie 3A, 8A, 12A, 13A, 14A, 19A.
	Section VI	Intolerance of Ambiguity 1T, 5F, 6T, 7T, 9T, 11T, 14T, 17T, 18T, 21F, 22T, 26T, 31T, 35T, 37T, 40F, 42T.
		Resentment 2T, 8T, 10T, 19T, 27F, 34T, 39T, 44T.
		Suspicion 3T, 12T, 13T, 20T, 24T, 28T, 29T, 30T, 36F, 41F.
		Guilt 4T, 15T, 16T, 23T, 25T, 32T, 33T, 38T, 43T.

APPENDIX B

CORRELATION MATRICES AND FACTOR ANALYSES

Variables

1. Approval Motive
2. Internal-External Control
3. Tacit Communication
4. Tacit Bargaining
5. Machiavellianism-IV
6. Gough-Sanford Rigidity
7. Authoritarianism
8. Intolerance of Ambiguity
9. Belief in Human Cooperativeness
10. General Hostility
11. Tendency to Choose Mid-point of Scale
12. Tendency to Choose Extreme Scale Points
13. Set for True
14. Infrequent Response
15. Social Undesirability
16. Achiever Personality
17. Intellectual Quality
18. Creative Personality
19. Social Adjustment
20. Emotional Adjustment
21. Masculine Orientation
22. Business Interest
23. Humanities Interest
24. Social Science Interest

APPENDIX B (continued)

25. Physical Science Interest

26. Biological Science Interest

Correlation Matrix for all Experimental and Control Ss on 26 Variables N=222

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1.00													
2	-.19	1.00												
3	-.07	.03	1.00											
4	.09	-.04	.40	1.00										
5	-.28	.20	.04	-.05	1.00									
6	.18	-.06	.04	.06	-.15	1.00								
7	.13	-.07	.09	-.04	-.05	.49	1.00							
8	-.04	.00	.05	.02	.06	.48	.53	1.00						
9	-.27	.23	.09	-.08	.59	.02	.08	.16	1.00					
10	-.35	.25	-.02	-.20	.43	.14	.11	.25	.53	1.00				
11	-.07	.08	-.02	-.01	-.30	-.11	-.23	-.04	-.19	-.06	1.00			
12	.05	-.00	.03	-.08	.18	-.07	-.00	-.09	.18	.12	-.42	1.00		
13	-.24	.10	-.03	-.16	.23	.31	.25	.29	.29	.45	-.20	.19	1.00	
14	-.17	.15	.01	.04	.25	-.09	-.02	.04	.25	.22	-.04	.02	.15	1.00
15	-.34	.15	.02	-.01	.16	-.10	-.11	-.08	.13	.23	.06	.08	.24	.15
16	.18	-.06	.04	-.02	-.00	.09	-.11	.01	.05	-.03	-.14	.01	-.14	.03
17	-.01	-.08	.00	.09	-.09	-.33	-.43	-.44	-.14	-.33	.10	-.04	-.37	-.14
18	-.04	.04	-.19	.02	.07	-.38	-.46	-.47	-.04	-.10	.10	.05	-.22	.03
19	.19	.01	-.03	.10	-.27	.18	.19	.13	-.28	-.15	-.01	-.04	-.09	-.34
20	.36	-.20	-.02	.11	-.13	.03	.02	-.09	-.19	-.33	.09	-.08	-.40	-.42
21	-.08	.06	-.01	-.02	.21	-.05	.02	.04	.19	.13	-.06	.07	.19	.20
22	.04	.03	.17	.11	.13	.12	.21	.26	.02	.01	.01	.05	-.02	.09
23	-.27	.12	-.07	-.11	.18	-.26	-.38	-.30	.09	.13	.02	.11	.16	.21
24	.08	-.07	-.06	.07	-.14	-.15	-.26	-.26	-.27	-.29	.08	.02	-.34	-.39
25	.10	-.07	.05	.11	.00	-.08	-.02	.04	.11	-.07	.02	-.08	-.16	.17
26	.26	-.04	-.01	-.01	-.17	.33	.28	.26	-.05	.03	-.04	-.16	-.02	-.21

Correlation matrix, all Ss (cont'd.)

	15	16	17	18	19	20	21	22	23	24	25	26
15	1.00											
16	-.31	1.00										
17	.12	.05	1.00									
18	.08	-.13	.45	1.00								
19	-.06	-.12	-.23	-.19	1.00							
20	-.35	-.13	.11	.17	.25	1.00						
21	.13	-.22	-.10	.05	-.13	.07	1.00					
22	.08	-.24	-.36	-.29	.22	.16	.21	1.00				
23	.18	.10	.32	.45	-.41	-.37	-.09	-.33	1.00			
24	-.01	-.20	.37	.40	.37	.43	-.04	.06	.10	1.00		
25	-.07	.29	.14	-.10	-.31	-.06	.07	-.16	-.28	-.44	1.00	
26	-.33	.23	-.32	-.41	.26	.16	-.20	-.18	-.38	-.23	.18	1.00

Factor Analysis for all Ss: Principal Axes Solution N=222

	Factors						
	1	2	3	4	5	6	7
1	-.14	-.50	.16	.04	-.23	.07	.18
2	.13	.25	-.10	-.01	.09	-.13	-.21
3	.10	-.04	.01	.30	.07	.33	-.33
4	-.09	-.15	.01	.34	.08	.31	-.26
5	.30	.51	-.11	.24	-.35	-.13	-.13
6	.47	-.39	-.04	-.20	-.01	.11	-.03
7	.57	-.38	-.10	-.03	-.05	.09	.12
8	.62	-.27	-.06	-.01	.10	-.03	-.07
9	.44	.44	.01	.17	-.27	-.18	-.21
10	.54	.41	-.11	-.13	-.05	-.24	-.17
11	-.25	-.05	.00	.01	.54	-.30	-.10
12	.09	.19	-.13	-.01	-.43	.24	.15
13	.58	.29	-.17	-.28	-.00	.09	.15
14	.26	.43	.15	.22	.16	.08	.14
15	.06	.43	-.28	.03	.27	.10	.04
16	.03	-.06	.56	-.10	-.22	.11	-.18
17	-.68	.22	.18	.06	-.02	.10	-.06
18	-.61	.39	-.09	-.02	-.15	-.15	.06
19	-.01	-.56	-.39	-.16	.01	.02	-.14
20	-.36	-.52	-.20	.24	-.29	-.28	-.01
21	.14	.18	-.21	.32	-.05	-.14	.24
22	.25	-.19	-.48	.43	.09	.09	.03
23	-.27	.66	.04	-.36	-.02	.17	-.08
24	-.62	-.16	-.50	-.08	-.17	.00	-.16
25	.08	-.01	.63	.40	.05	-.10	.11
26	.29	-.52	.32	-.20	-.09	-.20	-.18
	3.62	3.41	1.80	1.20	1.06	.76	.64

Factor Analysis for all Ss: Varimax Rotation N=222

	Factors							
	1	2	3	4	5	6	7	
1	.12	-.40	.06	-.16	-.24	.35	.02	.39
2	-.02	.16	-.06	.04	.18	-.31	-.03	.16
3	.09	.03	.04	.04	-.02	-.06	-.56	.32
4	-.01	-.11	.04	.06	.00	.11	-.53	.31
5	-.09	.06	.08	.12	-.18	-.72	-.04	.59
6	.61	.04	-.11	-.14	-.09	.07	-.00	.42
7	.69	-.03	-.00	.05	-.17	.02	.03	.51
8	.67	.05	.03	.01	.06	-.13	-.04	.47
9	.06	.11	.16	.01	-.10	-.72	-.02	.57
10	.22	.32	-.01	-.00	.07	-.63	.16	.58
11	-.12	-.02	.00	.07	.63	.18	.03	.45
12	-.06	.07	-.08	.08	-.52	-.17	.03	.32
13	.36	.50	-.07	.12	-.18	-.28	.23	.56
14	-.03	.34	.39	.23	-.02	-.22	-.04	.38
15	-.13	.38	-.08	.38	.11	-.14	-.03	.35
16	-.01	.02	.28	-.55	-.15	.01	-.12	.42
17	-.70	-.05	.03	-.10	.02	.20	-.13	.55
18	-.73	-.07	-.14	.07	-.00	-.04	.17	.58
19	.34	-.28	-.50	-.01	.07	.23	-.07	.51
20	-.05	-.77	-.19	.03	-.00	.13	.03	.66
21	.01	-.08	.14	.42	-.07	-.23	.11	.27
22	.34	-.20	-.11	.54	-.02	-.08	-.25	.53
23	-.56	.55	-.14	-.13	-.08	-.13	.07	.67
24	-.39	-.34	-.64	.09	-.00	.16	-.06	.72
25	-.01	-.15	.74	-.12	.05	.01	-.90	.59
26	.49	-.24	.08	-.51	.10	.06	.07	.58
	3.49	2.07	1.63	1.39	.95	2.11	.85	12.49

Correlation Matrix for all Male Ss on 26 Variables N=137

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1.00													
2	-.22	1.00												
3	-.09	.05	1.00											
4	.13	.02	.38	1.00										
5	-.26	.19	-.02	-.10	1.00									
6	.28	-.07	.02	.03	-.22	1.00								
7	.18	-.03	.09	-.08	-.06	.49	1.00							
8	.03	.08	.01	-.03	.02	.46	.57	1.00						
9	-.28	.19	.09	-.12	.61	.03	.14	.18	1.00					
10	-.32	.24	-.08	-.27	.47	.07	.09	.19	.52	1.00				
11	-.04	.07	-.08	-.02	-.34	-.13	-.29	-.10	-.23	-.09	1.00			
12	-.01	.00	.09	-.02	.30	-.02	.07	-.04	.18	.17	-.42	1.00		
13	-.21	.11	-.12	-.26	.31	.21	.18	.23	.29	.44	-.30	.32	1.00	
14	-.16	.16	-.02	.07	.20	-.13	-.04	-.04	.25	.19	-.06	.03	.12	1.00
15	-.27	.11	-.01	.01	.17	-.15	-.15	-.20	.10	.22	-.00	.18	.16	.18
16	.21	-.02	.15	.02	-.04	.11	-.02	.11	.03	-.13	-.12	-.04	-.11	.10
17	-.08	-.12	.04	.10	-.12	-.34	-.41	-.44	-.24	-.36	.15	-.06	-.32	-.13
18	-.06	-.01	-.22	-.04	.09	-.42	-.47	-.51	-.10	-.05	.12	.04	-.17	-.09
19	.27	-.11	.02	.14	-.28	.19	.26	.14	-.25	-.14	-.02	-.07	-.12	-.41
20	.41	-.21	-.01	.04	-.16	.01	.02	-.08	-.24	-.36	.13	-.09	-.48	-.47
21	-.05	-.01	-.01	-.03	.26	-.11	-.05	.05	.19	.12	-.05	.05	.08	.22
22	.07	.03	.07	.08	.10	.15	.20	.27	.07	-.01	-.05	.09	-.09	.07
23	-.32	.13	-.07	-.07	.20	-.28	-.42	-.34	.05	.09	.03	.11	.23	.17
24	.05	-.18	-.06	.09	-.15	-.18	-.25	-.28	-.34	-.26	.10	-.02	-.29	-.44
25	.16	.02	.06	.08	.01	-.02	.08	.11	.13	-.12	-.01	-.13	-.16	.18
26	.29	.01	.01	-.04	-.16	.28	.29	.25	.00	-.05	-.02	-.16	-.07	-.21

Correlation matrix, Males (cont'd.)

	15	16	17	18	19	20	21	22	23	24	25	26
15	1.00											
16	-.32	1.00										
17	.19	.01	1.00									
18	.17	-.16	.49	1.00								
19	-.14	-.09	-.20	-.24	1.00							
20	-.30	-.18	.09	.12	.31	1.00						
21	.15	-.16	-.08	.01	-.12	.08	1.00					
22	.05	-.13	-.37	-.34	.19	.16	.24	1.00				
23	.23	.08	.33	.50	-.40	-.40	-.14	-.33	1.00			
24	.05	-.17	.40	.41	.31	.41	-.07	.01	.18	1.00		
25	-.03	.24	.12	-.20	-.24	-.05	.19	-.13	-.36	-.45	1.00	
26	-.37	.12	-.34	-.42	.34	.20	-.22	-.16	-.44	-.22	.20	1.00

Factor Analysis for Male Ss: Principal Axes Solution N=137

	Factors							
	1	2	3	4	5	6	7	8
1	.29	.47	.08	-.01	-.11	-.25	.26	-.16
2	-.01	-.29	.05	-.01	.10	.14	-.24	-.01
3	.10	.02	.14	-.18	-.41	.11	-.33	.13
4	-.00	.21	.15	-.24	-.40	.19	-.19	.08
5	-.08	-.63	-.16	-.26	-.01	-.38	-.19	-.09
6	.59	.05	-.09	.23	-.12	.07	.16	.02
7	.69	-.05	-.14	.06	-.10	-.02	.12	.15
8	.66	-.15	-.06	.05	.02	.11	.01	-.02
9	.16	-.63	-.01	-.17	.05	-.24	-.24	-.00
10	.11	-.65	-.23	.07	.24	-.04	-.16	.04
11	-.21	.27	.14	.02	.42	.35	-.10	-.05
12	-.02	-.30	-.26	-.06	-.35	-.24	.11	.07
13	.16	-.62	-.26	.33	-.06	-.04	.20	.11
14	-.05	-.50	.35	-.18	-.03	.22	.15	-.18
15	-.32	-.33	-.15	-.17	-.03	.22	.14	.32
16	.14	.02	.46	.20	-.29	-.16	-.07	-.31
17	-.66	.27	.21	-.03	-.13	-.10	.06	.26
18	-.76	.08	-.11	.03	.09	-.23	.07	-.04
19	.35	.46	-.38	.04	-.05	.07	-.15	.10
20	.07	.66	-.24	-.31	.16	-.32	-.05	-.07
21	.00	-.22	-.05	-.49	.13	-.05	.19	-.02
22	.33	-.02	-.32	-.50	-.09	.27	.06	-.27
23	-.67	-.33	-.02	.36	-.18	.05	-.03	-.19
24	-.43	.49	-.47	-.01	-.11	-.03	-.08	-.01
25	.21	-.03	.67	-.28	.10	-.20	.13	.23
26	.56	.25	.16	.24	.19	-.21	-.25	.10
	3.83	3.69	1.72	1.33	1.00	.98	.69	.58

Factor Analysis for Male Ss: Varimax Rotation N=137

	Factors								
	1	2	3	4	5	6	7	8	
1	.17	.41	.13	-.04	.11	.33	.21	-.31	.48
2	.04	-.23	-.01	.01	-.09	-.25	-.22	.04	.17
3	.08	-.03	.05	-.01	-.60	-.03	.06	-.05	.37
4	-.03	.06	.05	-.13	-.55	.18	.02	-.04	.36
5	-.12	-.09	.03	-.12	.02	-.77	.19	.00	.67
6	.61	-.03	-.06	.06	.07	.18	.20	-.08	.46
7	.68	.05	.04	.03	.02	.00	.27	.05	.55
8	.68	-.06	.03	-.04	.04	-.08	.03	-.04	.48
9	.14	-.18	.14	-.02	-.03	-.70	.06	.00	.57
10	.19	-.31	-.11	.05	.19	-.60	-.04	.19	.58
11	-.14	.04	-.01	.01	.08	.26	-.59	.10	.45
12	-.04	-.08	-.11	-.08	-.05	-.25	.51	.05	.36
13	.25	-.48	-.16	.10	.28	-.30	.35	.15	.64
14	-.04	-.50	.31	-.34	.00	-.17	-.08	-.09	.51
15	-.24	-.29	-.00	-.15	-.06	-.09	.10	.49	.43
16	.05	-.14	.17	.11	-.13	.07	.07	-.63	.48
17	-.70	.06	.12	.17	-.16	.27	.07	.11	.65
18	-.77	.08	-.15	.07	.19	-.02	.03	.06	.66
19	.37	.43	-.33	.08	-.14	.22	.01	.11	.52
20	-.04	.84	-.05	-.06	.04	.13	-.04	-.02	.73
21	-.04	.08	.25	-.41	.10	-.24	.04	.19	.34
22	.34	.17	-.13	-.66	-.11	-.07	-.01	.08	.62
23	-.58	-.51	-.34	.09	.06	-.09	.05	-.13	.76
24	-.41	.41	-.51	-.01	-.08	.22	.06	.13	.67
25	.07	.03	.82	.07	-.07	.01	-.01	-.06	.69
26	.51	.29	.14	.45	.01	.01	-.14	-.19	.62
	3.65	2.40	1.52	1.07	.96	2.22	1.02	.97	13.82

Correlation Matrix for all Female Ss on 26 Variables N=85

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1.00													
2	-.23	1.00												
3	.05	.13	1.00											
4	.15	-.03	.29	1.00										
5	-.26	.30	.03	-.09	1.00									
6	.10	-.01	.01	.07	-.11	1.00								
7	.10	-.10	.04	-.04	-.08	.48	1.00							
8	-.05	-.01	-.06	-.08	.04	.51	.47	1.00						
9	-.26	.32	.10	-.02	.57	.00	-.02	.13	1.00					
10	-.38	.32	.05	-.14	.36	.23	.11	.32	.56	1.00				
11	-.07	.14	.02	-.08	-.30	-.12	-.16	.01	-.13	-.02	1.00			
12	.09	-.06	.02	-.09	.09	-.09	-.07	-.08	.20	.08	-.42	1.00		
13	-.26	.16	.07	-.06	.08	.41	.33	.33	.27	.47	-.07	.06	1.00	
14	-.14	.19	-.02	-.12	.28	-.06	-.01	.07	.25	.26	-.05	.03	.17	1.00
15	-.41	.26	-.00	-.16	.12	-.06	-.09	.02	.18	.22	.13	-.02	.34	.06
16	.09	-.20	-.04	.03	.12	.10	-.22	-.04	.08	.19	-.13	.02	-.15	-.02
17	.06	-.07	.00	.20	-.00	-.31	-.45	-.41	.03	-.26	.05	-.05	-.44	-.13
18	-.02	.13	-.17	.14	.04	-.33	-.46	-.45	.05	-.18	.08	.08	-.31	.21
19	.10	.19	-.13	.02	-.28	.18	.09	.14	-.32	-.16	.01	-.00	-.05	-.26
20	.34	-.13	-.14	.17	-.14	.05	-.00	-.20	-.12	-.32	-.03	-.02	-.32	-.39
21	-.14	.15	.01	.05	.15	.02	.14	.04	.20	.15	-.07	.09	.39	.19
22	.08	.18	.25	-.02	.09	.03	.17	.12	-.10	-.02	.07	.08	.06	.04
23	-.27	.03	.03	-.08	.22	-.21	-.30	-.19	.18	.24	.05	.06	.08	.33
24	.11	.09	-.03	.08	-.11	-.11	-.26	-.22	-.14	-.34	.05	.06	-.41	-.30
25	.08	-.17	-.09	.07	-.08	-.20	-.23	-.17	.07	-.00	.04	.03	-.20	.11
26	.20	-.15	.00	.09	-.17	.41	.29	.35	-.14	.18	-.08	-.18	.08	-.21

Correlation matrix, Females (cont'd.)

	15	16	17	18	19	20	21	22	23	24	25	26
15	1.00											
16	-.27	1.00										
17	.03	.07	1.00									
18	-.06	-.09	.37	1.00								
19	.07	-.16	-.29	-.12	1.00							
20	-.48	.01	.19	.28	.16	1.00						
21	.13	-.34	-.14	.12	-.14	.08	1.00					
22	.08	-.38	-.30	-.24	.31	.08	.19	1.00				
23	.13	.07	.27	.38	-.43	-.27	-.03	-.28	1.00			
24	-.09	-.28	.29	.39	.46	.51	.01	.21	-.06	1.00		
25	-.17	.46	.25	.06	-.41	-.12	-.10	-.37	-.09	-.43	1.00	
26	-.27	.40	-.32	-.39	.14	.09	-.16	-.20	-.30	-.25	.16	1.00

Factor Analysis for Female Ss: Principal Axes Solution N=85

	Factors								
	1	2	3	4	5	6	7	8	9
1	-.32	-.39	.18	.19	.20	.04	-.05	-.03	-.12
2	.22	.24	-.40	.04	-.29	.08	-.24	-.21	-.02
3	.09	.01	-.07	.06	.16	.17	-.52	.27	-.15
4	-.18	-.09	.06	.18	.05	-.12	-.40	.17	.03
5	.30	.47	-.08	.42	-.11	.23	-.02	-.06	-.09
6	.43	-.47	.09	.16	-.16	-.27	-.01	.14	-.05
7	.47	-.50	-.01	.10	.23	-.16	.03	.02	-.05
8	.57	-.35	.04	.00	-.11	-.09	.05	-.04	-.10
9	.41	.49	-.02	.42	-.16	.03	-.15	-.04	.15
10	.67	.28	.07	.15	-.31	-.03	-.05	-.03	-.01
11	-.11	.03	-.11	-.50	-.16	-.19	-.28	-.24	-.08
12	.02	.13	-.05	.35	.20	.27	.30	.15	.14
13	.73	.00	-.12	-.01	.09	-.26	.02	.13	.18
14	.31	.43	-.01	.01	.20	-.03	.10	-.26	-.33
15	.31	.30	-.35	-.38	-.11	.08	.01	.15	.30
16	-.02	.07	.70	.15	-.31	.18	.02	.02	-.08
17	-.58	.40	.10	.01	-.07	-.08	-.18	.22	.15
18	-.51	.48	-.18	.16	-.06	-.32	.11	-.16	-.08
19	-.08	-.56	-.43	-.08	-.36	.20	.16	-.05	.04
20	-.52	.34	-.08	.48	-.09	-.26	-.05	-.15	.08
21	.24	.12	-.32	.23	.29	-.28	-.06	-.17	.22
22	.13	-.27	-.55	.07	.22	.31	-.19	-.13	-.15
23	.01	.65	.02	-.08	-.05	-.23	.14	.29	-.33
24	-.58	-.14	-.55	.22	-.28	-.03	.04	.08	-.02
25	-.13	.24	.67	-.07	.13	.11	-.12	-.30	.24
26	.22	-.51	.50	.07	-.25	-.06	-.08	-.03	-.02
	3.73	3.29	2.50	1.40	1.05	.89	.86	.70	.62

Factor Analysis for Female Ss: Varimax Rotation N=85

Factors

	1	2	3	4	5	6	7	8	9	
1	-.34	-.03	.12	.42	.04	.16	.13	.15	-.08	.38
2	.51	.09	-.13	-.13	-.24	.09	-.28	.05	-.11	.46
3	.08	-.02	-.03	-.06	-.00	.01	-.02	.66	-.00	.44
4	-.02	.03	-.02	.28	.04	.00	-.06	.37	.24	.28
5	.67	.09	.02	-.05	.02	-.12	.22	.07	-.21	.57
6	.05	-.70	.08	.13	-.12	.01	-.03	.02	.15	.56
7	-.10	-.69	-.19	.06	-.01	.12	.10	.07	-.10	.57
8	.11	-.66	.05	-.09	-.06	.08	-.07	-.05	-.10	.48
9	.77	-.01	-.08	-.05	.14	-.10	.12	.04	.06	.65
10	.66	-.35	.08	-.25	.09	-.13	-.06	-.06	-.01	.66
11	-.13	.12	-.06	-.12	-.02	.01	-.66	-.01	-.02	.48
12	.12	.11	-.07	-.01	-.02	.03	.59	-.05	-.05	.38
13	.28	-.59	-.36	-.32	.06	-.09	.04	-.03	.12	.68
14	.27	-.01	-.16	-.13	.23	-.32	-.03	-.07	-.48	.51
15	.20	.07	-.26	-.64	-.14	.00	-.10	-.06	.18	.59
16	.14	-.02	.68	.11	.35	-.04	.09	-.06	.08	.64
17	-.05	.61	.07	.13	.10	-.23	-.03	.12	.38	.61
18	.09	.57	-.18	.34	-.06	-.39	-.10	-.23	.01	.70
19	-.15	-.12	.11	-.01	-.66	.43	-.07	-.16	-.01	.71
20	-.10	.12	-.05	.77	-.22	.16	.02	-.07	.18	.73
21	.25	-.11	-.61	.11	.06	.01	.05	-.04	-.01	.47
22	.02	-.07	-.30	-.03	-.37	.35	.02	.32	-.39	.62
23	.16	.22	.02	-.20	.04	-.76	.00	-.01	-.02	.70
24	-.07	.39	-.07	.36	-.70	.05	-.01	-.02	.13	.80
25	-.00	.23	.23	.05	.76	.16	-.04	-.10	.06	.73
26	-.05	-.54	.45	.19	.16	.21	-.10	-.03	.13	.64
	2.26	3.20	1.57	1.87	2.05	1.40	1.01	.85	.83	15.04

Factor Analysis: Ss Inviting TP: Principal Axes Solution
N=35

	Factors									
	1	2	3	4	5	6	7	8	9	10
1	-.64	-.18	.32	.04	.16	.10	.05	-.12	-.00	-.10
2	.27	.06	-.23	.16	.21	.33	-.39	-.02	-.29	-.03
3	-.30	-.30	.04	-.36	.58	-.06	-.04	-.03	.20	-.17
4	-.44	-.23	.12	-.28	.39	.12	-.39	.32	.10	.06
5	.38	.54	-.18	-.31	-.18	-.06	-.28	-.38	.13	.04
6	-.59	.13	.36	.49	.22	.04	-.03	.31	.08	.09
7	-.72	.50	-.26	.07	-.07	.03	-.09	.17	.19	-.08
8	-.64	.37	-.08	.08	-.11	-.10	.00	.09	.23	.02
9	.21	.74	-.04	-.25	-.09	-.02	-.34	.17	.15	-.00
10	.39	.53	-.16	.42	-.25	-.02	.13	.26	-.11	.21
11	.08	-.51	-.31	.11	-.06	.45	.31	.36	-.00	.05
12	-.07	.05	.52	-.08	.25	-.55	.06	.03	-.22	.35
13	.12	.49	.12	.33	.39	-.31	.21	.00	-.08	-.37
14	.44	.25	.14	-.53	.11	.30	.10	.14	.22	.07
15	.41	.21	-.29	.38	.51	.14	-.27	.00	-.29	-.04
16	-.34	-.13	.66	-.09	-.06	.37	-.13	-.20	-.13	.27
17	.52	-.64	.28	.02	-.01	-.08	-.09	.05	.06	-.24
18	.72	-.17	.23	.12	-.23	.02	-.28	.19	.04	-.06
19	-.77	-.02	-.27	.24	-.01	.03	-.36	-.10	-.07	.00
20	-.47	-.49	-.05	-.12	-.46	-.27	-.17	.08	-.05	-.08
21	.13	.06	-.18	-.52	.06	-.44	-.11	.35	-.20	.08
22	-.38	-.08	-.64	-.36	.29	.07	.24	-.11	-.12	.23
23	.76	-.03	.36	.22	.16	.04	-.12	-.01	.21	.15
24	.03	-.80	-.34	.15	-.19	-.24	-.26	.02	-.00	.06
25	-.13	.28	.35	-.54	-.29	.24	.08	.17	-.40	-.28
26	-.70	.31	.31	.13	-.24	.08	-.10	-.03	-.11	-.04
	5.73	3.85	2.46	2.18	1.79	1.41	1.19	.90	.76	.68

Ss inviting TP (cont'd.)

	11	12	13	14	15	16
1	-.09	-.16	.14	.11	-.09	.08
2	.05	-.18	.12	.13	-.11	-.12
3	.25	-.09	-.13	.12	.12	-.08
4	-.02	-.19	-.01	-.12	-.05	.09
5	-.06	-.18	.14	-.09	.18	.02
6	-.19	.05	.10	-.03	.08	-.15
7	.05	.11	-.06	.07	.08	.03
8	.23	.01	.31	-.09	-.11	.03
9	.01	.10	-.02	.09	-.05	-.08
10	-.02	-.21	-.06	.12	-.03	.01
11	.09	-.07	.05	-.02	.16	.06
12	.14	-.05	-.00	-.04	.03	-.01
13	-.13	-.13	-.04	-.00	-.04	.07
14	-.24	-.07	-.11	-.05	-.11	.07
15	.02	.06	.01	-.14	.09	.08
16	-.10	.05	.02	.03	.05	.03
17	-.15	.18	.13	-.02	-.04	-.08
18	.09	-.02	-.08	-.13	.00	-.09
19	-.14	.20	-.09	.09	.02	.09
20	-.15	-.26	-.02	.12	.07	-.03
21	-.14	.12	.07	.06	.04	.05
22	-.03	.05	-.01	.01	-.11	-.12
23	.15	.09	.01	.24	-.02	.11
24	.12	-.00	-.04	-.05	-.11	.09
25	.18	.08	.07	.05	.01	.04
26	.13	-.03	-.23	-.13	-.07	-.02
	.46	.41	.30	.25	.19	.15

Factor Analysis: Ss Inviting TP: Varimax Rotation N=35

	Factors									
	1	2	3	4	5	6	7	8	9	10
1	-.26	-.21	.15	-.32	-.15	-.03	.11	.26	-.06	-.21
2	.12	-.01	.08	.07	.68	.19	.00	-.09	-.00	.05
3	-.02	.01	.02	-.87	-.01	-.12	.16	.10	.03	-.04
4	-.23	-.14	-.14	-.55	.14	-.09	.02	.15	-.01	.13
5	.04	.14	-.04	.15	.08	.05	-.03	-.93	-.03	-.02
6	-.57	.05	-.02	-.01	-.00	-.16	-.17	.45	.18	-.22
7	-.94	.02	-.08	-.04	-.08	.14	.13	-.02	-.05	-.06
8	-.75	-.00	.07	-.01	-.18	-.09	.08	-.03	-.04	.00
9	-.29	.37	-.28	.17	.10	.03	-.21	-.50	-.22	.03
10	-.09	.19	.02	.77	.15	-.06	-.17	-.10	.07	-.16
11	.20	-.07	.06	.05	.04	.35	.13	.43	.04	.29
12	.06	.03	-.09	-.09	-.10	-.88	-.07	.06	-.03	-.13
13	-.08	.25	.02	.08	.15	-.16	-.10	.01	.05	-.82
14	.34	.54	-.18	-.01	-.15	.16	.02	-.28	-.19	.01
15	.10	.27	-.07	.05	.82	.03	-.02	-.07	.17	-.17
16	-.04	.03	.15	-.12	-.10	-.15	-.11	.09	-.22	.21
17	.74	-.16	-.15	-.17	-.04	.14	-.40	.23	.09	.06
18	.51	-.00	.03	.19	.14	.03	-.62	-.07	-.01	.20
19	-.71	-.37	-.08	-.12	.17	.17	.20	.16	.17	.07
20	-.11	-.86	-.08	-.10	-.33	.03	.04	.06	-.05	.12
21	.11	-.10	-.68	-.04	.00	-.26	.18	-.14	-.19	.03
22	-.15	.01	-.09	-.19	.06	.06	.90	.04	.09	.17
23	.49	.41	-.03	.07	.15	-.11	-.59	-.03	.24	.07
24	.25	-.67	-.00	-.10	.07	.06	-.03	.25	.36	.40
25	-.07	.08	-.07	-.02	-.10	-.02	-.02	-.06	-.96	.03
26	-.68	-.13	.34	.04	-.13	-.15	-.06	.10	-.30	-.03
	4.30	2.25	.84	1.99	1.53	1.25	1.99	1.91	1.50	1.25

Ss inviting TP (Varimax Rotation, cont'd.)

	11	12	13	14	15	16	
1	.00	-.06	.20	.03	.49	-.07	.68
2	-.04	-.08	.06	-.05	.02	-.28	.63
3	.07	-.07	-.07	.01	-.06	-.15	.84
4	.05	-.56	.07	-.05	.20	.01	.84
5	-.05	.01	.01	.01	-.08	.01	.93
6	.04	-.09	.09	-.38	.39	.00	.98
7	-.02	.00	-.02	-.04	-.07	-.03	.95
8	-.00	.00	.45	-.05	-.05	.01	.82
9	-.27	-.16	-.05	-.08	-.22	-.18	.87
10	.14	-.06	-.09	.00	-.26	-.26	.90
11	.61	-.06	-.01	-.02	-.11	-.01	.85
12	-.09	-.00	.01	-.01	.13	-.00	.86
13	-.10	.05	.01	-.01	-.18	.01	.86
14	.02	-.47	-.13	.03	.02	-.04	.84
15	.04	.02	-.07	.03	-.15	.12	.86
16	-.05	-.05	-.04	-.02	.83	.02	.88
17	-.10	.08	.09	-.11	.02	.12	.92
18	-.04	-.12	-.09	-.11	-.19	.03	.82
19	-.20	.11	-.08	.07	.27	.09	.96
20	.04	-.07	-.04	-.06	.09	-.06	.92
21	-.06	-.14	-.03	-.00	-.28	.02	.75
22	.03	-.02	-.01	.02	-.13	-.03	.94
23	-.01	.08	.00	.19	.01	-.24	.96
24	-.01	.02	.06	.18	-.22	.10	.98
25	-.01	-.02	.01	.01	.12	.00	.97
26	-.20	-.08	-.11	-.04	.27	.09	.89
	.59	.68	.33	.26	1.69	.33	22.70

Factor Analysis: Ss Rejecting TP: Principal Axes Solution
N=100

	Factors							
	1	2	3	4	5	6	7	8
1	.24	-.25	-.28	.34	-.02	.09	.03	.17
2	-.12	.13	.25	-.16	-.04	-.34	.18	.26
3	-.16	.06	.18	.10	.38	-.19	-.21	-.25
4	.02	.09	.11	.02	.52	-.05	-.12	-.25
5	-.25	.43	.00	.48	.07	-.29	-.02	-.03
6	-.47	-.32	-.12	.08	-.14	.02	.15	-.29
7	-.58	-.23	.05	.09	-.15	.23	.04	-.13
8	-.65	-.31	.05	-.09	.02	-.14	.08	-.22
9	-.55	.33	-.16	.36	-.05	-.24	.13	-.05
10	-.61	.23	.06	.14	-.16	-.14	-.05	-.02
11	.12	-.26	.19	-.42	.04	-.26	.35	.05
12	-.07	.36	-.13	.26	-.10	.23	-.28	.13
13	-.63	.26	.06	-.04	-.36	.16	.09	-.10
14	-.39	.36	-.10	-.15	.32	-.02	.04	.24
15	-.14	.46	.24	-.30	.10	.28	-.01	-.17
16	.13	-.15	-.56	.09	-.02	-.28	-.29	.04
17	.69	.23	-.19	-.04	.06	-.02	.12	-.29
18	.61	.44	.11	.16	-.09	.04	.18	-.05
19	.06	-.45	.50	.05	-.09	.08	-.31	.11
20	.43	-.34	.13	.52	.06	-.02	.35	-.01
21	-.23	.27	.07	.30	-.05	.20	.26	.13
22	-.34	-.10	.39	.21	.50	-.05	.01	.19
23	.33	.60	-.03	-.20	-.29	-.33	-.06	-.06
24	.56	-.09	.43	.34	-.12	-.05	-.05	-.19
25	-.02	-.06	-.60	-.04	.44	.18	.19	-.03
26	-.16	-.63	-.19	.01	-.19	-.23	-.05	-.02
	4.09	2.73	1.72	1.51	1.35	.95	.82	.69

Factor Analysis: Ss Rejecting TP: Varimax Rotation N=100

	Factors								
	1	2	3	4	5	6	7	8	
1	.02	-.09	-.17	.37	.02	-.30	-.22	.20	.35
2	.10	.19	.18	-.15	.21	.04	.42	.14	.34
3	-.07	.15	.05	-.04	.19	.01	-.01	-.54	.36
4	.08	-.01	-.13	.00	.19	.09	-.02	-.55	.37
5	.12	.70	.04	.03	.13	-.02	-.14	-.15	.57
6	-.63	.17	-.08	.05	-.19	.00	.04	-.00	.48
7	-.64	.13	.04	-.07	-.01	.18	-.13	.09	.49
8	-.69	.19	.01	-.16	.02	.01	.23	-.14	.61
9	-.18	.77	-.11	-.10	.03	.01	-.05	.01	.64
10	-.29	.55	.14	-.28	.05	.09	-.06	.03	.50
11	-.02	-.26	.02	.03	.02	.03	.65	.04	.49
12	.17	.21	.02	-.15	.04	.03	-.52	.12	.38
13	-.36	.41	.11	-.35	-.16	.36	-.09	.22	.64
14	.03	.26	-.29	-.42	.34	.13	.04	.00	.47
15	.13	.00	-.00	-.36	-.03	.56	-.05	-.16	.50
16	.05	.02	-.18	-.05	-.16	-.66	-.13	-.03	.52
17	.57	-.17	-.20	.25	-.40	.00	.03	-.19	.66
18	.68	.04	.04	.31	-.19	.23	-.04	.03	.65
19	-.22	-.37	.55	.16	.24	-.04	-.07	-.03	.57
20	.07	-.05	-.00	.83	.07	-.06	.05	.05	.72
21	-.02	.36	-.08	.10	.15	.32	-.16	.23	.35
22	-.22	.13	.05	.08	.68	.13	.06	-.23	.61
23	.64	.22	.18	-.26	-.36	-.01	.14	.01	.71
24	.29	-.14	.45	.57	-.09	.04	-.06	-.17	.67
25	-.06	-.09	-.77	.00	.02	-.12	-.07	-.07	.63
26	-.50	-.11	.07	.12	-.11	-.48	.16	.09	.55
	3.27	2.27	1.43	2.04	1.24	1.47	1.12	.99	13.84

Factor Analysis of Control Ss Choosing Red:
Principal Axes Solution N=43

	Factors											
	1	2	3	4	5	6	7	8	9	10	11	12
1	-.61	-.11	-.24	-.02	-.32	-.26	-.29	.01	.01	-.08	-.13	-.01
2	.45	-.17	.29	.16	-.19	-.15	.09	.25	.21	.01	.16	-.33
3	.20	.31	-.20	.44	.18	.26	-.16	.08	.10	-.12	-.19	-.28
4	-.18	.52	-.18	.29	.14	.22	-.09	.34	-.39	-.17	-.02	-.07
5	.75	.03	.26	.21	-.30	.04	.08	.05	-.03	-.06	-.19	.10
6	-.02	-.61	-.38	.02	.29	.02	-.08	.12	-.01	.09	.15	-.10
7	-.22	-.64	-.13	.06	-.08	.20	-.37	.17	.34	-.00	.11	.08
8	.20	-.53	-.17	-.14	-.15	.26	-.16	.30	-.18	.36	-.01	.13
9	.72	.06	.15	.33	-.26	.05	.19	-.30	-.03	.20	.03	.04
10	.77	-.32	-.08	.09	-.04	.10	.27	.20	.11	-.00	-.13	-.03
11	-.12	.48	-.26	-.51	.11	-.11	.16	.16	.27	.14	-.21	.02
12	.25	-.31	.57	.37	-.30	-.08	-.28	-.21	.07	-.13	-.04	.04
13	.58	-.48	-.07	-.10	.29	-.03	.15	.06	-.09	-.19	.09	.18
14	.60	.02	-.09	-.41	.03	-.13	-.32	-.02	-.04	.10	-.24	-.19
15	.30	.26	.29	-.45	.06	.42	.14	-.09	.16	-.06	.02	-.03
16	.46	.08	-.37	.18	-.06	-.21	-.03	-.29	-.15	.36	-.01	-.07
17	-.12	.76	.21	.09	.00	.33	-.23	-.06	.14	.17	.13	.14
18	-.16	.33	.32	.01	-.17	-.43	.00	.36	-.03	.01	.04	.10
19	-.64	-.47	.20	.04	.20	.00	.17	-.16	-.03	.10	.01	-.26
20	-.74	.00	.10	.08	-.38	-.01	.19	.16	.09	.07	-.16	-.03
21	.27	.00	-.04	-.62	-.44	-.04	-.01	.01	-.14	-.20	.24	-.14
22	-.12	-.41	.32	-.33	-.20	.24	-.08	-.06	-.18	-.09	-.29	.00
23	.57	.26	.12	-.02	.46	-.31	-.21	.05	.08	-.07	-.03	.09
24	-.51	.06	.76	.02	.13	.03	.12	.08	-.12	.17	.05	-.05
25	.12	.50	-.60	.01	-.49	.10	.01	-.05	.01	-.03	.17	-.05
26	-.34	-.23	-.62	.27	-.08	-.01	.29	-.08	.08	-.13	-.12	.12
	5.29	3.65	2.75	1.87	1.58	1.05	.92	.73	.62	.60	.52	.47

Factor Analysis of Control Ss Choosing Red: Varimax Rotation N=43

	Factors												
	1	2	3	4	5	6	7	8	9	10	11	12	
1	-.58	-.11	-.19	.03	-.42	-.30	-.09	-.10	.04	-.05	-.19	.05	.72
2	.48	-.11	.07	-.13	.08	-.14	-.02	-.21	.09	-.02	-.02	-.55	.65
3	.14	.17	-.26	.38	.12	.22	.10	-.04	-.46	-.05	-.19	-.24	.64
4	-.10	.20	-.09	.11	-.03	-.08	.10	.11	-.83	-.01	.06	.05	.80
5	.80	.04	-.13	-.08	.18	-.09	.08	-.30	.01	-.01	-.17	.06	.83
6	-.19	-.50	-.03	.14	.11	.21	-.50	.03	.03	.06	.12	-.15	.65
7	-.23	-.14	-.06	.15	-.15	.07	-.67	-.26	.22	-.33	.01	-.15	.82
8	.21	-.18	.01	-.14	-.04	.04	-.79	.00	.02	.13	-.08	.13	.76
9	.79	.10	-.15	-.01	.12	-.02	.03	-.23	.04	.28	.05	-.07	.81
10	.77	-.34	-.16	.00	.22	.14	-.18	.01	.08	-.06	-.07	-.12	.87
11	-.13	.19	-.14	-.05	.03	-.14	.16	.78	.11	-.09	-.19	.02	.78
12	.26	.06	.16	.03	.02	-.10	.02	-.82	.23	-.07	-.14	-.05	.86
13	.36	-.51	-.00	-.09	.50	.16	-.19	-.06	.11	-.11	.17	.11	.78
14	.18	-.05	-.17	-.29	.50	.03	-.10	.11	.10	.17	-.55	-.04	.77
15	.28	.38	.14	-.36	.19	.36	.13	.23	.11	-.25	-.06	.03	.68
16	.22	-.06	-.39	.10	.21	.05	.01	-.02	.07	.63	-.09	-.00	.67
17	-.06	.90	-.03	.08	.04	-.01	.16	.08	-.18	-.02	.07	.02	.89
18	-.01	.16	.18	-.08	-.05	-.69	.20	.05	-.08	-.03	.03	-.09	.60
19	-.42	-.29	.54	.15	-.40	.23	-.04	-.08	.14	.04	.08	-.11	.84
20	-.24	.06	.17	.09	-.78	-.26	.03	.07	.01	-.13	-.02	-.00	.81
21	.06	-.07	-.23	-.83	.04	-.03	-.00	.05	.12	-.04	-.08	-.04	.78
22	.00	-.12	.34	-.32	-.22	.17	-.20	-.19	.12	-.20	-.33	.28	.62
23	.19	.05	-.00	.12	.81	-.17	.19	.04	-.01	.00	-.11	-.07	.79
24	-.15	.27	.84	.00	-.25	-.14	.14	-.08	-.03	-.03	.11	-.02	.93
25	.04	.26	-.79	-.22	-.22	-.01	.10	.18	-.19	.17	.07	-.05	.91
26	-.17	-.41	-.41	.36	-.43	.11	-.01	.12	.00	-.05	.20	.14	.77
	3.28	2.24	2.47	1.51	2.69	1.10	1.65	1.74	1.20	.82	.74	.60	20.04

Factor Analysis of Control Ss Choosing Blue: Principal Axes Solution N=44

	Factors											
	1	2	3	4	5	6	7	8	9	10	11	12
1	-.36	-.49	-.25	-.14	.13	.05	-.15	.15	-.41	-.13	-.11	-.07
2	.09	.34	-.07	.24	.26	.34	-.34	-.24	.08	-.20	.04	.09
3	-.36	.03	.18	.20	-.24	.33	-.04	-.31	.13	-.01	.02	-.27
4	-.21	-.29	.09	.16	-.05	.12	-.29	-.23	.19	.00	.14	.11
5	.13	.63	.45	.06	-.13	-.18	-.09	.14	-.16	.26	.26	.12
6	-.74	-.02	.26	-.24	.04	-.05	.13	-.31	-.15	-.06	.00	.24
7	-.74	.22	-.05	-.07	-.27	-.00	.12	-.21	-.12	.02	-.16	.06
8	-.67	.24	.18	-.11	-.08	.04	.27	.13	.23	-.09	-.03	.08
9	.12	.43	.20	.31	.13	.00	-.06	-.20	-.22	.02	-.03	-.16
10	.16	.66	.23	.11	.41	-.13	.07	-.20	-.10	.07	.07	.06
11	.32	-.18	.20	.46	.26	-.08	.39	.10	.12	-.25	-.08	-.06
12	.03	-.01	.15	-.42	-.02	.32	-.37	.20	.04	.18	-.11	-.10
13	-.09	.55	.35	-.50	.06	.12	.07	.05	.27	.06	-.09	.01
14	.29	.42	-.14	.01	-.51	-.18	-.18	-.02	-.11	-.25	-.13	.15
15	.26	.28	.46	-.01	.25	.23	.07	.11	-.26	.09	-.16	-.04
16	-.16	.11	-.55	-.22	.03	.11	.19	-.10	-.13	-.01	.34	-.19
17	.55	-.35	-.18	.10	-.16	.33	.27	-.26	-.12	.31	-.15	.07
18	.80	-.27	.05	.09	-.12	-.14	-.16	-.02	.06	-.07	.08	.13
19	-.33	-.49	.31	.08	.41	.23	-.06	.10	.09	.01	.07	-.13
20	-.43	-.56	.24	.18	-.11	-.39	-.04	-.02	.05	.29	.13	-.11
21	-.02	-.03	.57	.39	-.27	-.06	-.04	.00	.03	.08	-.19	-.11
22	-.39	-.08	.62	.08	-.19	.15	-.02	.16	-.26	-.27	.18	-.08
23	.68	.14	.13	-.52	-.01	-.09	.11	-.17	.03	-.10	.08	-.17
24	.33	-.70	.36	-.27	.06	.03	.06	-.17	-.15	.03	.02	.18
25	-.13	.35	-.51	.40	-.13	.37	.14	.25	-.05	.16	.09	.17
26	-.48	.19	-.40	.08	.39	-.39	-.21	-.08	-.01	.11	-.18	-.04
	4.42	3.60	2.68	1.76	1.33	1.18	.90	.79	.72	.62	.48	.44

Factor Analysis of Control Ss Choosing Blue:
Varimax Rotation N=44

Factors

	1	2	3	4	5	6	7	8	9	10	11	12	
1	-.16	-.40	-.02	-.03	.21	-.07	-.14	.10	-.66	-.06	.10	.07	.73
2	.11	.17	-.10	.18	.03	.40	-.01	-.56	-.00	-.08	-.03	-.17	.60
3	-.32	-.07	.22	.12	.05	-.11	-.05	-.25	.12	.04	-.06	-.54	.56
4	-.07	-.08	.07	-.02	.17	-.26	-.09	-.47	.02	.01	-.11	-.07	.38
5	.02	.81	.20	.08	-.23	-.08	-.16	.05	.19	-.17	-.10	.10	.87
6	-.87	.03	.05	-.18	.16	-.12	-.02	-.12	-.07	-.10	.03	.11	.87
7	-.82	-.05	-.05	.19	-.18	-.11	-.09	.01	-.04	-.08	.01	-.13	.79
8	-.65	-.06	.11	.18	.12	-.00	.02	.14	.30	-.34	-.06	.01	.72
9	.03	.53	-.05	.06	-.10	.14	.15	-.12	-.09	-.01	-.10	-.32	.48
10	-.04	.75	-.21	-.04	.00	.29	.19	-.09	.13	-.10	.03	-.04	.77
11	.31	.01	.10	-.04	.21	.06	.69	.11	.05	.05	-.23	-.04	.71
12	.09	-.95	.11	-.12	.14	.18	-.65	.07	.02	-.03	-.11	-.04	.54
13	-.28	.29	.03	-.16	.03	.38	-.32	.17	.52	-.23	-.04	-.01	.79
14	.09	.08	.05	.07	-.81	.17	-.04	-.08	.02	-.05	-.10	.08	.73
15	.07	.51	.18	-.09	.18	.38	-.04	.18	-.05	.10	-.25	-.08	.60
16	-.12	-.12	-.11	.19	-.04	.08	-.05	.06	-.07	.01	.72	-.07	.61
17	.29	-.13	.03	.01	-.01	.05	.05	.03	-.00	.88	.01	-.03	.88
18	.71	-.02	.11	-.29	-.22	-.05	.10	-.16	.04	.27	-.12	.21	.82
19	-.13	-.15	.15	-.08	.74	-.12	.02	-.17	-.13	-.07	-.18	.11	.72
20	-.17	-.13	.01	-.14	.25	-.84	.04	.05	-.10	-.06	-.14	-.04	.87
21	-.02	.19	.28	-.04	-.05	-.28	.12	.01	.06	.03	-.57	-.27	.61
22	-.33	.12	.69	-.07	.14	-.13	.01	-.02	-.20	-.27	-.19	-.13	.81
23	.35	.16	.07	-.59	-.25	.32	-.07	.17	.27	.16	.26	.01	.86
24	.14	-.15	.27	-.63	.28	-.13	-.01	-.03	-.14	.44	-.09	.26	.89
25	-.01	.03	-.02	.90	-.09	.13	.02	-.02	.00	.11	.15	.03	.86
26	-.26	.04	-.73	.16	.05	-.11	.00	-.04	-.23	-.37	.06	-.03	.83
	3.16	2.26	1.44	1.94	1.79	1.71	1.17	.84	1.11	1.55	1.23	.72	18.92

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