75-21,325

FLUGMAN, Bert Michael, 1942-
RISK TAKING IN GROUPS AS A FUNCTION OF LOCUS OF CONTROL VARIABLES.

The City University of New York, Ph.D., 1975
Psychology, social

Xerox University Microfilms, Ann Arbor, Michigan 48106

RISK TAKING IN GROUPS AS A FUNCTION OF LOCUS OF CONTROL VARIABLES

by

Bert Flugman

A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York.

1975

This manuscript has been read and accepted for the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

5/2/75
date

Salomon Rettig
Chairman of Examining Committee

5/2/75
date

Executive Officer

Salomon Rettig

William Oakes

Bernard Seidenberg

Supervisory Committee

The City University of New York

Abstract

RISK TAKING IN GROUPS AS A FUNCTION OF
LOCUS OF CONTROL VARIABLES

by

Bert Flugman

Advisor: Professor Salomon Rettig

This experiment tested variables proposed by Rettig (1966, 1969, 1972), in the form of locus of control theory, as an explanation of risk taking in groups. The procedure employed attempted to determine the effects on risk taking in groups of variables specified by locus of control theory.

The experimental design was a three factor (3 x 3 x 3) analysis of variance. (Risk Function Emphasized X Expected Group Gain X Expected Exposure to Evaluation). The dependent variable was predictive risk judgments made on the Behavior Prediction Scale (BPS).

Subjects (N = 162) interacted in a simulated group. Each subject "interacted" with a 48 minute videotape which had been produced in advance. Three simulated group conditions existed: one where simulated group members primarily emphasized the high gain components of the BPS (gain tape), another where the high censure components were emphasized (censure tape), and a third where components and levels were varied at random (random tape). Decisions made by simulated group members in each tape for each of the 16 BPS items were held constant at about the mid-point of the risk scale across conditions.

Subjects were also briefed on the extent to which the composition of their group was to affect their problem solving behavior. The instructions given attempted to establish either a high or low expectation that group membership would lead to an increase of gains or positive outcomes for the subject (group:help or group:no help). Some subjects also received no information about their group (group:no information).

Subjects were also informed that problem solving behavior exhibited in the group would be evaluated after the experiment. The instructions concerning evaluation attempted to establish either a high or low expectation that group membership could decrease losses or negative outcomes (group evaluation or individual evaluation). Some subjects also received no information pertaining to evaluation (no evaluation).

Main effect predictions for total BPS scores were: gain tape > random tape, censure tape < random tape; group:help > group:no help; group evaluation > individual evaluation (higher scores = riskier).

Locus of control theory as a unified approach accounting for risk taking in groups was not supported in this experiment. No significant main or interaction effects were observed in a three-way analysis of variance, utilizing total BPS scores as well as BPS component scores. Post hoc analyses of subjects' reactions to BPS items were made. It was observed that the more gain relative to loss the greater the predicted risk on an item and the more loss relative to gain the lower

the predicted risk on an item.

The failure of the videotape manipulation of risk function to produce differential effects was ascribed to the fact that each risk function emphasized was accompanied by the same mid-scale decisions. Each subject, therefore, was provided with the same frame of reference for making judgments on the BPS. It was proposed therefore, that decisions expressed in a group discussion may become a referent for risk decisions made by group members, a value theory position.

The group gain factor was discussed in terms of the possible failure to effectively produce and sustain the manipulation of this variable. For example, emphasis of a risk function coupled with mid-scale risks may have seemed incongruent to subjects causing the simulated groups to appear less helpful than intended.

In addition, a more speculative discussion of post hoc analyses, which may be of interest in relation to future research efforts, was undertaken. In these instances post hoc observations were related to release theory, group influence processes, the cost ameliorating properties of groups and the negativity bias of individuals and groups.

Acknowledgments

I would like to express my appreciation to Professor Salomon Rettig for his guidance, encouragement and assistance in the conduct of this research and the preparation of this manuscript.

I would also like to thank Professor William Oakes and Professor Bernard Seidenberg for their advice and constructive suggestions as members of the dissertation committee. In addition I would like to thank Ruth Bruskin, Betty Oliver, Bo Olsson and Sergio Vanelli for their technical assistance in the preparation of the videotapes and materials used in this project.

Finally, I would like to express my appreciation to my wife, Marilyn, for her help, patience and understanding throughout these years.

Table of Contents

List of Tables

Table Page

List of Figures

Problem:

Individuals, making a decision involving levels of risk alone and then remaking that decision in a group, have shifted their decisions in either a risky or conservative direction. What factors account for these observed shifts from prediscussion alone decisions to decisions made during or after a group discussion?

Overview of Problem Area

The risk taking behavior of individuals as well as the risk taking behavior of groups has received extensive examination. The study of individual risk taking has centered on such problem areas and issues as: effects of gains and costs, effects of chance versus skill situations, individual dispositions in information required before risks are taken and the overall role of personality characteristics and intellectual functioning (see Kogan & Wallach, 1967b, for a comprehensive review).

The risk taking of groups and their individual members has also been investigated. The study of risk taking in groups, however, assumes there is more to the decision of groups than the sum of the determinants acting upon the individual decision making member (Kogan & Wallach, 1967b). One focus of group risk taking has been with the relationship between decisions made by individuals alone and their subsequent decisions on the same item in a group. It has been noted (Kogan & Wallach, 1967b) that there are three possible relationships:

1. Group decisions are the average of the prediscussion individual decisions.
2. Group decisions are more conservative than the average of the prediscussion individual decisions.
3. Group decisions are more risky than the average of the prediscussion individual decisions.

Research findings which have stimulated a great many investigations have shown that with certain kinds of problems groups make more risky decisions than the average of the members decisions prior to the group discussion. This phenomenon has been termed the "risky shift" effect.

A great deal of the initial research on the "risky shift" effect was undertaken by Kogan and Wallach (see Kogan & Wallach, 1964; Kogan & Wallach, 1967b) using the Choice Dilemmas Questionnaire (CDQ). The questionnaire as utilized requires that the subject read descriptions of various situations involving a central person with a choice between more or less risky courses of action. There are 12 situations in all. For each situation the subject is to indicate the lowest likelihood of success that he would accept before recommending that the alternative of higher risk be chosen (Kogan & Wallach, 1967b). An example of one item appears below along with the choices given for response:

> Mr. A, an electrical engineer who is married and has one child, has been working for a large electronics corporation since graduating from college five years ago. He is assured of a lifetime job with a modest, though adequate, salary, and liberal pension benefits upon retirement. On the other hand, it is very unlikely that his salary will increase much before he

retires. While attending a convention, Mr. A is offered a job with a small, newly founded company with a highly uncertain future. The new job would pay more to start and would offer the possibility of a share in the ownership if the company survived the competition of the larger firms.

Imagine that you are advising Mr. A. Listed below are several probabilities or odds of the new company's proving financially sound. Please check the lowest probability that you would consider acceptable to make it worthwhile for Mr. A to take the new job.

____ The chances are 1 in 10 that the company will prove financially sound.

____ The chances are 3 in 10 that the company will prove financially sound.

____ The chances are 5 in 10 that the company will prove financially sound.

____ The chances are 7 in 10 that the company will prove financially sound.

____ The chances are 9 in 10 that the company will prove financially sound.

____ Place a check here if you think Mr. A should not take the new job, no matter what the probabilities.

After responding to all 12 items the subject is asked to meet with other individuals who have completed the questionnaire. The newly formed group is to discuss each item and arrive at a decision again. In some experiments group consensus was required for each item while in others individuals made separate judgments after discussion of the item. For a wide range of subject populations, groups made more risky decisions than the average of the prediscussion individual decisions. In addition subjects asked to repeat

the questionnaire alone after the group discussion still manifested the "risky shift" (see Kelley & Thibaut, 1969; Kogan & Wallach, 1967b, for comprehensive reviews).

A reevaluation of the shift to risk as a typical outcome of group discussions began with the observation that the "risky shift" was observed for the combined scores of the 12 items on the CDQ. In examining items individually, it became clear that some of the items consistently produced shifts to caution (early results of this type were reported by Brown, 1965; Pruitt & Teger, 1967). As subsequent risk shift data were analyzed it became apparent that any generalization, to the effect that groups always make riskier decisions than individuals, was without merit (Cartwright, 1971). For example, Belcovicz and Finch (1971) analyzed the decision data by item from three "risky shift" experiments. Out of 564 decisions made using the CDQ, the number categorized as shifting toward risk were 39%, those shifting toward caution were 21%, and those showing no shift were 40%.

The acceptance of the shift toward risk as typical was further challenged in terms of the instrument commonly employed in risk shift experiments, the CDQ. It was established,using the same format as the original CDQ, that items could be written which could generate a cautious shift (e.g., Stoner, 1968). The ability to construct cautious shift items implied that the existence of the shift to risk might in part depend on the particular set of items utilized (see Cartwright, 1971, 1973, for a methodological critique of the

line of investigation taken with regard to the shift to risk research). It has generally been concluded therefore, that the problem under investigation (at the minimum) deals with accounting for shifts on the risk dimension (or choice shifts) in both cautious and risky directions as a function of group discussions (Pruitt, 1971a).

Decisions concerning ethical judgments have been used by Rettig (1966, 1969, 1972; Rettig & Turoff, 1967) in a series of experiments related to the study of risk taking in groups. Rettig used the Behavior Prediction Scale (BPS), a multidimensional measure, the items of which portray a person in conflict about stealing money from a bank[1] (Rettig, 1969). The structure of the scale is such that each item contains four theoretical components (expectancy and reinforcement value of gain and expectancy and reinforcement value of censure) in the same sequence randomly varying the levels of any one component (high or low) from item to item (Rettig, 1969). In responding to items subjects are requested to predict whether or not the money will be taken on a scale ranging from 0 (definitely no) to 6 (definitely yes). One situation from the 16 item scale reads as follows:

> A bank employee had to have some money in order to lend it to other people who needed it. The employee

---

[1] "Nearly all of the explanations [for the "risky shift" phenomenon] have attempted to account for shifts in risk taking behavior in which the risks are socially valued. Since the risks were a priori socially desirable, their gain value was not separated from their loss value, and their effects on the choice of higher risk levels could not be independently assessed." (Rettig, 1969, p. 427).

> was thinking of stealing the money from the bank. The money he could get would be enough to help a great number of people. The employee was sure that his theft would go unnoticed by the bank. However the employee knew that if he were caught he would be expelled from the bank and charged with criminal conduct.

The underlined portions of the item represent the four operationalized components which are systematically varied over the 15 remaining items of the scale. In addition to an overall risk taking score for all items the extent to which a high or low level of a component is accompanied with a certain degree of risk taking may be calculated to generate four component scores.

In exploring ethical risk taking it was found that individuals completing the BPS alone pay most attention to the reinforcement value of censure component (Rettig & Rawson, 1963). In comparing individuals to groups (between-subject design; alone to non-consensus group discussions) Rettig (1966) found that individuals paid most attention to the reinforcement value of censure component while groups paid most attention to the reinforcement value of gain component. In addition, total BPS scores for groups were significantly greater than for individuals (groups = riskier). A shift to increased emphasis on the reinforcement value of gain component from the individual to group condition was again reported by Rettig (1969) along with an increase in predicted ethical risk taking on the BPS as measured by total BPS scores (between-subject design; alone to non-consensus group discussions). Chapko (1972), using a within-subject design

reported a significant increase in the reinforcement value of gain component from alone to non-consensus group discussions but failed to observe a difference in predicted ethical risk taking as measured by the total BPS scores. However, in analyzing the results by items Chapko found some items showed significant shifts to risk as well as to caution.

Numerous explanations of the choice shifts effect have been proposed each in turn stimulating a series of investigations. A number of the major explanations proposed will be considered.

Diffusion of Responsibility

The responsibility diffusion formulation was one of the original explanations put forth by Kogan and Wallach to account for the observed "risky shift". Within this formulation group discussion is seen as arousing affective bonds between group members. Affective bonds are viewed as generating feelings among group members of less responsibility for failure when making riskier decisions than individuals would have made when alone (Kogan & Wallach, 1967b). That is, group members come to feel that they share the responsibility for any negative consequences of their risk taking and that causality for disaster will not be imputed to any single member (Kelley & Thibaut, 1969). While the relationship between affective bonds and responsibility diffusion is never fully expanded,responsibility diffusion is said to account for increases in risk taking. Thus, the responsibility diffusion position, as formulated, only accounts for shifts

toward risk and not toward caution

Some evidence has been presented in support of this theory, e.g., high anxious individuals show a greater shift to risk after group discussions (Kogan & Wallach, 1967a); greater risk is advocated when success or failure effects an entire group as opposed to an individual group member (Wallach, Kogan & Bem, 1964). However, additional support for the responsibility diffusion formulation has not been strong, e.g., where group members exchanged information on levels of risk but were only allowed to engage in irrelevant discussions (conditions deemed conducive to diffusing responsibility) no shift to risk was observed (Pruitt & Teger, 1969); in a test of the affective bonds portion of responsibility diffusion theory high group cohesiveness actually inhibited the shift toward risk while low cohesiveness facilitated it (Dion, Miller & Magnan, 1971). In general, responsibility diffusion theory has been evaluated negatively in terms of specifying the mechanisms that account for shifts in either the risky or cautious direction (Pruitt, 1971a).

Value Theory

The value theory formulation was originally proposed by Brown (1965) to account for observed shifts to risk and caution using the CDQ. A number of different formulations of value theory have since been presented. Underlying each approach is a common assumption, that the item or situation depicted evokes a cultural value as to the appropriate way one should act within the situation. Brown (1974), has continued to

favor a mechanism by which the individual learns in part how to manifest the evoked value, in concrete terms, from the group experience.

As originally proposed by Brown (1965), to account for the shift to risk, this view contends that certain decision situations, problems or items generate a value of risk. That is, in certain situations the individual feels it is appropriate to be risky. It is contended that subjects not only make what they consider to be decisions compatible with this value of risk while working alone but also estimate themselves as being more risky than a majority of people like themselves (Kelley & Thibaut, 1969). Furthermore, since the risk situations presented are ambiguous subjects have sufficiently different standards of culturally appropriate risk norms and differ in their risk preferences, some being more risky than others (Vidmar, 1969). The group discussion informs those whose initial risk taking levels are below the central tendency of the group that others are accepting greater risk. The level of risk accepted by others provides a frame of reference for group members with respect to the risk taking of others (Kogan & Wallach, 1967b). Some group members, discovering others are more risky than themselves, begin to question whether their own risk level is in line with the cultural value. In the group session the less risky members' preferences are readjusted in the direction of greater riskiness (Vidmar, 1969). "The content of the discussion, the arguments pro and con are of no importance by

this theory. It is information about other people's answers that makes individuals move toward greater risk after group discussion." (Brown, 1965, p. 702).

As noted, in a number of instances items have been viewed to evoke a cautious shift. In this case proponents of value theory claim that some problems evoke a cultural value of caution instead of risk. "The dynamics behind the cautious shifts are exactly opposite risky shifts; subjects think of themselves as being among the most cautious in the population but group discussion disconfirms this belief for some of the members (those relatively less cautious) and they shift toward greater caution." (Vidmar, 1969, p. 4).

A number of other formulations based on value theory assumptions have been developed, each proposes a mechanism through which group induced shifts occur, as categorized by Pruitt (1971a) they are: pluralistic-ignorance theory (Levinger & Schneider, 1969), release theory (Pruitt, 1969), relevant-arguments theory (St. Jean, 1970) and commitment theory (Moscovici & Zavalloni, 1969). Each approach proposes a different mechanism through which group discussion facilitates the expression, in discision terms, of values previously evoked in the individual. As evaluated, value theory formulations have received support indicating that groups shift in a direction toward which individual members are already attracted in a manner consistent with some of the proposed mechanisms noted above (see Pruitt, 1971a, 1971b, for a comprehensive review and evaluation of value theories).

Leadership Hypothesis

In several experiments concerned with the "risky shift" phenomenon subjects were asked to choose the most influential members of their group after arriving at group derived risk decisions. In a significant number of instances group members picked as most influential an individual whose alone decision was riskier than the mean pre-group (alone) decision of other members (Flanders & Thistlethwaite, 1967; Marquis, 1962; Wallach, Kogan, & Bem, 1962; Wallach, Kogan, & Burt, 1965). These results supported the position that increased risk taking by groups could be the result of initially riskier members being more influential than initially conservative members.

Evaluation of the leadership hypothesis in terms of the preceding results has always revolved around the question of causality. Perhaps the relationship reported between initial riskiness and influence simply reflects what has happened: subjects observe the shift to occur and infer from it that initially risky persons have been more influential (Kelley & Thibaut, 1969). In addition the studies that have demonstrated conservative shifts (e.g., Nordhøy, 1962; Vidmar, 1968) would seem to require an amendment of the leadership hypothesis to suggest that in some situations the most cautious people are the most persuasive.

The leadership formulation however has also been presented in another manner. It has been suggested (Burnstein, 1969) that those who take high or low risk on any item

display greater confidence in their position and therefore exert more influence on other group members during discussions. This formulation has received some support in an experiment using a gambling task. A choice shift was found in the risky direction only where high risk members were high in confidence (Clausen, 1965).

Familiarization Hypothesis

The familiarization formulation contends that the observed "risky shift" effect is a result of group discussion allowing for individuals to become more familiar with decision alternatives.

Bateson (1966), and Flanders and Thistlethwaite (1967) asked individuals to study the choice dilemma items more intensively after initial judgments were made. In addition subjects were also asked to prepare a listing of important aspects of the problem to be considered in arriving at their judgment. In both studies a shift to risk was obtained. However, a systematic attempt to reproduce Bateson's findings failed. Four separate replications of the study were attempted in which a shift to risk did not occur (Teger, Pruitt, St. Jean & Haaland, 1970).

Locus of Control Theory

An explanation for the "risky shift" and risk taking in groups in general has been made by Rettig (1966, 1969, 1972) in what he terms locus of control theory. Rettig's position is interpreted here to assume that relative control over one's behavior can vary as a function of the situation. For

example, an individual "behaving" alone is seen as being under a different set of behavior controls than if he were a member of a group. It is Rettig's contention that an individual interacting in a group (e.g., turning to a group for added information) may partially transfer the locus of control over his outcome from the exclusive self to the whole group (1969); that is, transfer of outcome control denotes that the individual partially surrenders the control over his outcome to the group (1972). Outcomes are taken to refer to rewards and costs related to an individuals behavior or interaction in a group. Thus transfer of outcome control means the individual partially surrenders to the group the ability to control rewards or costs for actions and behavior. The greater the group's ability to control outcomes the greater are the behavior controls the group may exercise over the individual. The proposed relationship between outcome and behavior control has also been made by Thibaut and Kelley (1959) in reference to group influence.

Transfer of locus of control over outcomes is an inferred process which is viewed as involving the arousal of a generalized expectancy. The generalized expectancy aroused by transfer of outcome control (via new group membership) is that the group produces a more favorable outcome than the individual can produce for himself. As Rettig notes, "there are many reasons why group membership is likely to produce (or has produced in the past) more favorable outcomes. Some tasks simply cannot be done alone, while some may require

informational support . . . etc." (1969, p. 427). Moreover, the generalized expectancy of a more favorable outcome may express itself in either (or both) of two specific expectancies:

1) The expectation that group membership will lead to an increase of gains (rewards, positive outcomes) for the group member.
2) The expectation that group membership will lead to a minimization in losses (costs, negative outcomes) for the group member.

It is contended that to the extent the expectancies delineated above are held by a group member consequences occur which affect risk taking behavior. The consequences of holding outcome expectancies are:

1) The enhancement of the gains and minimization of the losses accruing to a proposed risk situation.
2) The increase of the behavior controls of the group.

Enhancement of risk functions. The consideration of a risk item is viewed as the balancing of loss and gain functions (e.g., If I take this risk I have this much to loose and this much to gain). It is contended that an emphasis on one function over another should serve to influence the movement and direction of risk taking. For example, in a group discussion of a risk taking item an emphasis on the gains accruing to the risk as opposed to the losses should increase the risk taking of group members. While emphasis on the losses as opposed to the gains should decrease the risk taking of group

members. Conversely, diminution of gains should decrease risk taking while diminution of losses should increase risk taking. Significantly greater risk taking by groups over individuals on the BPS has in fact been associated with greater group member sensitivity to the gain dimension of the BPS (specifically, the reinforcement value of gain component). On the other hand, significantly lower risk taking by individuals was associated with greater sensitivity to the censure dimension of the BPS (specifically, the reinforcement value of censure dimension) (Rettig, 1966).

It is contended that as a consequence of the expectations that group membership will lead to an increase in gains for the group member an enhancement of the gains accruing to the risk items under discussion occurs. That is, a group member expecting greater gains for himself in the group enhances the gains accruing to the risk item under discussion. The enhancement of gains leads to increased risk taking. Likewise the expectation that group membership will lead to a decrease in losses leads to an enhancement of decreased loss (or leads to a minimization of losses) accruing to the risk under discussion. The enhancement of decreased loss accruing to the risk increases risk taking.

It should be noted that the enhancement of risk functions can occur from sources other than expectancies concerning the group's ability to affect outcomes. For example, items may be of such a nature as to compel the consideration of a particular risk function regardless of the expectancy

held. It is contended, though, that for whatever reason the function emphasized by the group would be a determinant of the extent and direction of risk taking.

Behavior controls. Expectancies concerning outcomes, in addition to enhancing risk functions, serve to enhance group influence. As has been noted, transfer of outcome control to a group is viewed as involving the arousal of a generalized expectancy that a more favorable outcome will be produced by the group for the group member. Also as noted the generalized expectancy of a more favorable outcome may express itself in either of two specific expectancies:

1) The expectation that group membership will lead to an increase of gains (rewards, positive outcomes) for the group member.
2) The expectation that group membership will lead to a decrease in losses (costs, negative outcomes) for the group member.

To the extent that a group member perceives a group as able to control outcomes as in (1) and (2) the group acquires behavior controls over that group member. Behavior controls exist in the form of the groups ability to influence the individual to enhance a particular risk function. An individual group member is then more likely to enhance a group emphasized risk function when he perceives the group as able to control outcomes. Specifically, an individual holding the expectation that group membership will lead to an increase of gains will be influenced by the group. When one function

is emphasized or enhanced (gain over loss or loss over gain) a group member will be more likely to also emphasize or enhance that function with its predicted effects for or against risk taking. In addition, the expectation that group membership will lead to a decrease in potential losses will also lead to increases in the behavior controls of the group. Here again when one function is emphasized (gain over loss or loss over gain) a group member will also be more likely to enhance that function.

In the initial stages of the development of Rettig's theoretical position emphasis was placed on the influence of the gain function in accounting for the "risky shift" effect. For example, Rettig (1966) notes that stress of the gain value leads to an increase in risk taking (in Rettig, 1969). A theoretical evolution of Rettig's position has brought it to the point of integrating the effects of both functions, loss and gain, on the direction that group risk taking might take, whether it be more conservative or more risky. Thus locus of control theory is a more general formulation concerning risk taking in groups rather than a specific theory of the "risky shift".

The locus of control formulation was explored in an experiment by Rettig (1969). Utilizing a between-subject design Rettig found a marginally significant increase in total BPS scores as a function of group size (individual, dyad, triad), as well as a significant increase in the reinforcement value of gain component as a function of group

size. These findings were taken as supporting the locus of control formulation. The results were interpreted as indicating that with increases in group size control of the group increased, expectations of help from the group increased which enhanced expectations of gain and increased risk taking.

In another experiment, using a within-subject design, Rettig (1972) compared BPS responding by individuals and groups. Three group discussion conditions existed, they were: help, hinder and control. In the help and hinder conditions two out of three group members were instructed to role play at helping or hindering behavior in the group discussion. In the control condition no special instructions were given to group members. A significant increase in total BPS scores was found for the help condition but not for the hinder condition. In the control condition a marginally significant increase in total BPS scores was obtained. Significant increases in the reinforcement value of gain component were found for both the help and control conditions. The results of this experiment were taken by Rettig as supporting the locus of control formulation in that the presence of group members who were helping was viewed as transferring control to the group. Transfer of control was viewed as increasing the stress of the gain function since group membership carried expectations of more favorable outcomes. The increased stress of the gain function was viewed as increasing risk taking.

Chapko (1972) however failed to obtain support for the locus of control formulation. In an experiment using the standard alone to non-consensus group paradigm with the BPS; Chapko explored the relationship between shifts in decisions from the alone to group condition, initial divergence in decisions on items and emphasis of the reinforcement value of gain component. Chapko concluded that the mean change on items showing a significant change from the alone to group condition was significantly correlated to the divergence of initial positions in the alone condition. Through regression analysis it was concluded that no significant shift occurs on items when the initial divergence in the group is zero, basically irrespective of increases in emphasis on the reinforcement value of gain component. Chapko interpreted this finding as supporting a communication process, e.g., value theory as opposed to an expectancy type process such as locus of control theory in accounting for shifts in group decisions.

Hypotheses

The present experiment attempts to test a number of formulations of locus of control theory by empirically manipulating the following variables:

1) Group emphasis on gain and loss risk functions.
2) The expectation that group membership will affect group member gains.
3) The expectation that group membership will affect group member losses.

On the basis of the presented formulations of locus of control theory a number of questions and hypotheses have been generated. The context assumed is that of individuals interacting in a group discussion of items on the BPS. The questions and associated hypotheses are as follows:

In a group discussion of a risk taking item, will an emphasis on gains accruing to the risk as opposed to losses increase the risk taking of group members? Will an emphasis on losses accruing to the risk as opposed to gains decrease the risk taking of group members? The following is hypothesized.

Hypothesis 1. High gain component emphasis vs. Random component emphasis.

> If group members primarily emphasize the high gain components of the BPS (with maximum emphasis on the high reinforcement value of gain component); Then BPS judgments of experimental subjects in the high gain groups will be more risky than those of experimental subjects in groups where BPS components and levels are emphasized at random.

Hypothesis 2. High censure component emphasis vs. Random component emphasis.

> If group members primarily emphasize the high censure components of the BPS (with maximum emphasis on the high reinforcement value of censure component); Then BPS judgments of experimental subjects in the high censure groups will be less risky than those of experimental subjects in groups where BPS components and levels are emphasized at random.

Will holding expectations concerning the group's ability to affect outcomes influence group member risk taking? Specifically, will a group member expecting greater gains for himself in a group enhance the gains accruing to a risk

item under discussion and subsequently increase risk taking? Will a group member expecting decreased losses for himself in a group minimize losses accruing to a risk item under discussion and increase risk taking?

Hypothesis 3. High expectation of group member gain vs. Low expectation of group member gain.

Group members holding a high expectation that group membership will lead to an increase in gains will make BPS judgments which are more risky than those of group members holding a low expectation that group membership will lead to an increase in gains.

Hypothesis 4. High expectation of decreased loss vs. Low expectation of decreased loss.

Group members holding a high expectation that group membership can result in a decrease in losses will make BPS judgments which are more risky than those of group members holding a low expectation that group membership can decrease losses.

Will an individual group member be more likely to emphasize a group emphasized risk function (gain or loss) when perceiving the group as able to control outcomes? That is, given that a risk function (or component) is emphasized by the group will a group member also be more likely to enhance the function, subsequently influencing risk taking when the group is perceived as able to control outcomes?

Hypothesis 5. Gain emphasis X Expectancy group member gain.

The introduction of a high gain emphasis will produce more risky BPS judgments among group members holding a high expectation that group membership will lead to an increase in gains than those holding a low expectation that group membership will lead to an increase in gains

Hypothesis 6. Censure emphasis X Expectancy group member gain.

The introduction of a high censure emphasis will produce less risky BPS judgments among group members holding a high expectation that group membership will lead to an increase in gains than those holding a low expectation that group membership will lead to an increase in gains.

Hypothesis 7. Gain emphasis X Expectancy decreased loss.

The introduction of a high gain emphasis will produce more risky BPS judgments among group members holding a high expectation that group membership can decrease loss than those holding a low expectation that group membership can decrease loss.

Hypothesis 8. Censure emphasis X Expectancy decreased loss.

The introduction of a high censure emphasis will produce less risky BPS judgments among group members holding a high expectation that group membership can decrease loss than those holding a low expectation that group membership can decrease loss.

Value Theory Versus Locus of Control Theory

Locus of control variables are viewed as operating differently as compared to value theory variables. It is contended that it is not the risk items that directly generate a norm/value of risk or caution as value theory proposes but rather it is an emphasis on risk functions. For example, in a group discussion of a risk taking item an emphasis on the gains accruing to the risk as opposed to the losses should increase risk taking of group members, while emphasis on losses as opposed to gains should decrease the risk taking of group members. In addition, sources of group member enhancement of a risk function are the expectations group members hold concerning the group's ability to increase

gain and decrease loss. These expectancies are viewed as leading to an enhancement of gains and a diminution of losses accruing to the risk item, which in turn increase risk taking.

In contrast to value theory, disclosure of group member risk preferences are not viewed as critical but discussion where gains and losses are considered are. When one equates the risk positions of groups in two conditions, shifts in a risky or conservative direction are predicted as occurring as a function of the gain or loss function emphasized.

Value theory views individuals as attempting to live up to a norm/value as the dynamic for adopting a risk position. Locus of control theory views the behavior controls of the group, originating in expectations concerning the group's ability to affect outcomes as a mechanism for adopting risk positions. Behavior controls exist in the form of the group's ability to influence the individual to enhance a particular risk function. An individual group member is more likely to enhance a group emphasized risk function when he perceives the group as able to control outcomes. For example, an individual holding the expectation that group membership will lead to an increase of gains will be influenced by the group. When one function is emphasized or enhanced (gain over loss or loss over gain) a group member will be more likely to also emphasize or enhance that function with its predicted effect for or against risk taking.

Diffusion of Responsibility Versus Locus of Control Theory

Within locus of control theory the concept of expected minimization in loss as a function of group membership bears some resemblance to the overall notion of responsibility diffusion. However expected low loss is hypothesized as operating somewhat differently from responsibility diffusion. Specifically,the expectation that group membership can decrease loss leads to an enhancement of low loss in risk taking deliberations. The enhancement of low loss accruing to the risk increases risk taking. The expectation that group membership can lead to a decrease in loss will also lead to increases in the behavior controls of the group. When one risk function is emphasized (gain over loss or loss over gain) a group member will also be more likely to enhance that function in his decisions. The notion of responsibility diffusion is always viewed as increasing risk taking. In direct contrast however; the expectation that group membership can lead to a decrease in losses, leads to decreases in risk taking, if the loss function is emphasized in the group discussion.

Method

Overview of Experimental Design

The procedure employed attempted to determine the effects on risk taking in groups of variables specified by locus of control theory. An overview of the theoretical variables and their operationalized counterparts are given below:

A1	Theoretical:	Group emphasis on gain function.
	Operational:	Simulated group members primarily emphasize the high gain components of the BPS, with maximum emphasis on the high reinforcement value of gain component.
A2	Theoretical:	Group emphasis on loss function.
	Operational:	Simulated group members primarily emphasize the high censure components of the BPS, with maximum emphasis on the high reinforcement value of censure component.
A3	Control:	Simulated group members emphasize a randomized series of components and component levels.
B1	Theoretical:	High expectation of group member gain.
	Operational:	Subjects informed that the composition of their group will help their problem solving behavior.
B2	Theoretical:	Low expectation of group member gain.
	Operational:	Subjects informed that the composition of their group will neither help nor hinder their problem solving behavior.
B3	Control:	No information given concerning group composition or its relationship to problem solving behavior.
C1	Theoretical:	High expectation that group membership can decrease loss.
	Operational:	Evaluation of group judgments on the BPS, with individual judgments not known to the evaluator.

C2 Theoretical: Low expectation that group membership can decrease loss.
Operational: Evaluation of group judgments on the BPS, with individual judgments known to the evaluator.

C3 Control: No information given concerning an evaluation procedure.

The experimental design utilized to determine the effectiveness of the manipulated variables was a three-factor 3 x 3 x 3 analysis of variance (Risk Function Emphasized x Expected Group Gain x Expected Exposure to Evaluation). The dependent variable was predictive risk judgments made on the BPS.

Subjects recruited for this experiment were all undergraduate volunteers at Hunter College of the City University of New York. Subjects were randomly assigned to each of the experimental conditions. The sample consisted of 27 males and 135 females. One male and five females were randomly assigned to each of the 27 treatment cells.

Overview of Procedure

Subjects (N=162) were recruited for an experiment, ostensibly pertaining to problem solving behavior under manned space flight conditions. Under the guise of determining how problem solving behavior on a judgmental task is affected by different combinations of individuals, subjects were assigned to "groups". In each of these "groups" subjects were asked to arrive at decisions on each item of the BPS. In reality however, subjects interacted in a simulated group. Each subject "interacted" with a videotape which had been produced

in advance. The simulated group members who appeared on the videotape emphasized a particular risk component of the BPS. Three simulated group conditions existed: one where simulated group members primarily emphasized the high gain components of the BPS (gain tape), another where the high censure components were emphasized (censure tape), and a third where components and levels were varied at random (random tape). Decisions made by simulated group members in each tape for each of the 16 BPS items were held constant at about the midpoint of the risk scale across conditions. The running time of each videotape and therefore each simulated group session was 48 minutes.

Subjects were briefed before the simulated group session on the extent to which the composition of their group was to affect their problem solving behavior. The instructions given attempted to establish either a high or low expectation that group membership would lead to an increase of gains or positive outcomes for the subject (group:help or group:no help). Some subjects also received no information about their group (group:no information).

Subjects were also informed that problem solving behavior exhibted in the group would be evaluated after the experiment. The instructions concerning evaluation attempted to establish either a high or low expectation that group membership could decrease losses or negative outcomes (group evaluation or individual evaluation). Some subjects also received no information pertaining to evaluation (no evaluation).

At the termination of the simulated group session a questionnaire was administered to determine, in part, the effectiveness of the manipulations. Finally, subjects were debriefed.

Behavior Prediction Scale

The Behavior Prediction Scale (BPS) is a 16 item instrument consisting of items portraying a person in conflict about stealing money from a bank (see Appendix A). The BPS is a multidimensional scale consisting of four separate components. The rational for the components of the scale were derived from social learning theory (Rotter, 1954) and operationalized by Rettig and Rawson (1963). In each item of the scale there is a manipulation of the four theoretical components. Throughout the 16 item scale each component appears in the same sequence but the levels of any one component are randomly varied from high to low from item to item (Rettig, 1969). The four theoretical components and their operationalized high and low levels are as follows:

1. Reinforcement value of gain (RVgn):high-the money is needed for a crucial medical operation; low-the money is needed by other people.

2. Expectancy of gain (Egn): high-the medical operation was guaranteed to cure the illness, the money obtainable would help many people; low-the success of the operation was not guaranteed; the money obtainable would help only very few people.

3. Negative reinforcement value of censure (RVcens): high-the theft would result in expulsion from the bank and a charge of criminal conduct; low-the theft would be settled in private with the bank president.

> 4. Expectancy of censure (Ecens): high-the theft would be detected; low-the theft would go unnoticed. (Rettig, 1969, pg. 427)

The combination of the four components (RVgn, Egn, RVcens, Ecens) at two levels (high and low), generates the 16 items of the BPS. As noted, each BPS item portrays a person in conflict about stealing money from a bank. Subjects are requested to make a prediction as to whether or not the money would be taken on a scale ranging from 0 (definitely no) to 6 (definitely yes). Instructions to the subjects emphasize that they are to predict whether or not the money would be taken not how wrong it would be to take it (Rettig, 1970). An overall measure of risk taking on the BPS is obtained by summing the risk positions taken for each of the 16 items. Theoretically, subject's overall risk scores on the BPS could range from 0 to 96.

In addition to an overall risk taking score, component scores can be derived from the BPS. In the derivation of a component score items are paired post-experimentally on the basis of the differences in the two levels of one component (high vs. low) but no difference in the levels of the remaining components (Rettig, 1970). Each component appears eight times at a high level and eight times at a low level in the BPS; therefore, eight pairs of matched items are obtained for one component. The 16 BPS items are re-paired so that each of the four components is represented by eight pairs of matched items. Thus, the four components are represented by four different sets of item pairs with each

combination containing eight pairs of items (Rettig, 1970).

To obtain a subject's score on a component, one sums the difference in the subject's judgments across the eight post experimentally obtained pairs of items representing that component (Rettig, 1970). The difference score on a component denotes relative sensitivity to a component. The difference score indicates the difference in risk taking that occurred when the component appeared within items at a high level as opposed to a low level. The larger the difference score the greater is said to be the sensitivity to the component. "It can be shown mathematically that the four component difference scores (d-scores) are obtained from the original 16 items in an orthogonal (and linearly independent) fashion." (Rettig, 1970, pg. 4).

Rettig (1970) notes that Kuder-Richardson reliability estimates of the BPS scale when given in ordinary questionnaire form were .90 in both group and individual judgment conditions. Administering the scale item by item (one item per page) Kuder-Richardson reliability estimates were found to be .88 for male subjects and .86 for female subjects.

Overview of Procedure Sequence

Recruitment. Subjects were recruited for a study of problem solving under manned space flight conditions. Subjects were informed they were to work with others to solve a series of problems over a closed circuit television system.

Pre-experimental questionnaire. Each subject completed a bogus "group matching" questionnaire.

Experimental situation. Each subject was told to report to a specific room at a specific time. Upon arrival the subject was taken to a room which contained a television monitor, a microphone, and a television camera. The subject was given a series of instructions indicating he would interact over the closed circuit T.V. system with two other individuals to solve a series of problems (the BPS).

Experimental manipulations. Subjects were also told one of the following "facts" about the group they would enter: group:help, group:no help or group:no information. Subjects were also informed that the they would be evaluated as follows: group evaluation, individual evaluation or no evaluation. Subjects interacted with one of three videotapes: gain tape, censure tape or random tape.

Post-experimental questionnaire. Each subject completed a post-experimental questionnaire to assess the effectiveness of the manipulations.

Debriefing. All subjects received positive and complimentary feedback on their performance. Subsequently all subjects were mailed a debriefing letter.

Specific Procedure

Recruitment of subjects. The experimenter presented the experiment to classroom groups of potential subjects as follows:

> I would like to know if anyone here is interested in being a subject in an experiment dealing with problem solving behavior under manned space flight conditions. If you are a subject in this experiment you will be a member of a simulated astronaut group. You will be

> asked to work and talk with other individuals over a closed circuit television system. The experiment will take place at (location), at a time which is convenient to you.
>
> If you are interested please fill out the form I am handing out. On it indicate your name, address and a phone number at which I can contact you for the experiment. On the chart provided indicate the day of the week and the time you will be free to participate in the experiment.

The sign up forms were collected by the experimenter, who then gave each individual who had signed up for the experiment a Problem Solving Preference Questionnaire (see Appendix B). The only function of this questionnaire was to establish a cover story for the subject's later assignment to a group. Potential subjects were instructed as follows:

> I would like each of you who has signed up for the experiment to fill out one of these questionnaires. The questionnaire deals with problem solving preferences and style and will be needed for our study. Fill it out alone at home and bring it to class on ___day. I will be here to pick it up or you can mail it to me.
>
> I will call you at home and tell you when to report for the experiment.

The Problem Solving Preference Questionnaire collected (or returned by mail) subjects were then contacted by telephone and instructed to come to the site of the experiment at a specific time.

Introduction to the experimental situation. A subject arriving for the experiment was greeted by the experimenter and taken to a room which contained a television monitor, a microphone and a television camera. The subject was seated at a table in a position to view the T.V. monitor, speak into the microphone and be in range of the T.V. camera. Orientation

to the experiment by the experimenter began with the following verbal instructions:

> I'd like you to spend a few mintues reading this material. [The subject is given an instruction packet labeled, Manned Space Flight Instruction Booklet.] The entire briefing for this experiment has been put in writing to insure that everyone gets the same instructions. As you may know, in an experiment, it is important that everyone gets a clear idea of what we are doing, therefore the need for this material. I'll be back in about 5 minutes and review what you've read. If you have any questions, I can answer them at that time.

Page one of all instruction booklets had the following title and instructions:

> Purpose of the Experiment
>
> We are collecting information on how people solve problems under manned space flight conditions. You will be a member of a group that will communicate like a group of astronauts. You will talk and work with other members of your group over the closed circuit television system you see in front of you. The limited closed circuit television system is similar to the type of communication system that will be found in large space ships of the future. In these space ships people will have to talk with one another and quickly solve problems using a closed circuit television system. However, the success of long space flights may not only depend on the machines we build but on whether or not we can operate them.

Group gain manipulation. All subjects having read the standard introduction to the experiment then found further explanatory material in their instruction booklet. Two conditions with regard to expectations concerning group member gain were manipulated (see Appendix C for all materials used in the group gain manipulation). In the condition of maximum expectation of group member gain as a function of group membership (group:help), subjects read the following:

You have been made a member of a group. The fact that you are working in this group will help you solve problems.

On the basis of the "Group Matching Questionnaire" you filled out, you were matched on a number of critical factors with two other individuals to form a group. These factors dealt with:

1. People you like and dislike;

2. Particular qualities about yourself.

For the purposes of this experiment we did our best to set up your group so that each member "fits" with each other member, like pieces in a puzzle, to form a solid problem solving unit.

We believe that the group we have formed will produce a good deal of problem solving behavior. We predict that your group with its specific combinations of people should add to your own problem solving effectiveness. You and each member of your group should do better at solving problems because you are a member of this group than you would have if you were working alone.

Your assignment to this group was not because we think you are better or worse at solving problems but to look at the problem solving behavior of a particular combination of people.

The other individuals in your group are now in two other separate rooms also receiving the same instructions you are.

In the condition of minimum expectation of group member gain as a function of group membership (group:no help), subjects read the following:

You have been made a member of a group. However we expect this group will not help you or hinder you in solving problems.

On the basis of the "Group Matching Questionnaire" you filled out you were mis-matched on a number of critical factors with two other individuals to form a group. These factors dealt with:

1. People you like and dislike;

2. Particular qualities about yourself.

For the purposes of this experiment we did our best to set up your group so that each member does not "fit" with each other member and does not form a solid problem solving unit.

We believe that the group we have formed will not produce a good deal of problem solving behavior. We predict that your group with its specific combination of people should not add to your own problem solving effectiveness. You and each member of your group should do about the same at solving problems as you would have if you were working alone.

Your assignment to this group was not because we think you are better or worse at solving problems but to look at the problem solving behavior of a particular combination of people.

The other individuals in your group are now in two other separate rooms also receiving the same instructions you are.

In the control condition subjects did not receive the preceding information concerning group composition or the experimenters expectation concerning problem solving outcomes (group:no information). Subjects read the following:

You have been made a member of a group. You will be working with two other people who were also able to sign up for the experiment during this time period.

The other individuals in your group are now in two other separate rooms also receiving the same instructions you are.

The task. Having been informed of the nature of the experiment and given a group assignment, subjects were then informed about the task they were to work on. The following are the instructions the subject received:

Each member of your group will receive a copy of the Problem Questionnaire [BPS]. Look at the instructions for the scale and a sample problem below. The entire scale has 16 such problems.

Problem Questionnaire

This questionnaire presents 16 different situations, each situation portraying a person in conflict about taking money which does not belong to him. You are to read each situation carefully and make a prediction as to whether or not the person would take the money.

Each situation is followed by a set of numbers ranging from 0 to 6.

Circle the 0 if you feel that the person will definitely not take the money.

Circle the 6 if you feel that the person will definitely yes take the money.

Circle the 3 if you feel that the chances are about equal that the person will or will not take the money. Use the in-between numbers for the varying degree of certainty, 1 or 2 being more on the no side, 4 and 5 being more on the yes side.

Remember! Your choice of the numbers is to indicate whether or not the person would take the money, not how wrong it would be to take the money. Although the 16 situations may appear to you very much alike at times, each situation differs in some respect from every other situation.

Sample

A bank employee had to have some money to pay for a crucial medical operation he needed. The employee was thinking of stealing the money from the bank. The operating surgeon could not give the employee any guarantee that the operation would cure the illness. The employee was sure that his theft would be detected sooner or later. However, the employee was convinced that if he was caught, he could settle the matter privately with the bank president.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

As you may have noted the problem presented does not have a clear cut answer, as you would find in a math problem. The fact is that these problems were selected for this very reason. On extended space voyages, problems of a judgmental nature will be the most important for a group to solve and are therefore of most concern to us.

Instructions for interaction. Subjects having been given information as to the nature of the experiment, the group they will work with and the task; were then given the following instructions for working together:

> You will work with your group on the Problem Questionnaire.
>
> You will use the closed circuit T.V. system you see here to talk with other group members about each of the 16 problems.
>
> Your statements to the other members of your group about the problem you are working on should be of the following type:
>
> 1) Report to the other group members your decision on each problem.
>
> 2) Report to the other group members what you felt was the most important part of the problem in arriving at your decision.
>
> Everyone is instructed to make statements of the above type.
>
> An example of one statement is presented below.
>
> Problem:
>
> A bank employee had to have some money to pay for a crucial medical operation he needed. The employee was thinking of stealing the money from the bank. The operating surgeon could not give the employee any guarantee that the operation would cure the illness. The employee was sure that his theft would be detected sooner or later. However, the employee was convinced that if he was caught, he could settle the matter privately with the bank president.
>
> definitely no — fifty-fifty — definitely yes
>
> 0 1 2 3 4 5 6

Sample Statement

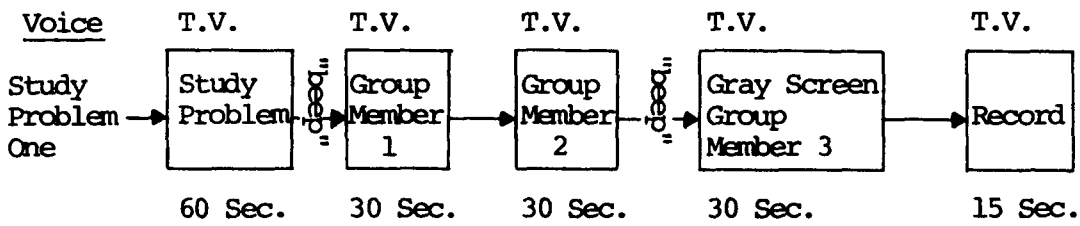
I would say five. I guess its a matter of using the money for his own life, its a chance to save his life. Life is more important than what happens if you steal money.

Prior to the start of the group interaction phase of the experiment subjects were given the entire Behavior Prediction Scale to use for the group discussion. The BPS was administered item by item (one item per page), with the instructions for making statements appearing on each page (see Appendix A).

Having received instructions on what types of statements to make to other group members subjects received the following additional information on the interaction procedure. Subjects also received yellow and white response sheets (see (Appendix C).

The T.V. system you see has been hooked up and the circuits timed in a specific way. The chart in front of you shows the order of communication over the T.V. system for the group problem solving task [see chart below].

Consider Yourself Group Member Three



The communication sequence will be as follows:

1) You will hear someone tell you which problem is to be discussed.

2) You will have one minute to study the problem. A sign on the T.V. monitor will read "Study Problem". After 50 sec. a "beep" will sound.

3) You will then see group member one who will give a decision and tell you what was the most important part of that problem in arriving at the decision. Record the decision given by group member one on your yellow answer sheet in the appropriate space.

4) You will then see group member two who will give a decision and tell you what was the most important part of the problem in arriving at the decision. Record the decision given by group member two on your yellow answer sheet in the appropriate space.

5) You will then hear a "beep" and the T.V. will appear gray. You can now speak to the other members of your group. Give your decision and tell the other group members what was the most important part of the problem in arriving at your decision. Record your decision on the yellow answer sheet. You can't speak longer than 30 seconds but you don't have to speak for the entire time period you are on. A "beep" will sound indicating the end of your speaking period. [Note: 45 seconds is allowed for subject response.]

Exposure to evaluation manipulation. In the condition of low expectation that group membership can decrease loss (individual evaluation) subjects were told the following concerning the last (sixth) phase of interaction:

6) Finally you will see a sign on the T.V. monitor labeled "Record". Each time that the "Record" sign appears on the T.V. monitor re-record your decisions for each problem on white individual evaluation sheet. After the 16 problems have been considered you will tear up the yellow sheet and discard it.

At the end of the experiment we will have a conference with you. At this conference we will meet with you in private and share with you our evaluation of your group's problem solving behavior. The evaluation will in part be based on your responses on the white evaluation sheet.

> Thus while your group will exchange problem solving information, to an extent, your own problem solving performance will be evaluated separately.

In the condition of high expectation that group membership (group evaluation) can decrease loss, subjects were told the following concerning the last (sixth) phase of interaction:

> Each time that the "Record" sign appears on the T.V. monitor add up all the decisions for the problem for each member of the group including yourself (e.g., 3+4+5=12) and place that total on the group evaluation sheet. After the 16 problems have been considered you will tear up the yellow sheet and discard it.
>
> At the end of the experiment we will have a conference with you. At this conference we will meet with you and share with you our evaluation of your group's problem solving behavior. The evaluation will be based on the total group response on the white evaluation sheet.
>
> Thus your group will exchange problem solving information and will be evaluated as a group.

In the control condition no attempt was made to generate expectations concerning an evaluation (no evaluation). Subjects were instructed to record their own decision (on the yellow response sheet) during phase five instead of phase six. Generally, instructions were modified to omit references to any evaluation procedure (see Appendix C for all materials used in the exposure to evaluation manipulation).

After instructions for interaction all subjects in all conditions then received the following information:

Summary

> In summary, and looking at the chart in front of you, the order of communication is:

1. You are given a problem to study.
2. You study the problem.
3. You see group member one.
4. You see group member two.
5. You talk to group members one and two.
6. You record information.

This sequence is repeated for each of the 16 problems.

*A final note: We are not trying to determine if you go along with the decisions of other members of your group. We want each group member to make the best decision based on the information provided by the group.

When subjects completed the instruction booklet the experimenter (who had left the room) returned and clarified any questions concerning the instructions in the instruction booklet (see Appendix D for a sample booklet). Subjects received a summary of the experiment (see Appendix D for a summary sheet) which was keyed to the subjects' condition. Finally, subjects were told to await the start of the experiment which was to be communicated over the T.V. system.

Observations were made of all subjects at work to insure that subjects understood and followed the instructions given. After the completion of the first problem solving sequence, the experimenter quickly entered the room to determine that instructions were being followed. If necessary clarifying instructions were "quickly" given. No further visits into the subjects' room were planned unless clarifying instructions were necessary after problem sequence one. Those subjects who required clarifying instructions after problem sequence one were checked a second time; none required further instructions. Additional observations by the experimenter were continued to determine if any subjects "withdrew"

from the experimental situation.

At the close of the experiment subjects were asked to complete a post-experimental questionnaire to determine the effectiveness of the manipulations (see Appendix E). Finally, subjects were debriefed. Subjects were informed they all performed well in answering the problems and following the instructions. Each subject was told not to discuss the experiment with friends. Subsequently all subjects received a full debriefing letter (see Appendix E). The total time to run one subject through the procedure was 75 minutes.

Group Emphasis on Risk Functions Through Videotape Simulation

Three videotapes were produced: a gain, censure and control tape. Subjects "interacted" with one of the three videotapes. In the gain oriented videotape both simulated group members primarily emphasized the high RVgn and Egn components of each BPS item. In the censure oriented videotape all simulated group members primarily emphasized the high RVcens and Ecens components of each BPS item. In the control tape each group member emphasized a component chosen at random for each BPS item.

Each videotape consisted of decisions and statements by the two simulated group members for the 16 BPS items. The decisions made for each item by each simulated group member were chosen at random from the mid-range of the BPS (points 2, 3 & 4). The decisions for each item were held constant across the three videotapes for all 16 items and both simulated group members. The same individuals, one male and

one female of college age, acted as simulated group members in each of the three videotapes. Thus decisions made across all three videotapes as well as the simulated group members were held constant, while the components emphasized were varied.

Statements in each videotape emphasizing components were made by simulated group members. These statements were made as simulated group members reported what they felt was the most important part of the problem in arriving at a decision. A statement consisted of a neutral filler item plus reiteration of part of the BPS item (which was selected at random) and a direct reference to the component emphasized.

To acquire realistic dialogue for the statements to be utilized a sample of the population used in the experiment was asked to respond to the BPS. These individuals were asked to give their decisions on each item as well as report which aspect of the problem was most important in arriving at their decision. All responses were audiotaped and standardized dialogue for filler items and dialogue for component items was generated.

To develop a particular videotape in which one risk function was emphasized over another the following factors were considered. The gain function of a risk item was represented by two components on the BPS, reinforcement value of gain (RVgn) and expectancy value of gain (Egn). The loss function was also represented by two components on the BPS, negative reinforcement value of censure (RVcens) and

expectancy censure (Ecens). As noted, throughout the 16 item BPS, each component appears in each item. The component sequence is the same for all items but the levels of any one component are randomly varied from high to low from item to item (see Appendix F for the high-low distribution of components per item).

As noted, it was found (Rettig 1966, 1969) that groups make riskier predictive judgments on the BPS than individuals. In addition, the more risky behavior of groups was associated with emphasis of the high RVgn component and the less risky behavior of individuals was associated with emphasis of the high RVcens component. Therefore, in attempting to produce increased risk taking through a manipulation of the gain function, the high RVgn component received maximum emphasis. To produce decreased risk taking through a manipulation of the loss function the high RVcens component received maximum emphasis (See Appendix F for the scheme and scripts used for each videotape).

Gain videotape. Based on the distribution of RVgn and Egn components the gain oriented videotape for the 16 BPS items had the following specific format:

1) Both simulated group members in interaction with the experimental subjects emphasized the high RVgn component in items 2, 4, 5, 7, 8, 11, 14, 15, and the high Egn component in items 1, 3, 6, 16.

2) One simulated group member emphasized the low RVgn component in items 9, 10, 12, 13 while the other emphasized low Egn in items 9, 10, 12, 13.

Thus in the gain oriented videotape both simulated group members focused on the gain components by referring to them when accounting for decisions made on the BPS. Maximum emphasis was accorded the high RVgn component.

Censure videotape. The censure oriented videotape for the 16 BPS items, based on the distribution of RVcens and Ecens components had the following specific format:

1) Both simulated group members in interaction with experimental subjects emphasized the high RVcens component in items 1, 2, 7, 8, 9, 10, 14, 16 and high Ecens in items 4, 6, 7, 13.
2) One simulated group member emphasized the low RVcens components in items 3, 5, 12, 15 while the other emphasized low Ecens in items 3, 5, 12, 15.

In contrast to the gain oriented videotape, both simulated group members focused on the censure components by referring to them when accounting for decisions made on the BPS. Maximum emphasis was accorded the high RVcens component.

Random videotape. In the control videotape each simulated group member emphasized a component for each item chosen at random from any of the four components within each item (see Appendix F).

Results

Effectiveness of the Manipulations

To assess the effectiveness of the manipulated variables, subjects were asked to complete a post-experimental questionnaire (see Appendix E). The questionnaire elicited each subject's reaction to the experimental manipulations as well as to the experimental milieu. In addition, direct observations by the experimenter of subject behavior in the experimental situation were made. The post-experimental questionnaire was administered to 138 subjects while direct observations were made of the entire sample of 162 subjects. Post-experimental responses by 138 out of 162 subjects were found adequate in assessing subject reaction to the experiment. Data from the post-experimental questionnaire and experimenter observations are utilized to discuss subject reaction to the simulated group, the risk function manipulation, the group gain manipulation and the exposure to evaluation manipulation.

Reaction to the simulated group. Subjects were involved and interacted with the simulated group presented in this experiment as if the group actually existed. This conclusion is based on observations of subject behavior, and on data collected on the post-experimental questionnaire.

Observations were made of all subjects at work to insure that subjects understood and followed the instructions given. These observations were made at the beginning, middle and end of the experiment. Thus with a minimum of three observations per subject, at least 486 "group" interactions

were observed. In each case the experimenter was able to view the subject at work and hear verbal responses made to the simulated group. These observations went undetected by the experiment's participants. In all the 486 interactions observed, subjects were found viewing, listening, and talking to both simulated group members in the prescribed manner as if they were actually interacting with them in other rooms. No subject was observed to have withdrawn from the experiment or the group by not responding in the directed manner at the appropriate time.

In order to determine the extent to which subjects viewed themselves as involved with a real group, each subject was asked to respond to the following question on the post-experimental questionnaire. "If you had the time would you like to meet with other members of your group?" (see Appendix E, statement 6). Of the subjects (N = 138) asked to respond to this question, 87.68% reported they would like to meet the other members of their group.

Subjects today, both in and out of universities, possess some sophistication, some notion of psychology and psychological research. Almost all subjects will add to the instructions given them, subjectively reconstructing an experiment based on their past experiences. In this particular experiment two individuals did guess they were viewing a videotape and therefore were dropped from the data analysis. Other subjects did speculate as to what the experiment was about, e.g., "Were you varying brightness on the T.V. monitor to see how we would react?" However, based

on the direct observations made and the extremely robust finding on the post-experimental questionnaire, it is concluded that individuals participating in this experiment acted as if they were working with other people over a closed circuit television system. Further manipulation checks to be reported will indirectly attest to the degree to which subjects were involved and attentive to the other members of their "group".

Videotape manipulation of risk functions. The risk function manipulation was executed by having subjects interact with one of three videotapes: one in which high gain components of the BPS were emphasized (gain tape), one in which the high censure components were emphasized (censure tape) and one in which components were emphasized at random (random tape).

The check of the risk function manipulation was accomplished by determining if subjects in each videotape condition could in fact report that simulated group members were emphasizing a particular set of components. Specifically, subjects were asked to estimate what other members of their "group" thought was the most important part of the problem in arriving at their decisions. Each subject was requested to rate those parts of the problem referred to most frequently (rating = 1), those parts referred to with moderate frequency (rating = 2) and those parts referred to least frequently (rating = 3) by the other group members. The 10 operationalized components of the BPS were listed to allow

these ratings (see Appendix E, statement 4). Thus each operationalized component was rated 1, 2 or 3 by each subject completing the post-experimental questionnaire. The components and the percent of subjects who rated them as occurring most frequently (rating = 1) for each of the three videotape conditions is given in Table 1.

In the gain and censure videotape conditions the components emphasized through manipulation were in fact rated by subjects as occurring most frequently (rating = 1) in a greater number of cases then expected by chance.[2] In the gain tape where RVgn (high) and Egn (high) were emphasized, both were rated as occurring most frequently by a significant proportion of subjects exposed to this tape, RVgn high, $\chi^2(2) = 35.94$, $p < .01$; Egn high, $\chi^2(2) = 15.28$, $p < .01$. Likewise in the censure tape where RVcens (high) and Ecens (high) were emphasized, both components were also rated as occurring most frequently by significant proportion of subjects exposed to this tape, RVcens high, $\chi^2(2) = 41.78$, $p < .01$; Ecens high, $\chi^2(2) = 19.62$, $p < .01$. In contrast the random tape, by design, does not produce a report of excessive emphasis of any component. RVgn (high) and Egn (high) are rated as occurring most frequently almost as often as RVcens (high) and Ecens (high).

---

[2]The frequencies for each of the three rating categories for each component were tabulated for each videotape. A one-sample chi-square was calculated for the ratings given each component. The frequency of ratings represented in the form of percents for the most frequent category appears in Table 1. The significant chi-squares reported were only those which were a function of exceeding the expected occurrence in the most frequent category.

Table 1

Percent of Subjects Rating a BPS Component as Occurring, Most Frequently per Videotape Risk Function Condition

	Videotape		
BPS Component	Gain	Censure	Random
	(n=46)	(n=45)	(n=47)
RVgn - high	87.0[a]	33.3	44.7
RVgn - low	50.0	11.1	38.3
Egn - high	71.7[b]	33.3	52.1
Egn - low	32.6	17.8	34.0
RVcens - high	13.0	93.3[c]	48.9
RVcens - low	28.3	40.0	29.8
Ecens - high	26.1	77.8[d]	46.8
Ecens - low	37.0	53.3	44.7

Note. Letters indicate percent of ratings occurring more than expected by chance as determined by a one-sample chi-square.

[a] $\chi^2(2) = 35.94$, $p < .01$

[b] $\chi^2(2) = 15.28$, $p < .01$

[c] $\chi^2(2) = 41.78$, $p < .01$

[d] $\chi^2(2) = 19.62$, $p < .01$

The mechanical manipulation of the risk function manipulation through videotape was judged effective. The videotapes were perceived differentially by those exposed to them with the reported differences in ratings clearly and significantly in accord with the intended manipulation.

Group gain manipulation. In order to manipulate the expectation that group membership could affect member gain, subjects were briefed before the group session on the extent to which the composition of their group could affect their problem solving behavior. Subjects were given one of three types of information about the group they were joining: One set was told that the group they were joining would help their problem solving behavior (group:help), the second set that the group would not help but not hinder their problem solving behavior (group:no help) and the third set of subjects were merely informed that they were members of a group (group:no information).

The manipulation checks specifically compared the group: help manipulation and the group:no help manipulation, both of which were manipulated to achieve a specific effect. The ratings of the group:no information condition are of interest in establishing how the simulated group was perceived under a standard no information group condition.

In the forthcoming analysis where t tests for two independent means were utilized in determining the effectiveness of the manipulations, a pooled sum of squares combining the variances in the three experimental conditions was

calculated to arrive at a better estimate of experimental error.[3] In all cases the error terms were pooled following an Fmax test in which no significant differences were found between variances of the individual conditions.

The check of the group gain manipulation was accomplished by asking subjects on the post-experimental questionnaire what they had expected their group to be like. All subjects were given the following statement to rate on a series of bi-polar adjectives, "Before I started talking with the other group members I expected the group to be" (see Appendix E, statement 1). The bi-polar adjectives were used with a 7-point (1-7) rating scale. The higher the score the more positive the ratings. The mean scores for each adjective pair for each videotape condition appears in Table 2. For all seven of the bi-polar adjectives the mean ratings of the group:help condition were higher than the mean ratings of the group:no help condition.

The combined sum of all adjective ratings was used as a measure of subjects' overall reaction to the simulated group (see Table 3, statement 1). In all conditions the simulated groups were rated positively, a mid-point rating being 28.00. The mean composite rating of the group:help condition (M = 36.97) was found to be more positive than both the group:no help condition (M = 35.34) and the group: no information condition (M = 34.41). The difference

---

[3]See Appendix G for a discussion of the use of one and two-tailed t tests in determining the effectiveness of the manipulations.

Table 2

Mean Adjective Ratings for Expected Group per Group Gain Condition

	Expected Group		
Scale	Help (n=46)	No Help (n=46)	No Information (n=46)
Fast-Slow	5.15	5.13	4.57
Intelligent-Not Intelligent	5.52	5.30	5.00
Good-Bad	5.26	5.11	4.83
Strong-Weak	4.96	4.87	4.69
Helpful-Not Helpful	5.28	4.93	5.15
Sharp-Dull	5.30	5.02	4.91
Valuable-Worthless	5.50	4.98	5.26

Note. Seven point (1-7) bi-polar adjective rating scale, e.g., Fast = 7 to Slow = 1.

Table 3

Mean Composite Adjective Ratings for Expected and Encountered Group Members per Group Gain Condition

Group conditions	Statements 1		2		3	
	M	SD	M	SD	M	SD
Help (n = 46)	36.97[a]	5.86	30.08[b]	6.99	31.06	7.67
No Help (n = 46)	35.34	4.96	27.33	6.91	31.65	6.16
No Information (n = 46)	34.41[c]	4.56	29.10	6.25	29.47	5.68

Note. Statement 1--Before I started talking with other group members I expected the group to be. . .

Statement 2--During the experiment I found group member one [male] to be. . .

Statement 3--During the experiment I found group member two [female] to be. . .

[a]Statement 1; help>no help, $t(90)=1.54$, $p<.10$, one-tailed.

[b]Statement 1; help>no information, $t(90)=2.42$, $p<.02$, two-tailed.

[c]Statement 2; help>no help, $t(90)=1.99$, $p<.025$, one-tailed.

between group:help and group:no help was slightly higher than the chosen level of significance, $t(90) = 1.54$, $p < .10$, one-tailed. The difference between group:help and group: no information was significant, $t(90) = 2.42$, $p < .02$, two-tailed.

These ratings lend qualified support as to the effectiveness of the manipulated conditions, one in which subjects were to view the group as valuable or helpful to them (group:help) and, one in which the group was not to be viewed as helpful (group:no help). Before further qualifications on the effectiveness of this manipulation are made additional data will be considered.

Subject reaction to the group they actually encountered was considered. Two questions were posed which dealt with the reaction of subjects to the group members they finally worked with. Subjects were asked to rate each group member they worked with on the same series of bi-polar adjectives presented in assessing their expected help from the group. (The order and direction of the bi-polar list differed for each question, see Appendix E, statements 2 and 3). The means of the composite adjective ratings for each of three conditions and for each of three group rating statements appears in Table 3.

The composite ratings clearly reflect a drop in ratings from what was reported as expected of the "group" to what was reported as encountered. The mean ratings in question one, for all conditions, are significantly

($p < .001$) higher than the mean ratings of both questions two and three (t test for related measures).[4] It should be noted however, that subjects in the group:help condition rated encountered group member one as significantly more favorable than subjects in the group:no help condition, $t(90) = 1.99$, $p < .025$, one-tailed, (see Table 3, statement 2). This was the only difference in ratings between conditions for statements 2 and 3 that were statistically significant.

The finding that subjects in the group:no help condition viewed at least one member of their encountered group less favorably than subjects in the group:help condition lends some support to the creation of differential reactions to the simulated group in the planned direction. The reported ratings however, highlight the differences between what subjects expected and what they encountered. Some of the rated differences between expected and encountered group members may have reflected the reality of the situation,

---

[4]Results of t tests for related measures (two-tailed):

Group:help
Statement 1 vs. statement 2, $t(45) = 5.79$, $p < .001$
Statement 1 vs. statement 3, $t(45) = 5.05$, $p < .001$

Group:no help
Statement 1 vs. statement 2, $t(45) = 7.49$, $p < .001$
Statement 1 vs. statement 3, $t(45) = 3.89$, $p < .001$

Group:no information
Statement 1 vs. statement 2, $t(45) = 4.65$, $p < .001$
Statement 1 vs. statement 3, $t(45) = 5.25$, $p < .001$

that is, the group they encountered on videotape was not as "good" as the one they expected. In addition it may also reflect the juxtaposing of statements 1, 2, and 3. Asking for ratings in this form may have at least conveyed the expectation that there should be differences. Nevertheless, the difference between the expected ratings and encountered ratings will have to be integrated into the interpretation of findings of subject behavior in these conditions. It is fair to conclude however, that the simulated videotape groups were "real" enough to be viewed positively by most subjects. It is also concluded that the simulated group was viewed differentially, per condition, in the directions intended by the manipulation. However, based on the post-experimental questionnaire ratings, the planned differential reactions to the simulated groups could have been of greater magnitude.

In assessing the effectiveness of the group gain manipulation, the possibility of differential responding by population sub-samples to this condition was considered. In the videotape presentation of the problem solving group the experimental subjects encountered one male and one female, both college age and white. As age and race were visibly salient factors a check was made to determine if subjects reacted systematically on the basis of these factors. For example, rejection of the simulated group by black and non-college age subjects in any systematic fashion could confound the results of the experiment.

The most sensitive condition for determining if the group was rejected was in the group:help condition. If the sub-samples in question systematically rejected the simulated group it would be most noticeable in this condition. The reactions of black and white, as well as non-college age and college age subjects to the simulated group in the group: help condition appear in Table 4. The reaction to the simulated group is measured by the composite ratings on the post-experimental bi-polar adjective check list. Comparisons of ratings were made using the Mann-Whitney U-test because of the large differences in sample size between the samples compared, as well as the small size of the samples themselves. No significant differences were found between black and white subjects or between college age and non-college age subjects on any of the three ratings of the group:help condition. In the group:help condition black subjects showed no indication of rejecting the group. While the differences were not significant the composite adjective ratings by the black sub-sample in the group:help condition were more positive than those of white subjects. Non-college age subjects did not differ significantly from college subjects on ratings of the simulated group. Based on this data for the most sensitive condition, systematic confounding reactions due to race and age are viewed as not operating.

Exposure to evaluation manipulation. The expected exposure to evaluation manipulation was accomplished by instructing subjects in how they were to be evaluated. Three

Table 4

Mean Composite Adjective Ratings by Sub-Samples,

in the Group:Help Condition,

for Expected and Encountered Group Members

Statements	Black College	White College	Non-College White	College White
	(n=6)	(n=29)	(n=10)	(n=29)
1. Expected group	37.50[a]	36.72	36.90[d]	36.72
2. Encountered member one	33.83[b]	29.41	30.00[e]	29.41
3. Encountered member two	34.50[c]	30.69	30.00[f]	30.69

Note. Values for Mann-Whitney U-test for six pairs of comparisons:

Black vs. White	Non-College vs. College
$^{a}Z = -.17$	$^{d}Z = +.08$
$^{b}Z = -1.51$	$^{e}Z = +.14$
$^{c}Z = -.90$	$^{f}Z = +.31$

A value ± 1.96 significant at .05 level, two-tailed test.

conditions existed: one in which the combined group response to each item of the BPS was recorded for an expected group evaluation (group evaluation), a second in which individual responses to each item were recorded for an expected individual evaluation (individual evaluation), and finally a third in which no evaluation was expected and individual responses to the BPS were recorded routinely (no evaluation).

The manipulation check sought to analyze the relationship between the group evaluation condition and the individual evaluation condition. In both conditions exposure to evaluation differed as exposure of subjects' work was differentially manipulated. It was expected that subjects in the individual evaluation condition would report their individual work as more detectable than those in the group evaluation condition. The responses to the no evaluation condition are of interest in establishing how subjects reacted to the non-manipulated condition.

On the post-experimental questionnaire subjects were asked whether they felt their individual work could be detected. Specifically, subjects were asked to rate the degree to which they felt their individual work could be detected from the judgments submitted on their final evaluation work sheets (see Appendix E for statements 5a, 5b or 5c which are keyed to the evaluation condition). Ratings were made on a 7-point scale (yes = 7 to no = 1). The mean ratings made by subjects in each condition appear in Table 5.

Table 5

Mean Ratings of Degree to Which Subjects Report Their Individual Work Could be Detected per Exposure to Evaluation Condition

Evaluation conditions	Ratings	
	M	SD
Group evaluation (n=46)	3.56[a]	2.05
Individual evaluation (n=46)	4.85	1.59
No evaluation (n=46)	4.91[b]	1.64

Note. Seven point rating scale (yes = 7 to no = 1).

[a]Group evaluation<individual evaluation; $t(90)=3.69$, $p<.005$, one-tailed.

[b]Group evaluation<no evaluation; $t(90)=3.54$, $p<.005$, two tailed.

As was expected the subjects in the group evaluation condition reported that their individual work was less likely to be detected than subjects in the individual evaluation condition. This difference was statistically significant, $t(90) = 3.69$, $p < .005$, one-tailed. The difference between the group evaluation condition and the no evaluation condition was also significant, $t(90) = 3.54$, $p < .005$, two tailed. There was no significant difference in ratings between the individual evaluation condition and the no evaluation condition. On the basis of these ratings it is concluded that the manipulation was effective in producing a differential response on the part of subjects. Individuals in the group evaluation situation reported their work as less exposed to detection, and therefore expected evaluation, than those subjects in the individual evaluation condition.

Response to the Experimental Conditions - BPS Scores

These data were generated by subjects ($N = 162$) responding to the 16 item BPS risk scale under simulated group conditions. Irrespective of the experimental conditions, data for all subjects consisted of decisions made for each item of the BPS. An overall measure of risk taking on the BPS was obtained by summing the risk positions taken for each of the 16 items. Since subjects could rate each individual risk item from 0 (low risk) to 6 (high risk), overall risk scores on the BPS could range from 0 to 96. As noted the 16 BPS items also allow for the calculation of four component scores for each subject; reinforcement value of gain (RVgn),

expectency of gain (Egn), negative reinforcement value of censure (RVcens) and expectency of censure (Ecens).

The mean total BPS score for all subjects was found to be 52.27 (N = 162). The distribution of total BPS scores appears in Figure 1. The mean BPS score and distribution of scores for experimental subjects was to a large extent above the simulated group mean of 46.00. The major proportion of experimental subjects, 133 out of 162 or 82.10%, scored higher than the simulated group mean. The mean BPS score for males (n = 27) was 50.37, while the mean of the female subjects (n = 135) was 52.65. A t test for differences between two independent means was calculated in which the two sub-samples were found not significantly different $t(160) = 1.06$, $p > .25$, two-tailed.

The experimental design combined experimental conditions in the form of a three-factor, three level, factorial design. Responses on the BPS to the three factors (Risk Function X Group Gain X Exposure to Evaluation) were analyzed utilizing a three-way (3 x 3 x 3) analysis of variance. The total BPS score was used as the dependent measure.

The mean total BPS responses for the nine main effects appears in Table 6 (see Appendix H for the one, two and three-way cell means). A comparison of the predicted main and interaction effects with the actual results obtained appears in Table 7. Of the eight predicted relationships four were in the expected direction and four were not. In the three-way analysis of variance, as seen in Table 8, no significant

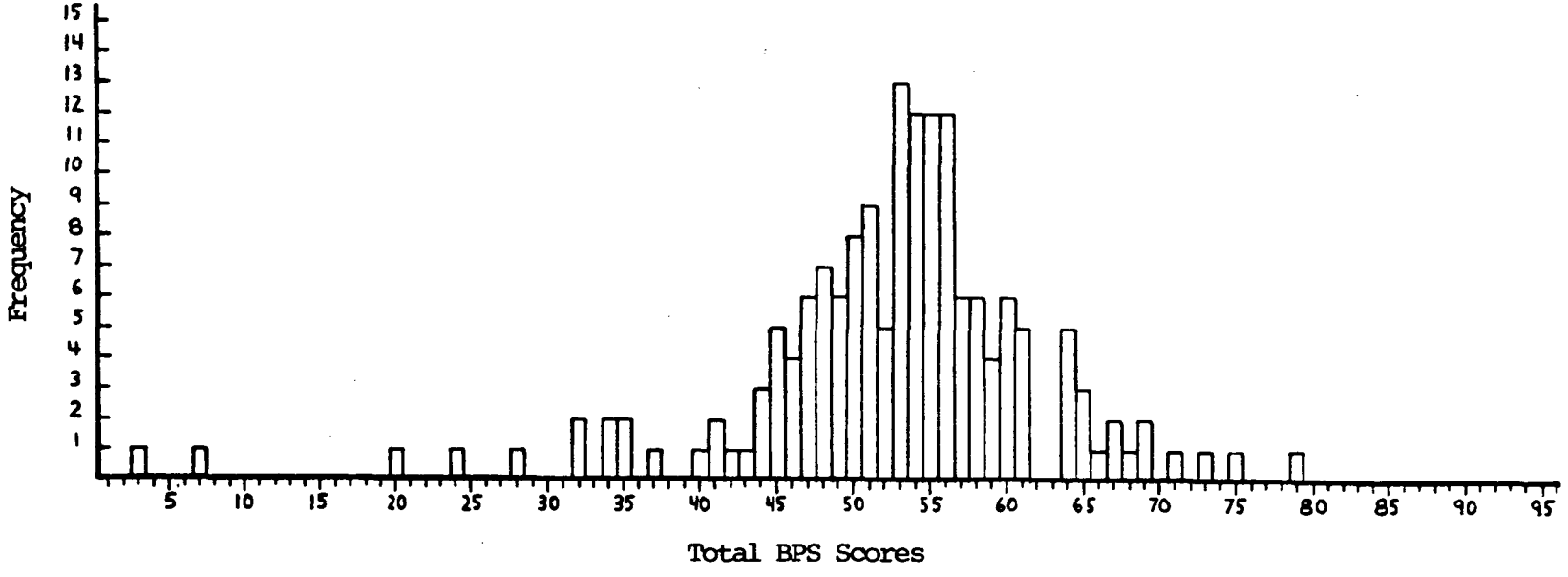


Figure 1. Distribution of total BPS scores.

Table 6

Means of Total BPS Scores per Main Effects

Conditions	Levels	M	SD
Gain tape	A1	51.89	8.43
Censure tape	A2	51.41	12.33
Random tape	A3	53.52	9.71
Group:help	B1	51.09	10.39
Group:no help	B2	51.43	12.43
Group:no information	B3	54.30	7.11
Group evaluation	C1	53.63	9.20
Individual evaluation	C2	50.81	10.11
No evaluation	C3	52.37	11.35

Note. n = 54/level

Table 7

Summary of Hypothesized vs. Obtained Relationship Using Total BPS Scores

Hypotheses	Predictions	Observed means
1	Gain tape > Random tape	[a]51.89 vs. 53.52
2	Censure tape < Random tape	51.41 vs. 53.52
3	Group:help > Group:no help	[a]51.09 vs. 51.43
4	Group evaluation > Individual evaluation	53.63 vs. 50.81
5	Gain tape Group:help > Gain tape Group:no help	52.61 vs. 51.56
6	Censure tape Group:help < Censure tape Group:no help	[a]50.44 vs. 48.00
7	Gain tape Group evaluation > Gain tape Individual evaluation	52.22 vs. 50.22
8	Censure tape Group evaluation < Censure tape Individual evaluation	[a]52.61 vs. 50.22

Note. Hypotheses 1-4, main effects, n = 54/condition. Hypotheses 5-8, n = 18 per two-way interaction.

[a]Observed means reverse of predicted means.

Table 8

Three-Way Analysis of Variance :Risk Function X Group Gain X Exposure to Evaluation Using Total BPS Scores

Source	df	MS	F
Risk function (A)	2	66.09	.61
Group gain (B)	2	167.52	1.56
Exposure to evaluation (C)	2	107.36	.99
A X B	4	137.26	1.27
A X C	4	24.16	.22
B X C	4	53.68	.49
A X B X C	8	109.67	1.02
Error	135	107.61	

main or interaction effects were observed. Thus, in the pre-planned comparisons no evidence was obtained in support of the relationships predicted in any of the eight hypotheses. Furthermore, there was no evidence in support of differential effects of any manipulated variables.

Post-hoc analyses were undertaken to explore trends which may be of theoretical interest as well as suggestive of further experimentation. One analysis examined subject's judgments for each of the 16 BPS items as a function of main effect manipulations. The other analysis examined risk levels for each BPS item as a function of item content (see Appendix I).

Discussion

The research effort undertaken herein was an attempt to test an extended form of locus of control theory. Mechanisms specified by this theory as influencing risk taking in groups were operationalized and tested. Locus of control theory as a unified approach accounting for risk taking in groups was not supported. A number of methodological and conceptual issues emerged and will be discussed in relation to the failure of support for locus of control theory.

In addition, a more speculative discussion of the results was undertaken which may be of interest in relation to future research efforts. In these instances post hoc observations of results in this experiment were related to release theory, group influence processes, the cost ameliorating properties of groups and the negativity bias of individuals and groups (see Appendix I).

In research on ethical risk taking employing the BPS and in the development of locus of control theory, great emphasis has been placed on the role of the gain and loss functions accruing to a risk. The empirical manifestation of the role of these two functions has mainly been in the form of the RVgn component and the RVcens component of the BPS. To reiterate briefly, individuals completing the BPS alone were found to pay more attention to the RVcens component (Rettig & Rawson, 1963). In comparing individuals to groups Rettig (1966) found that individuals paid most attention to

the RVcens component while groups paid most attention to the RVgn component. In addition, total BPS scores for groups were significantly greater than for individuals (group = riskier). A shift to increased emphasis on the RVgn component from the individual condition to group condition was again reported by Rettig (1969) along with an increase in predicted ethical risk taking on the BPS. Chapko (1972) has more recently reported a significant increase in the RVgn component from the alone to group condition but failed to observe a significant increase in total BPS scores.

Locus of control theory in its development as well as in its expanded presentation here has focused on the role of the gain function and the censure function in affecting risk taking. Emphasis on the gains of the RVgn component are seen as being associated with increased risk while emphasis on the losses of the RVcens component are seen as being associated with decreased risk. This basic association between gain and risk as well as loss and caution was clearly demonstrated in the reaction of all subjects to BPS items. The degree of predicted risk taking associated with an item was related to the extent to which gain or loss was represented in that item (see Appendix I, Table E). The more gain (RVgn and or Egn) represented in an item relative to the amount of loss (RVcens and or Ecens) the greater the predicted risk on that item. Whereas, the more loss represented in an item relative to gain the lower the predicted risk on that item.

The presentation of locus of control theory in this experiment postulates a set of mechanisms which accounts for emphasis on either the loss or gain function in a group with subsequent effects on risk taking. These mechanisms have been delineated and operationalized in this experiment to test their validity. However, one aspect of this experiment has been to directly evaluate whether or not gain or loss emphasis in a group will influence risk taking irrespective,of the hypothesized mechanisms which account for the emphasis. Within this context an attempt was made to determine if an emphasis on gains accruing to a risk as opposed to losses will increase the risk taking of group members and if an emphasis on losses accruing to the risk as opposed to gains decreases the risk taking of group members. The following hypotheses were generated and tested:

Hypothesis 1. High gain component emphasis vs. Random component emphasis.

If group members primarily emphasize the high gain components of the BPS (with maximum emphasis on the high reinforcement value of gain component); Then BPS judgments of experimental subjects in the high gain groups will be more risky than those of experimental subjects in groups where BPS components and levels are emphasized at random.

Hypothesis 2. High censure component emphasis vs. Random component emphasis.

If group members primarily emphasize the high censure components of the BPS (with maximum emphasis on the high reinforcement value of censure component); Then BPS judgments of experimental subjects in the high censure groups will be less risky than those of experimental subjects in groups where BPS components and levels are emphasized at random.

As has been noted, simulated groups were established in which the gain, censure and random emphasis of risk components were manipulated through the videotape procedure already described. Risk taking on each of the three videotapes, on each item, for each simulated group member, was held constant across videotapes. Specific risk decisions on items were distributed about the mid-point of the 7-point risk scale; thus the distribution of decisions on items may be characterized as homogeneous. From the broader perspective of the choice shift literature this manipulation can be viewed as one where arguments have been varied while decision information is contrived but held constant at mid-range irrespective of arguments. That is, although decision information is given it does not complement the arguments presented.

In the pre-planned data analyses and comparisons, no support was obtained for the predicted effects on total BPS scores of the gain videotape, the censure videotape and the random videotape. Furthermore, no differential effects on total BPS scores of any of these three variables was observed (see Tables 6, 7, 8). Thus under conditions where the emphasis on risk functions were varied (but risk decisions were held constant at the mid-range across conditions) no significant differences in total BPS scores occurred. Thus, hypotheses 1 and 2 as stated were not supported.

The present results, no effect of the risk function emphasis manipulation, are somewhat surprising in light of the consistent emergence of RVgn and RVcens component sensitivity in BPS research. The failure to obtain the predicted results is also unexpected in the light of the choice shift research delineating the role of arguments in affecting group decision making. The relevant arguments point of view has consistently emphasized the role arguments have played in influencing the direction of risk in group decisions. The role of arguments has been studied in the analysis of discussions leading up to decisions (Burnstein, Miller, Vinokur, Katz & Crowley, 1971; Meyers & Bishop, 1971; Nordhøy, 1962) as well as through the manipulation of arguments group members have been exposed to (Ebbensen & Bowers, 1974; Silverthorne, 1971). Perhaps, however, an interpretation of the present unexpected results produced by the risk function manipulation can be initiated by comparing the videotape manipulation of risk function with the operational definition of component sensitivity on the BPS.

As has been noted, in all three videotape manipulations employed in the present experiment the decisions made by the simulated group members did not move higher or lower as emphasis on a risk function was made. That is, when gains were emphasized by simulated group members high risk decisions were not made. Likewise when censure was argued low risk decisions were not made. The risk positions in both cases were designed to remain about the mid-point of the risk scale and were identical across conditions. The intent

of the manipulations were to determine if gain emphasis would drive risk taking up or whether censure emphasis would drive it down, despite the fact that decisions of simulated group members did not move off center. On the BPS, on the other hand, emphasis (or sensitivity) to a component is in fact defined in terms of differential decision making. For example, sensitivity to gains means that the individual takes high risks (makes higher predictive judgments) when gains accruing to the risk are high but not when they are low. Therefore, when a group member emphasizes the gain accruing to a risk he not only emphasizes the gain function to himself and potentially to other group members but also provides decision information in the form of a risk decision that reflects the emphasis on the risk function. This analysis applies to the loss function as well. In operational terms then, component sensitivity on the BPS carries with it two "types" of information, the risk function being emphasized (gain vs. loss) as well as decision information (how gain and loss are represented in the form of decisions). Therefore, the videotape risk function manipulation (arguments only) is different from sensitivity to a component, since sensitivity to a component carries with it risk function emphasis (arguments) as well as decision information. The videotape risk function manipulation varied only one aspect of sensitivity, namely the risk function and not complementary decision information.

The distinction between component emphasis and the present risk function videotape manipulation is important,

not only in relation to prior findings with the BPS but in relation to the relevant arguments position for the choice shift effect. An example of the relevant arguments position is found in the seeming definitive work of Ebbesen and Bowers (1974), in which the contents of group discussions were manipulated. Ebbesen and Bowers manipulated subject exposure to varying proportions of risky and conservative arguments. Thirty males were individually exposed to the experimental situation. Each was asked to pre-score five representative choice dilemma problems, listen to an audiotaped group discussion of the five problems and finally post-judge the five items again. The audiotaped group discussions had been scripted and then audiotaped with confederates so as to produce discussions with varying proportions of risky to conservative arguments. A total of 10 arguments made up each audiotape. In the audiotaped discussions initial levels of risk were not given nor were decision positions given in the discussions. Thus, the discussions consisted of arguments only. Ebbesen and Bowers (1974), reported a highly significant effect of proportion of risky arguments on the mean risk estimate shift, from the pre to post questionnaire.

> As the proportion of risky arguments increased, the subjects tended to become more risky on the post questionnaire. There was no mean shift when the number of risky and conservative arguments were equal. When there were more conservative than risky arguments subjects shifted in a cautious direction. The linear component of this main effect accounted for 96% of the between condition variance ($p < .001$). (p. 323)

If we accept some degree of comparability between risk function emphasis of gains and losses and risky/cautious discussion arguments, then the findings of Ebbesen and Bowers seem strickingly incompatible with the present results produced by the videotape manipulation of risk function emphasis. The findings are incompatible unless one notes the potential in any "arguments only" manipulation for inferring risk positions (Pruitt, 1971b). Thus, as with component sensitivity on the BPS, the potential exists that arguments alone convey two types of information, the arguments (or risk function emphasized) and inferred decision information. The present experiment attempted to control for decisional inferences. The videotape manipulations held decision information constant at the mid-point of the risk scale, varying only risk function emphasis. Thus, decision information did not complement the arguments presented. For example, with gains accruing to a risk emphasized, the decisions given by simulated subjects were generally at the mid-point of the risk scale. With risk functions (arguments) emphasized but with no supportive complementary decision information, the predicted differential effects of risk function emphasis on risk taking were not observed.[5] One could possibly conclude

[5]Emphasis of a risk function coupled with mid-scale risks may have seemed inconguent to subjects. For example, with censure being emphasized (implying a low risk decision), intermediate risks were taken by simulated group members. The incongruence between risk function emphasized and decisions, an outgrowth of attempts to control decisional inferences, may have weakened the expectancy group gain manipulation. The incongruence factor may have caused the

that arguments or the emphasis of a risk function does not affect decision making in groups; or as will be developed here, that arguments and decision information operate in concert to affect outcomes of choice shift type discussions. The latter possibility will be expanded upon below.

Three types of findings with regard to the effects of arguments and decision information will be considered. First, when only decision information is exchanged between group members in the standard choice shift paradigm, few or small choice shifts occur (see reviews, e.g., Cartwright, 1971). When only arguments (risky/conservative) are exchanged with the potential for inferring decisions, a potent arguments-choice shift effect is observed (Ebbesen & Bowers, 1974). In the present experiment where risk emphasis (gain/loss) is exchanged but decision information is not allowed to complement emphasis then no risk function emphasis-risk choice effect is observed. The relationship of these three sets of findings would seem to imply that risk emphasis or arguments has to be associated with complementary decision information to produce differential results. A complementary manifestation of the consequences of risk emphasis or arguments is needed if movement is to be produced by argument or risk emphasis. This position implies that while relevant arguments can be effective in influencing group decisions

---

simulated groups to appear less helpful than expected, as evidenced by the decline in ratings of the simulated group observed on the post-experimental questionnaire (see Table 3).

(though results in this experiment do not support this proposition), decision information in the context of a group discussion may exert greater influence than has been assumed. That is, decision information in the context of a discussion may be perceived by a group member as qualitatively different from decision information exchanged without discussion. It is plausible to assume that decision information in a discussion may become a valued referent to group members in helping to express in decision terms the positions implied in situation inspired arguments. In the present experiment decision information supplied by the simulated group may have interacted with arguments in this fashion. Since each risk function emphasized was accompanied by the same decision, providing the same frame of reference for the expression of positions implied by arguments, the risk function effect may have been equalized.

The line of discussion stimulated by consideration of the results of the videotape manipulation of risk function has commented on the relevant arguments position in affecting group decision while underscoring the role of complementary decision information. To the extent that decision information is viewed as an active variable in the context of group discussions, then social comparison processes, as applied to choice shift research, may also be a factor in affecting group member decisions.

In BPS related research there is some support that arguments and decisions have the potential for affecting risk. It is credible to assume (and feasible to determine) that in normal group discussions items on the BPS have the potential for eliciting a preponderance of gain-risk arguments or loss-cautious arguments with complementary though subject specific risk decisions. This conception is in part based on the post hoc observation that predicted risks on BPS items were related to the degree of gain/loss represented in the item (see Appendix I, Table E). It seems fair to assume that group members would express in discussions their rationale for decisions. Group discussions would then develop with various proportions of gain-loss arguments which could influence risk taking in the discussed fashion. Secondly, Chapko (1972) reports that decision information in BPS provoked discussions is also a factor in influencing final group decisions. In an experiment using the standard alone to non-consensus group paradigm with the BPS; Chapko explored the relationship between shifts in decisions from the alone to group condition, initial divergence in decisions on items and RVgn sensitivity. Chapko concluded that the mean change on items showing a significant change, from the alone to group condition, was significantly correlated to the divergence of initial positions in the alone condition. Through regression analysis it was concluded that no significant shift occurs on items when the initial divergence in the group is zero, basically irrespective of increases in levels of the RVgn component. Chapko

interpreted this finding as supporting a communication type process in which decision information was a factor in accounting for shifts in group decisions, e.g., value theory, as opposed to an expectancy type process such as locus of control theory. However, the precise role of decision information, in relation to arguments or risk function emphasis warrants further investigation through the systematic manipulation of arguments (risk function emphasis) as well as decision information within the same experiment. For example, a comparison of responses to the following three types of risk function-decision conditions would be illuminating: risk functions emphasized with constant decision information; risk functions emphasized with complementary decision information; and risk function emphasized with no decision information.

It should be noted that the present discussion has evolved in terms of mechanisms which have traditionally been part of value theory positions. However this in no way eliminates, at this point, the possibility that mechanisms posited by locus of control theory can also be operative.

The logic of considering the relationship of the three aforementioned sets of experimental findings from the choice shift literature assumes that one can relate the present videotape manipulation using the BPS to results employing the test-retest choice shift paradigm using the CDQ. One could entertain the notion of no comparability between the arguments manipulation of Ebbesen and Bowers (1974) and the present videotape manipulation of risk function on the basis

of validity and or potency of arguments per se. Although the videotape manipulations of risk function emphasis were differentially perceived by subjects, as reported on the manipulation checks, they may not have been as potent or comparable to the 10 arguments in the audiotape of Ebbesen and Bowers. If one assumes there is no comparability, then a more severe interpretation of the results of the videotape manipulations of risk function would conclude: that no support was provided for the proposition that the emphasis of a risk function in a group discussion of BPS items may influence the decisions of group members.

A second focus of the present experiment was with the mechanisms posited by locus of control theory to account for gain or loss emphasis with its corresponding effects on risk decisions. To restate briefly, it is theorized that as a consequence of transferring a certain degree of outcome control to a group, expectancies are aroused as to the extent that the group will increase group member gain or decrease group member loss. Specifically a group member expecting greater gains for himself in a group enhances the gains accruing to the risk item under discussion. The enhancement of gains leads to increased risk taking. Likewise the expectation that group membership will lead to a decrease in losses leads to an enhancement of decreased loss (or leads to a minimizing of potential loss) accruing to the risk under discussion. The enhancement of decreased loss accruing to the risk increases risk taking. In the present experiment,

expectancies of group derived gain as well as group derived protection from loss were operationalized to determine their effects on risk taking using the BPS.

In light of the findings of the video risk function manipulation, that enhancement of the gain function and loss function did not affect risk taking, it seems appropriate to clarify some characteristics of the purported expectancy-enhancement-decision process. Chapko (1972) indicated that the expectancy-enhancement-decision-process is not theoretically dependent upon communication from other group members. This mechanism can be viewed as residing in the individual and occurs as a consequence of being in a group. The individual's own expectancies about group gain and low loss can lead to his own enhancement of a risk function with its accompanying effects on risk decision. The origin of enhancement in the videotape manipulation of risk functions, in which component emphasis was communicated from one group member to another was external. It is important to make this distinction in light of the findings that risk function emphasis, as operationalized here, did not differentially affect risk taking on the BPS in the predicted manner. This distinction (external enhancement vs. internal enhancement) therefore, does not rule out the possibility of logically considering effects (if any) produced by the expectancy manipulations via internal enhancement. Locus of control advocates could further argue that the video manipulation only clarified the distinction between risk function emphasis and component

sensitivity. Expectancies, it could be argued, lead to differential component sensitivity and not only risk function emphasis, and therefore it is possible logically to consider effects of the expectancies on risk.

The questions considered with regard to the expectancy-enhancement-decision-process were the following: Will a group member expecting greater gains for himself in a group, enhance the gains accruing to risk item under discussion and subsequently increase risk taking? Will a group member expecting decreased losses for himself in a group minimize losses accruing to a risk item under discussion and increase risk taking? The following hypotheses were generated and tested:

> Hypothesis 3. High expectation of group member gain vs. Low expectation of group member gain.
>
> Group members holding a high expectation that group membership will lead to an increase in gains will make BPS judgments which are more risky than those of group members holding a low expectation that group membership will lead to an increase in gains.
>
> Hypothesis 4. High expectation of decreased loss vs. Low expectation of decreased loss.
>
> Group members holding a high expectation that group membership can result in a decrease in losses will make BPS judgments which are more risky than those of group members holding a low expectation that group membership can decrease losses.

The group gain results as they relate to the expectancy of group help (hypothesis 3) will be discussed first. In testing this hypothesis subjects were exposed to one of three sets of information in which three conditions were established: group:help, group:no help and group:no information. In the

pre-planned analyses the predicted effects of hypothesis 3 were not observed. In addition, no significant differential effects on total BPS scores of the group gain manipulation were found (see Tables 6, 7, 8). Since BPS component scores can be viewed as a manifestation of an intervening mechanism in the expectancy-enhancement process, supplementary analyses of component data were also undertaken. Of special interest was the relationship between the group gain manipulation and the RVgn component. As derived from locus of control theory, one would have predicted greater RVgn sensitivity under the group:help condition than under the group:no help condition. In analyses of the effects of the group gain manipulation on component scores no significant expected or differential effects were observed (see Tables G through J, Appendix J). Thus the predictions of locus of control theory; as derived, operationalized, and tested were not supported. Predictions as to the effects of the gain manipulation on BPS scores as well as on the RVgn component were not observed.

It seems fair to consider some data based arguments, from the locus of control point of view, as to why the expectancy gain manipulation did not operate as predicted. First, although the group gain manipulation, as measured by the post-experimental questionnaire, was moderately successful in producing the prescribed differential expectations, the absolute effectiveness of the conditions could have been of greater magnitude. Secondly, the post-experimental ratings given to the encountered groups, for all conditions, were

significantly lower than the ratings given to the expected group. Thus, all subjects did not find the simulated group members to be as "good" as they expected. Although the prescribed relative differences between conditions were observed on the encountered ratings, subjects in all conditions, in general, viewed the simulated encountered groups as "OK". The encountered group ratings for all conditions averaged 4.2, about the mid-point of the scale (see Table 3). As previously noted, emphasis of a risk function coupled with mid-scale risks may have seemed incongruent to subjects. This incongruence factor may have caused the simulated groups to appear less helpful than expected. The thrust of this argument therefore is that although differential expectations existed with regard to groups, the absolute levels of these expectancies, as measured by the post-experimental questionnaire, were not of sufficient magnitude. The moderate absolute levels of the gain expectations as well as some disconfirmed expectations seemed to have created conditions which did not adequately test the gain expectancy prediction. An implication of the problems encountered in the group gain manipulation is the need for locus of control theory to consider the effects of the reality of the encountered group in light of the extent to which an expectancy effect could so easily be negated.

Another data based argument as to why the expectancy gain manipulation did not operate as predicted (enhance RVgn) deals with the fixed decisions made by simulated group members.

The fixed simulated decisions which were also low in sensitivity for all components may have inhibited the potential development of RVgn sensitivity which has been observed to occur in non-simulated groups.

The aforementioned arguments in one way or another indicated that the expectancy gain manipulation was not effectively produced. It is believed the points made in these arguments do deserve consideration, especially in the planning and design of new research.

The results of manipulating the exposure to evaluation factor provided the only instance where main effect results were in the direction predicted by locus of control theory. The question posed was the following: Will a group member expecting decreased losses for himself in a group minimize losses accruing to a risk item under discussion and therefore increase risk taking? The following hypothesis was generated, operationalized, and tested:

> Hypothesis 4. High expectation of decreased loss vs. loss expectation of decreased loss.
>
> Group members holding a high expectation that group membership can result in a decrease in losses will make BPS judgments which are more risky than those of group members holding a low expectation that group membership can decrease losses.

As has been noted, three experimental conditions existed: one in which the combined group response to each item was recorded for an expected group evaluation (group evaluation); a second in which individual responses to each item were recorded for an expected individual evaluation (individual

evaluation); and, finally, a third in which no evaluation was expected, and individual responses to the BPS were recorded routinely (no evaluation).

The observed dependent variable relationship (total BPS scores) between the group evaluation condition ($\underline{M}$ = 53.63) and the individual evaluation condition ($\underline{M}$ = 50.81) was in the predicted direction. However, in the pre-planned analysis no support was obtained for this hypothesized prediction, nor were any significant effects of the manipulated variables observed for this factor (see Tables 6, 7, 8). Supplementary analyses were conducted on BPS components with the expectation that RVcens would vary with the levels of the manipulated variables. Specifically, RVcens for the individual evaluation condition greater than RVcens for group evaluation. No significant expected or differential effects were observed in analyses which included all four of the component scores (see Tables G through J, Appendix J). Thus, there was no support for the proposition that RVcens varied in any differential fashion with regard to the two exposure to evaluation conditions. Therefore, there was no support for the notion that RVcens functioned as an intervening mechanism. On the other hand, one may cautiously point to the relationship between the RVgn component of the group evaluation condition ($\underline{M}$ = 11.19) and the individual evaluation condition ($\underline{M}$ = 9.46). As noted above, this difference is not significant, but the RVgn mean for the group evaluation condition is the largest RVgn component score for any main

effect (see Table F, Appendix J). It is certainly a statistical probability that this observation is a chance occurence. However, the issue it highlights may not be. Perhaps it has been an erroneous assumption that expectancy gain (e.g., group:help) should lead to enhancement of gain (RVgn) as opposed to the notion that expectancy low loss (e.g., group evaluation) may lead to an enhancement of gain. This orientation would put more emphasis on the loss ameliorating properties of groups in accounting for the shift to RVgn sensitivity in groups, a proposition which has not been fully investigated.

The present experiment attempted to specify the relationships that existed between holding expectations about the group's ability to affect outcomes (expectation of group gain and expectation of low loss) and information concerning the risk functions being emphasized by simulated group members. It was predicted that expectations concerning the group's ability to affect outcomes would generate a group influence process which would interact with group norms. Group norms favoring different levels of risk were conceptualized as conveyed through the risk functions emphasized by simulated group members. The following hypotheses which represent the predicted interactions between the expectancy factors and the risk function factors, were tested:

Hypothesis 5. Gain Emphasis X Expectancy group member gain.

The introduction of a high gain emphasis will produce more risky BPS judgments among group members holding a high expectation that group membership will lead to an increase in gains than those holding a low expectation that group membership will lead to an increase in gains.

Hypothesis 6. Censure Emphasis X Expectancy group member gain.

The introduction of a high censure emphasis will produce less risky BPS judgments among group members holding a high expectation that group membership will lead to an increase in gains than those holding a low expectation that group membership will lead to an increase in gains.

Hypothesis 7. Gain Emphasis X Expectancy decreased loss.

The introduction of a high gain emphasis will produce more risky BPS judgments among group members holding a high expectation that group membership can decrease loss than those holding a low expectation that group membership can decrease loss.

Hypothesis 8. Censure Emphasis X Expectancy decreased loss.

The introduction of a high censure emphasis will produce less risky BPS judgments among group members holding a high expectation that group membership can decrease loss than those holding a low expectation that group membership can decrease loss.

In the data analyses employed no support was obtained for the predictions made in the above hypotheses (see Table 7 for a comparison between predicted and observed results). In the 3 x 3 x 3 analysis performed, with total BPS scores as the dependent variable, no significant interaction effects were observed.

In the present experiment, the inability to specify the relationship between group influence and group norms appears attributable in part to the experimental design employed. That is, two types of information were provided from which different normative inferences could have been made, risk functions emphasized and the mid-point decisions provided by simulated group members. Further attempts to specify and test the relationship between a group influence process (generated by expectancies concerning the group's ability to control outcomes) and group norms (generated by information upon which normative inferences can be made) must be able to present to subjects unequivocal information upon which normative inferences can be made.

APPENDIX A: PROBLEM QUESTIONNAIRE (BPS)

PROBLEM QUESTIONNAIRE

This questionnaire presents 16 different situations, each situation portraying a person in conflict about taking money which does not belong to him. You are to read each situation carefully and make a prediction as to whether or not the person would take the money.

Each situation is followed by a set of numbers ranging from 0 to 6. Circle the 0 if you feel that the person will definitely not take the money. Circle the 6 if you feel that the person will definitely yes take the money. Circle the 3 if you feel that the chances are about equal that the person will or will not take the money. Use the in-between numbers for the varying degree of certainty, 1 or 2 being more on the no side, 4 and 5 being more on the yes side.

Circle your answer on your yellow answer sheet.

Remember! Your choice of the numbers is to indicate whether or not the person would take the money, not how wrong it would be to take the money. Although the 16 situations may appear to you very much alike at times, each situation differs in some respect from every other situation.

DO NOT MAKE ANY MARKS IN THIS BOOKLET.

Problem 1

1. A bank employee had to have some money in order to lend it to other people who needed it. The employee was thinking of stealing the money from the bank. The money he could get would be enough to help a great number of people. The employee was sure that his theft would go unnoticed by the bank. However, the employee knew that if he were caught, he would be expelled from the bank and charged with criminal conduct.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 2

2. A bank employee had to have some money to pay for a crucial medical operation he needed. The employee was thinking of stealing the money from the bank. The operating surgeon had guaranteed the employee that the operation would cure the illness. The employee was sure that his theft would go unnoticed by the bank. However, the employee knew that if he were caught, he would be expelled from the bank and charged with criminal conduct.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 3

3. A bank employee had to have some money in order to lend it to other people who needed it. The employee was thinking of stealing the money from the bank. The money he could get would be enough to help a great number of people. The employee was sure that his theft would go unnoticed by the bank. Furthermore, the employee was convinced that if he were caught, he could settle the matter privately with the bank president.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 4

4. A bank employee had to have some money to pay for a crucial medical operation he needed. The employee was thinking of stealing the money from the bank. The operating surgeon could not give the employee any guarantee that the operation would cure the illness. The employee was sure that his theft would be detected sooner or later. However, the employee was convinced that if he was caught, he could settle the matter privately with the bank president.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 5

5. A bank employee had to have some money to pay for a crucial medical operation he needed. The employee was thinking of stealing the money from the bank. The operating surgeon could not give the employee any guarantee that the operation would cure the illness. The employee was sure that his theft would go unnoticed by the bank. Furthermore, the employee was convinced that if he were caught, he could settle the matter privately with the bank president.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 6

6. A bank employee had to have some money in order to lend it to other people who needed it. The employee was thinking of stealing the money from the bank. The money he could get would be enough to help a great number of people. However, the employee was sure that his theft would be detected sooner or later. However, the employee was convinced that if he was caught, he could settle the matter privately with the bank president.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members ~~what~~ you felt was the most important part of the problem in arriving at your decision.

Problem 7

7. A bank employee had to have some money to pay for a crucial medical operation he needed. The employee was thinking of stealing the money from the bank. The operating surgeon could not give the employee any guarantee that the operation would cure the illness. The employee was sure that his theft would go unnoticed by the bank. However, the employee knew that if he were caught, he would be expelled from the bank and charged with criminal conduct.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 8

8. A bank employee had to have some money to pay for a crucial medical operation he needed. The employee was thinking of stealing the money from the bank. The operating surgeon had guaranteed the employee that the operation would cure his illness. However, the employee was sure that his theft would be detected sooner or later. Furthermore, the employee knew that if he was caught, he would be expelled from the bank and charged with criminal conduct.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 9

9. A bank employee had to have some money in order to lend it to other people who needed it. The employee was thinking of stealing the money from the bank. The money he could get would only be enough to help a very few people. The employee was sure that his theft would go unnoticed by the bank. However, the employee knew that if he were caught, he would be expelled from the bank and charged with criminal conduct.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 10

10. A bank employee had to have some money in order to lend it to other people who needed it. The employee was thinking of stealing the money from the bank. The money he could get would only be enough to help a very few people. However, the employee was convinced that his theft would be detected sooner or later. Furthermore, the employee knew that if he was caught, he would be expelled from the bank and charged with criminal conduct.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 11

11. A bank employee had to have some money to pay for a crucial medical operation he needed. The employee was thinking of stealing the money from the bank. The operating surgeon had guaranteed the employee that the operation would cure his illness. The employee was sure that his theft would be detected sooner or later. However, the employee was convinced that if he was caught, he could settle the matter privately with the bank president.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 12

12. A bank employee had to have some money in order to lend it to other people who needed it. The employee was thinking of stealing the money from the bank. The money he could get would only be enough to help a very few people. The employee was sure that his theft would go unnoticed by the bank. Furthermore, he was also certain that if he were caught, he could settle the matter privately with the bank president.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 13

13. A bank employee had to have some money in order to lend it to other people who needed it. The employee was thinking of stealing the money from the bank. The money he could get would only be enough to help a very few people. The employee was sure that his theft would be detected by the bank sooner or later. However, the employee was convinced that if he was caught, he could settle the matter privately with the bank president.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 14

14. A bank employee had to have some money to pay for a crucial medical operation he needed. The employee was thinking of stealing the money from the bank. The operating surgeon could not give the employee any guarantee that the operation would cure the illness. The employee was sure that his theft would be detected sooner or later. Furthermore the employee knew that if he was caught, he would be expelled from the bank and charged with criminal conduct.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 15

15. A bank employee had to have some money to pay for a crucial medical operation he needed. The employee was thinking of stealing the money from the bank. The operating surgeon had guaranteed the employee that the operation would cure the illness. The employee was sure that his theft would go unnoticed by the bank. Furthermore, the employee was convinced that if he were caught, he could settle the matter privately with the bank president.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Problem 16

16. A bank employee had to have some money in order to lend it to other people who needed it. The employee was thinking of stealing the money from the bank. The money he could get would be enough to help a great number of people. However, the employee was sure that his theft would be detected sooner or later. Furthermore, the employee knew that if he was caught, he would be expelled from the bank and charged with criminal conduct.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Report to the other group members your decision on each problem.

Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

APPENDIX B: GROUP

MATCHING QUESTIONNAIRE

Group Matching Questionnaire

Developed by Whitney C. Mann
Northeast Group Research Center

It is possible with a fair degree of accuracy to determine by this questionnaire what group problem solving qualities and preferences you have. This is not a test of intelligence. This questionnaire will allow for the matching of individuals who have similar problem solving preferences and styles.

PART I - Read each statement and decide whether it is true as applied to you or false as applied to you.
After each question mark a circle around T or F.
If a statement is True or Mostly True as applied to you circle (T).
If a statement is False or Mostly False as applied to you circle (F).

TRUE	FALSE		
T	F	(1)	I often organize or direct the activities of a group.
T	F	(2)	I like mechanics magazines.
T	F	(3)	I usually start activities of my group.
T	F	(4)	I find it hard to maintain my point of view against others.
T	F	(5)	I have a good appetite.
T	F	(6)	I make decisions immediately, not after considerable thought.
T	F	(7)	I usually accomplish what I aim to do.
T	F	(8)	I wake up fresh and rested most mornings.
T	F	(9)	I win friends easily.
T	F	(10)	I can work alone as well as with others.
T	F	(11)	I am easily awakened by noise.
T	F	(12)	I usually liven up a group on a dull day.
T	F	(13)	I feel I have enough time for recreation.
T	F	(14)	My daily life is full of things that keep me interested.
T	F	(15)	I keep detailed records of expenses.
T	F	(16)	I am often tired even in the early part of the day.
T	F	(17)	I enjoy detective or mystery stories.
T	F	(18)	I prefer working alone to working on committees.
T	F	(19)	I seem to need more rest than most people.
T	F	(20)	I seldom worry about my health.
T	F	(21)	I have mechanical ingenuity (inventiveness).
T	F	(22)	My judgment is better then it ever was.
T	F	(23)	My grades in high school were a fairly accurate reflection of my abilities.
T	F	(24)	I feel that I can influence other people more than they can influence me.
T	F	(25)	I think I would like the work of a forest ranger.
T	F	(26)	I can correct others without giving offense.
T	F	(27)	I am given credit as being capable of facing difficult situations.
T	F	(28)	I think most people are honest chiefly through fear of being caught.
T	F	(29)	I can write a concise, well-organized report.
T	F	(30)	I plan my work in detail.

PART II - Types of People

Report your feelings about these different kinds of people. Do not think of various possibilities or exceptional cases. "Let yourself go" and record the feeling that comes to mind as you read each item.
If you like that type of person, circle L.
If you are indifferent (that is don't care one way or another) circle I.
If you dislike that type of person circle D.

LIKE	INDIFFERENT	DISLIKE		
L	I	D	(1)	Happy people
L	I	D	(2)	Sad people
L	I	D	(3)	Active people
L	I	D	(4)	Navy men
L	I	D	(5)	Aggressive people
L	I	D	(6)	Hippies
L	I	D	(7)	Optimists
L	I	D	(8)	Pessimists
L	I	D	(9)	People who are natural leaders
L	I	D	(10)	People who assume leadership
L	I	D	(11)	Musicians
L	I	D	(12)	People who have made fortunes in show business
L	I	D	(13)	People who show feelings
L	I	D	(14)	Thrifty people
L	I	D	(15)	Spendthrifts
L	I	D	(16)	Famous psychologists
L	I	D	(17)	Religious people
L	I	D	(18)	Irreligious people
L	I	D	(19)	Easygoing people
L	I	D	(20)	Artistic women
L	I	D	(21)	Foreigners
L	I	D	(22)	Physically sick people
L	I	D	(23)	Babies
L	I	D	(24)	Teenagers
L	I	D	(25)	Women Lawyers
L	I	D	(26)	Outspoken people with new ideas
L	I	D	(27)	Electronic geniuses
L	I	D	(28)	People who daydream a lot
L	I	D	(29)	Prominent bandleaders
L	I	D	(30)	Outstanding athletes
L	I	D	(31)	Acrobats
L	I	D	(32)	Democrats
L	I	D	(33)	Republicans
L	I	D	(34)	Women who perform on TV
L	I	D	(35)	People who insist on having everything in its proper place
L	I	D	(36)	Housewives
L	I	D	(37)	Carelessly dressed people
L	I	D	(38)	College students
L	I	D	(39)	Nonconformists
L	I	D	(40)	Independents in politics
L	I	D	(41)	Men who live dangerously
L	I	D	(42)	Prominent writers
L	I	D	(43)	Prominent politicians
L	I	D	(44)	Athletic men

PLEASE COMPLETE

NAME_____ Male ☐ Female ☐

AGE_____ COLLEGE PRESENTLY ATTENDING_____

ADDRESS_____ Freshman ☐

Sophomore ☐

_____ Junior ☐

_____ Senior ☐

Other _____

Phone _____

APPENDIX C: MATERIALS: GROUP GAIN AND EXPOSURE TO EVALUATION MANIPULATIONS

Your Group - 1) Matched
2) Help

You have been made a member of a group. The fact that you are working in this group will help you solve problems.

On the basis of the "Group Matching Questionnaire" you filled out, you were matched on a number of critical factors with two other individuals to form a group. These factors dealt with:

1. People you like and dislike;
2. Particular qualities about yourself

For the purposes of this experiment we did our best to set up your group so that each member "fits" with each other member, like pieces in a puzzle, to form a solid problem solving unit.

We believe that the group we have formed will produce a good deal of problem solving behavior. We predict that your group with its specific combinations of people should add to your own problem solving effectiveness. You and each member of your group should do better at solving problems because you are a member of this group than you would have if you were working alone.

Your assignment to this group was not because we think you are better or worse at solving problems but to look at the problem solving behavior of a particular combination of people.

The other individuals in your group are now in two other separate rooms also receiving the same instructions you are.

turn page

Your Group - 1) Mis-Matched
2) No Help - No Hinder

You have been made a member of a group. However we expect this group will not help you or hinder you in solving problems.

On the basis of the "Group Matching Questionnaire" you filled out you were mis-matched on a number of critical factors with two other individuals to form a group. These factors dealt with:

1. People you like and dislike:
2. Particular qualities about yourself

For the purposes of this experiment we did our best to set up your group so that each member does not "fit" with each other member and does not form a solid problem solving unit.

We believe that the group we have formed will not produce a good deal of problem solving behavior. We predict that your group with its specific combination of people should not add to your own problem solving effectiveness. You and each member of your group should do about the same at solving problems as you would have if you were working alone.

Your assignment to this group was not because we think you are better or worse at solving problems but to look at the problem solving behavior of a particular combination of people.

The other individuals in your group are now in two other separate rooms also receiving the same instructions you are.

turn page

Your Group

You have been made a member of a group. You will be working with two other people who were also able to sign up for the experiment during this time period.

The other individuals in your group are now in two other separate rooms also receiving the same instructions you are.

turn page

Communication

The T. V. system you see has been hooked up and the circuits timed in a way that is similar to the limited communication system that will be used aboard a space ship. The chart in front of you shows the order of communication over the T. V. system for the group problem solving task.

The communication sequence will be as follows:

1. You will hear someone tell you which problem is to be discussed.
2. You will have one minute to study the problem. A sign on the T.V. monitor will read "Study Problem." After 50 seconds a "beep" will sound.
3. You will then see group member one who will give a decision and tell you what was the most important part of that problem in arriving at the decision. Record the decision given by group member one on your yellow answer sheet in the appropriate space.
4. You will then see group member two who will give a decision and tell you what was the most important part of the problem in arriving at the decision. Record the decision given by group member two on your yellow answer sheet in the appropriate space.
5. You will then hear a "beep" and the T. V. will appear gray. You can now speak to the other members of your group. Give your decision and tell the other group members what was the most important part of the problem in arriving at your decision. Record your decision on the yellow answer sheet. You can't speak longer than 30 seconds but you don't have to speak for the entire time period you are on. A "beep" will sound indicating the end of your speaking period.
6. Finally, you will see a sign on the T. V. monitor labeled "Record." Each time that the "Record" sign appears on the T. V. monitor add up all the decisions for the problem for each member of the group including yourself (e.g. 3+4+5=12) and place that total on the white group evaluation sheet. After the 16 problems have been considered you will tear up the yellow sheet and discard it.

At the end of the experiment we will have a conference with you. At this conference we will meet with you and share with you our evaluation of your groups problem solving behavior. The evaluation will be based on the total group response on the white evaluation sheet.

Thus your group will exchange problem solving information and will be evaluated as a group.

turn page

Communication

The T. V. System you see has been hooked up and the circuits timed in a way that is similar to the limited communication system that will be used aboard a space ship. The chart in front of you shows you the order of communication over the T. V. system for the group problem solving task.

The communication sequence will be as follows:

1. You will hear someone tell you which problem is to be discussed.
2. You will have one minute to study the problem. A sign on the T. V. monitor will read "Study Problem." After 50 seconds a "beep" will sound.
3. You will then see group member one who will give a decision and tell you what was the most important part of that problem in arriving at the decision. Record the decision given by group member one on your yellow answer sheet in the appropriate space.
4. You will then see group member two who will give a decision and tell you what was the most important part of the problem in arriving at the decision. Record the decision given by group member two on your yellow answer sheet in the appropriate space.
5. You will then hear a "beep" and the T. V. will appear gray. You can now speak to the other members of your group. Give your decision and tell the other group members what was the most important part of the problem in arriving at your decision. Record your decision on the yellow answer sheet. You can't speak longer than 30 seconds but you don't have to speak for the entire time period you are on. A "beep" will sound indicating the end of your speaking period.
6. Finally, you will see a sign on the T. V. monitor labeled "Record". Each time that the "Record" sign appears on the T. V. monitor re-record your decisions for each problem on white individual evaluation sheet. After the 16 problems have been considered you will tear up the yellow sheet and discard it.

At the end of the experiment we will have a conference with you. At this conference we will meet with you in private and share with you our evaluation of your groups problem solving behavior. The evaluation will in part be based on your responses on the white evaluation sheet.

Thus while your group will exchange problem solving information, to an extent, your own problem solving performance will be evaluated separately.

turn page

Communication

The T. V. system you see has been hooked up and the circuits timed in a way that is similar to the limited communication system that will be used aboard a space ship. The chart in front of you shows the order of communication over the T. V. system for the group problem solving task.

The communication sequence will be as follows:

1. You will hear someone tell you which problem is to be discussed.
2. You will have one minute to study the problem. A sign on the T. V. monitor will read "Study Problem." After 50 seconds a "beep" will sound.
3. You will then see group member one who will give a decision and tell you what was the most important part of that problem in arriving at the decision. Record the decision given by group member one on your yellow answer sheet in the appropriate space.
4. You will then see group member two who will give a decision and tell you what was the most important part of the problem in arriving at the decision. Record the decision given by group member two on your yellow answer sheet in the appropriate space.
5. You will then hear a "beep" and the T. V. will appear gray. You can now speak to the other members of your group. Give your decision and tell the other group members what was the most important part of the problem in arriving at your decision. You can't speak longer than 30 seconds but you don't have to speak for the entire time period you are on. A "beep" will sound indicating the end of your speaking period.
6. Finally, you will see a sign on the T. V. monitor labeled "Record." Each time the record sign appears on the T. V. monitor (if you have not already done so) record your decision on the yellow answer sheet.

turn page

YELLOW RESPONSE SHEET

Problem 1 Group Member One_____ Group Member Two_____
Group Member Three - circle your decision

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Problem 2 Group Member One_____ Group Member Two_____
Group Member Three - circle your decision

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Problem 3 Group Member One_____ Group Member Two_____
Group Member Three - circle your decision

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Problem 4 Group Member One_____ Group Member Two_____
Group Member Three - circle your decision

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Problem 5 Group Member One_____ Group Member Two_____
Group Member Three - circle your decision

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Problem 6 Group Member One_____ Group Member Two_____
Group Member Three - circle your decision

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Problem 7 Group Member One_____ Group Member Two_____
Group Member Three - circle your decision

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Problem 8 Group Member One_____ Group Member Two_____
Group Member Three - circle your decision

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

YELLOW RESPONSE SHEET

Problem 9 Group Member One _____ Group Member Two _____

Group Member Three - circle your decision

Definitely no fifty-fifty definitely yes

0 1 2 3 4 5 6

Problem 10 Group Member One _____ Group Member Two _____

Group Member Three - Circle your decision

Definitely no fifty-fifty definitely yes

0 1 2 3 4 5 6

Problem 11 Group Member One _____ Group Member Two _____

Group Member Three - circle your decision

Definitely no fifty-fifty definitely yes

0 1 2 3 4 5 6

Problem 12 Group Member One _____ Group Member Two _____

Group Member Three - circle your decision

Definitely no fifty-fifty definitely yes

0 1 2 3 4 5 6

Problem 13 Group Member One _____ Group Member Two _____

Group Member Three - circle your decision

Definitely no fifty-fifty definitely yes

0 1 2 3 4 5 6

Problem 14 Group Member One _____ Group Member Two _____

Group Member Three - circle your decision

Definitely no fifty-fifty definitely yes

0 1 2 3 4 5 6

Problem 15 Group Member One _____ Group Member Two _____

Group Member Three - circle your decision

Definitely no fifty-fifty definitely yes

0 1 2 3 4 5 6

Problem 16 Group Member One _____ Group Member Two _____

Group Member Three - Circle your decision

Definitely no fifty-fifty definitely yes

0 1 2 3 4 5 6

WHITE EVALUATION SHEET

	GROUP TOTAL
Problem 1	
Problem 2	
Problem 3	
Problem 4	
Problem 5	
Problem 6	
Problem 7	
Problem 8	
Problem 9	
Problem 10	
Problem 11	
Problem 12	
Problem 13	
Problem 14	
Problem 15	
Problem 16	

Each time that the "Record" sign appears on the T.V. monitor add up all the decisions for the problem for each member of your group including yourself (e.g. 3+4+5=12) and place that total on the group evaluation sheet.

WHITE EVALUATION SHEET

DECISION OF GROUP MEMBER THREE

Problem 1	
Problem 2	
Problem 3	
Problem 4	
Problem 5	
Problem 6	
Problem 7	
Problem 8	
Problem 9	
Problem 10	
Problem 11	
Problem 12	
Problem 13	
Problem 14	
Problem 15	
Problem 16	

Each time that the "Record" sign appears on the T.V. monitor re-record your decision for each problem on the white evaluation sheet.

APPENDIX D: SAMPLE INSTRUCTION BOOKLET AND SUMMARY

Experimental Project: Investigation Cite - 11

Principle Investigator: The City University of New York

PROBLEM SOLVING BY GROUPS
UNDER MANNED SPACE FLIGHT CONDITIONS

Purpose of the Experiment

We are collecting information on how people solve problems under manned space flight conditions. You will be a member of a group that will communicate like a group of astronauts. You will talk and work with other members of your group over the closed circuit television system you see in front of you. The limited closed circuit television system is similar to the type of communication system that will be found in large space ships of the future. In these space ships people will have to talk with one another and quickly solve problems using a closed circuit television system. However, the success of long space flights may not only depend on the machines we build but on whether or not we can operate them.

turn page

Your Group - 1) Matched
2) Help

You have been made a member of a group. The fact that you are working in this group will help you solve problems.

On the basis of the "Group Matching Questionnaire" you filled out, you were matched on a number of critical factors with two other individuals to form a group. These factors dealt with:

1. People you like and dislike;
2. Particular qualities about yourself

For the purposes of this experiment we did our best to set up your group so that each member "fits" with each other member, like pieces in a puzzle, to form a solid problem solving unit.

We believe that the group we have formed will produce a good deal of problem solving behavior. We predict that your group with its specific combinations of people should add to your own problem solving effectiveness. You and each member of your group should do better at solving problems because you are a member of this group than you would have if you were working alone.

Your assignment to this group was not because we think you are better or worse at solving problems but to look at the problem solving behavior of a particular combination of people.

The other individuals in your group are now in two other separate rooms also receiving the same instructions you are.

turn page

The Task

Each member of your group will receive a copy of the "Problem Questionnaire." Look at the instructions for the questionnaire and a sample problem below. The entire questionnaire has 16 such problems.

Problem Questionnaire

This questionnaire presents 16 different situations, each situation portraying a person in conflict about taking money which does not belong to him. You are to read each situation carefully and make a prediction as to whether or not the person would take the money.

Each situation is followed by a set of numbers ranging from 0 to 6.

On Your Yellow Answer Sheet

Circle the 0 if you feel that the person will definitely not take the money.

Circle the 6 if you feel that the person will definitely yes take the money.

Circle the 3 if you feel that the chances are about equal that the person will or will not take the money. Use the in-between numbers for the varying degree of certainty, 1 or 2 being more on the no side, 4 and 5 being more on the yes side.

Remember! Your choice of the numbers is to indicate whether or not the person would take the money, not how wrong it would be to take the money. Although the 16 situations may appear to you very much alike at times, each situation differs in some respect from every other situation.

Sample Problem

A bank employee had to have some money to pay for a crucial medical operation he needed. The employee was thinking of stealing the money from the bank. The operating surgeon could not give the employee any guarantee that the operation would cure the illness. The employee was sure that his theft would be detected sooner or later. However, the employee was convinced that if he was caught, he could settle the matter privately with the bank president.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Judgmental! As you may have noted the problem presented does not have a clear cut answer, as you would find in a math problem. The fact is that these problems were selected for this very reason. On extended space voyages, problems of a judgmental nature will be the most important for a group to solve and are therefore of most concern to us.

turn page

The Group Task

You will work with your group on the "Problem Questionnaire."

You will use the closed circuit T. V. system you see here to talk with other group members about each of the 16 problems.

Your statements to the other members of your group about the problem you are working on should be of the following type:

1. Report to the other group members your decision on each problem.
2. Report to the other group members what you felt was the most important part of the problem in arriving at your decision.

Everyone is instructed to make statements of the above type.

An example of one statement is presented below.

Problem:

A bank employee had to have some money to pay for a crucial medical operation he needed. The employee was thinking of stealing the money from the bank. The operating surgeon could not give the employee any guarantee that the operation would cure the illness. The employee was sure that his theft would be detected sooner or later. However, the employee was convinced that if he was caught, he could settle the matter privately with the bank president.

definitely no			fifty-fifty			definitely yes
0	1	2	3	4	5	6

Sample Statement

I would say five. I guess it's a matter of using the money for his own life, it's a chance to save his life. Life is more important than what happens if you steal money.

turn page

Communication

The T. V. system you see has been hooked up and the circuits timed in a way that is similar to the limited communication system that will be used aboard a space ship. The chart in front of you shows the order of communication over the T. V. system for the group problem solving task.

The communication sequence will be as follows:

1. You will hear someone tell you which problem is to be discussed.
2. You will have one minute to study the problem. A sign on the T.V. monitor will read "Study Problem." After 50 seconds a "beep" will sound.
3. You will then see group member one who will give a decision and tell you what was the most important part of that problem in arriving at the decision. Record the decision given by group member one on your yellow answer sheet in the appropriate space.
4. You will then see group member two who will give a decision and tell you what was the most important part of the problem in arriving at the decision. Record the decision given by group member two on your yellow answer sheet in the appropriate space.
5. You will then hear a "beep" and the T. V. will appear gray. You can now speak to the other members of your group. Give your decision and tell the other group members what was the most important part of the problem in arriving at your decision. Record your decision on the yellow answer sheet. You can't speak longer than 30 seconds but you don't have to speak for the entire time period you are on. A "beep" will sound indicating the end of your speaking period.
6. Finally, you will see a sign on the T. V. monitor labeled "Record." Each time that the "Record" sign appears on the T. V. monitor add up all the decisions for the problem for each member of the group including yourself (e.g. 3+4+5=12) and place that total on the white group evaluation sheet. After the 16 problems have been considered you will tear up the yellow sheet and discard it.

At the end of the experiment we will have a conference with you. At this conference we will meet with you and share with you our evaluation of your groups problem solving behavior. The evaluation will be based on the total group response on the white evaluation sheet.

Thus your group will exchange problem solving information and will be evaluated as a group.

turn page

Summary

In summary, and looking at the chart in front of you, the order of communication is:

1. You are given a problem to study.
2. You study the problem.
3. You see group member one.
4. You see group member two.
5. You talk to group members one and two.
6. You record information.

This sequence is repeated for each of the 16 problems.

*A final note: We are not trying to determine if you go along with the decisions of other members of your group. We want each group member to make the best decision based on the information provided by the group.

Summary

Purpose of the Experiment - To determine what combination of people generate the best type of problem solving behavior.

Your Group - Matched - the fact that you are working in this group will help you solve problems.

The Problem - Arrive at decisions for the problems presented to you.

a. Give your decision.

b. Report to other group members as to the most important aspect of the problem in arriving at your decision.

Working With Others - Talk with other group members over closed circuit T. V. (See chart in front of you.)

Evaluation - Report to the evaluation session at the end of the experiment. The evaluation will be based on the total group response on the white evaluation sheet. Thus your group will exchange problem solving information and will be evaluated as a group.

APPENDIX E: POST-EXPERIMENTAL QUESTIONNAIRE AND DEBRIEFING LETTER

FINAL COMMENTS

Please answer the following questions. Your answers are important for this experiment.

Rate the statements below on all of the scales provided.
The more you feel a statement applies to one word as opposed to another the closer to that word you are to mark an X.
Consider the middle of each scale to be neutral.

Place your X in the middle of the space, not in the boundaries.

EXAMPLE

Psychology courses are:

Interesting	—	X	—	—	—	—	—	Dull

Statement 1

Before I started talking with the other group members I expected the group to be:

Fast	—	—	—	—	—	—	—	Slow
Not Intelligent	—	—	—	—	—	—	—	Intelligent
Good	—	—	—	—	—	—	—	Bad
Weak	—	—	—	—	—	—	—	Strong
Helpful	—	—	—	—	—	—	—	Not Helpful
Dull	—	—	—	—	—	—	—	Sharp
Worthless	—	—	—	—	—	—	—	Valuable

Statement 2

During the experiment I found group member 1 to be:

Worthless	—	—	—	—	—	—	—	Valuable
Fast	—	—	—	—	—	—	—	Slow
Not Intelligent	—	—	—	—	—	—	—	Intelligent
Good	—	—	—	—	—	—	—	Bad
Weak	—	—	—	—	—	—	—	Strong
Helpful	—	—	—	—	—	—	—	Not Helpful
Dull	—	—	—	—	—	—	—	Sharp

Statement 3

During the experiment I found group member 2 to be:

Weak	—	—	—	—	—	—	—	Strong
Fast	—	—	—	—	—	—	—	Slow
Good	—	—	—	—	—	—	—	Bad
Not Intelligent	—	—	—	—	—	—	—	Intelligent
Helpful	—	—	—	—	—	—	—	Not Helpful
Dull	—	—	—	—	—	—	—	Sharp
Worthless	—	—	—	—	—	—	—	Valuable

Statement 4
Estimate what other members of your group thought was the most important part of the problem.

Give a 1 to those parts of the problem referred to most frequently.

Give a 2 to those parts of the problem referred to a moderate amount of time.

Give a 3 to those parts of the problem referred to least frequently.

_____The theft would result in expulsion from the bank and a charge of criminal conduct.

_____The success of the operation was not guaranteed.

_____The theft would go unnoticed.

_____The money is needed for a crucial medical operation.

_____The theft would be detected.

_____The money would help many people.

_____The money would help few people.

_____The medical operation was guaranteed to cure the illness.

_____The theft would be settled in private.

_____The money is needed by other people.

Statement 5a
Add up your groups 16 judgment scores on the white evaluation sheet. Total__

Can your individual work be detected from this group total (check one)

YES MAYBE NO

___ ___ ___ ___ ___ ___ ___

Statement 6
If you had the time would you like to meet with other members of your group? (check one)

YES_____ NO_____

If you are interested in receiving details concerning the results of this experiment fill in your name and mailing address below.

NAME_____

ADDRESS_____

_____

_____

Statement 5b
Add up your 16 judgments on the white evaluation sheet. Total_____

Can your individual work be detected from this total (check one)

YES			MAYBE			NO
___	___	___	___	___	___	___

Statement 6
If you had the time would you like to meet with other members of your group? (check one)

YES_____ NO_____

If you are interested in receiving details concerning the results of this experiment fill in your name and mailing address below.

NAME_____

ADDRESS_____

_____

_____

Statement 5c
Add up your 16 judgments on the yellow answer sheet. Total_____

Can your individual work be detected from this total. (check one)

YES MAYBE NO

___ ___ ___ ___ ___ ___ ___

Statement 6
If you had the time would you like to meet with other members of your group? (check one)

YES_____ NO_____

If you are interested in receiving details concerning the results of this experiment fill in your name and mailing address below.

NAME_____

ADDRESS_____

_____

_____

Dear Participant:

As you may recall you were a participant in a psychology experiment at Hunter College. You worked alone in a room with other people to solve a series of problems over a closed circuit television system. The problems dealt with the circumstances under which you would predict that someone would steal money from a bank.

I am still analyzing the data from this experiment. However, my preliminary findings are that the judgments you made on the problems were in large part determined by the conditions stated in the problems (e.g. whether the money was for a crucial medical operation or to loan to other people), rather than the conditions imposed on you by the closed circuit system and the other group members. In addition everyone followed the complex instructions remarkably well.

Finally, I'd like to report that while you did interact with the other group members to solve these problems we standardized the group by presenting them to you on videotape. Thus everyone in the experiment was exposed to the same group members.

Thank you again for your cooperation.

Bert Flugman

P. S. If you wish to discuss this experiment with me I can be reached at 212-354-2263.

APPENDIX F: MATERIALS: VIDEOTAPE MANIPULATION OF RISK FUNCTION

BPS Items and Components

The high (H) and low (L) levels for each BPS component are as follows:

BPS Item	Gain Function		Loss Function	
	RVgn	Egn	Ecens	RVcens
1	L	H	L	H
2	H	H	L	H
3	L	H	L	L
4	H	L	H	L
5	H	L	L	L
6	L	H	H	L
7	H	L	L	H
8	H	H	H	H
9	L	L	L	H
10	L	L	H	H
11	H	H	H	L
12	L	L	L	L
13	L	L	H	L
14	H	L	H	H
15	H	H	L	L
16	L	H	H	H

Scheme - Gain Video Tape

BPS Item	Group Member One			Group Member Two		
	BPS Choice	Reiterate	Emphasize	BPS Choice	Reiterate	Emphasize
1	4	RVgn(L), RVcens(H)	Egn(H)	3	RVcens(H)	Egn(H)
2	4	Ecens(L)	RVgn(H)	2	Egn(H), Ecens(L)	RVgn(H)
3	4	RVcens(L)	Egn(H)	3	Ecens(L), RVgn(L)	Egn(H)
4	3	Egn(L), Ecens(H)	RVgn(H)	2	Ecens(H)	RVgn(H)
5	3	Egn(L), RVcens(L)	RVgn(H)	2	Ecens(L)	RVgn(H)
6	3	RVgn(L), Ecens(H)	Egn(H)	2	RVcens(L)	Egn(H)
7	2	Ecens(L)	RVgn(H)	3	Egn(L), RVcens(H)	RVgn(H)
8	3	Ecens(H)	RVgn(H)	3	Ecens(H), Egn(H)	RVgn(H)
9	4	Ecens(L), Egn(L)	RVgn(L)	2	Ecens(L)	Egn(L)
10	4	RVcens(H)	Egn(L)	4	Egn(I), Ecens(H)	RVgn(L)
11	2	RVcens(L)	RVgn(H)	4	Egn(H), Ecens(H)	RVgn(H)
12	3	Egn(L)	RVgn(L)	2	RVgn(L), RVcens(L)	Egn(L)
13	2	RVcens(L)	Egn(L)	3	Ecens(H), RVcens(L)	RVgn(L)
14	2	Egn(L)	RVgn(H)	2	Ecens(H), Egn(L)	RVgn(H)
15	4	Egn(H), RVcens(L)	RVgn(H)	2	Egn(H)	RVgn(H)
16	2	Ecens(H)	Egn(H)	4	Ecens(H), RVgn(L)	Egn(H)

Schemo - Censure Video Tape

BPS Item	Group Member One			Group Member Two		
	BPS Choice	Reiterate	Emphasize	BPS Choice	Reiterate	Emphasize
1	4	Egn(H), RVgn(L)	RVcens(H)	3	RVgn(L)	RVcens(H)
2	4	Egn(H)	RVcens(H)	2	Ecens(L), Egn(H)	Rvcens(H)
3	4	RVgn(L)	RVcens(L)	3	RVcens(L), Egn(H)	Ecens(L)
4	3	RVcens(L), Egn(L)	Ecens(H)	2	Egn(L)	Ecens(H)
5	3	RVgn(H), Egn(L)	Ecens(L)	2	Ecens(L)	RVcens(L)
6	3	RVgn(L), RVcens(L)	Ecens(H)	2	Egn(H)	Ecens(H)
7	2	Egn(L)	RVcens(H)	3	Ecens(L), RVgn(H)	RVcens(H)
8	3	Ecens(H)	RVcens(H)	3	Ecens(H), Egn(H)	RVcens(H)
9	4	Ecens(L), Egn(L)	RVcens(H)	2	Ecens(L)	RVcens(H)
10	4	Egn(L)	RVcens(H)	4	Ecens(H), RVgn(L)	RVcens(H)
11	2	RVgn(H)	Ecens(H)	4	RVcens(L), Egn(H)	Ecens(H)
12	3	Egn(L)	RVcens(L)	2	Egn(L), RVcens(L)	Ecens(L)
13	2	RVcens(L)	Ecens(H)	3	RVgn(L), RVcens(L)	Ecens(H)
14	2	RVgn(H)	RVcens(H)	2	Ecens(H), RVgn(H)	RVcens(H)
15	4	Egn(H), RVgn(H)	Ecens(L)	2	Egn(H)	RVcens(L)
16	2	Egn(H)	RVcens(H)	4	Egn(H), Ecens(H)	RVcens(H)

Scheme - Random Video Tape

BPS Item	Group Member One: BPS Choice	Group Member One: Reiterate	Group Member One: Emphasize	Group Member Two: BPS Choice	Group Member Two: Reiterate	Group Member Two: Emphasize
1	4	Egn(H), RVgn(L)	RVcens(H)	3	Ecens(L)	Egn(H)
2	4	RVgn(H)	Ecens(L)	2	RVgn(H), Ecens(L)	Egn(H)
3	4	RVgn(H)	Egn(H)	3	Egn(H), RVcens(L)	Ecens(L)
4	3	Egn(L), RVcens(L)	RVgn(H)	2	RVgn(H)	Egn(L)
5	3	RVcens(L), Egn(L)	Ecens(L)	2	Egn(L)	Ecens(L)
6	3	Ecens(H), RVcens(L)	RVgn(L)	2	RVcens(L)	Egn(H)
7	2	RVcens(H)	Egn(L)	3	RVgn(H), Egn(L)	Ecens(L)
8	3	RVgn(H)	RVcens(H)	3	RVgn(H), RVcens(H)	Egn(H)
9	4	RVcens(H), Egn(L)	Ecens(L)	2	RVcens(H)	Ecens(L)
10	4	Ecens(H)	RVgn(L)	4	RVcens(H), RVgn(L)	Egn(L)
11	2	RVgn(H)	Ecens(H)	4	Egn(H), Ecens(H)	RVcens(L)
12	3	RVgn(L)	Egn(L)	2	RVcens(L), Egn(L)	Ecens(L)
13	2	RVcens(L)	Ecens(H)	3	Ecens(H), RVcens(L)	Egn(L)
14	2	RVgn(H)	Egn(L)	2	RVcens(H), Egn(L)	RVgn(H)
15	4	Egn(H), Ecens(L)	RVcens(L)	2	RVgn(H)	RVcens(L)
16	2	Egn(H)	Ecens(H)	4	RVcens(H), Ecens(H)	Egn(H)

Script - Gain Tape - Group Member One

[Item 1] I'd give this one a 4.
In this one the employee needed the money to lend it to others....and he'd possibly be expelled from the bank. I'd say the most important part of the problem in arriving at my decision was that the money would help a great number of people.

[Item 2] My decision is 4.
In this problem, ah let's see, the theft would be unnoticed, ah let's see. The most important part here in arriving at my decision was the fact that it's for a crucial medical operation.

[Item 3] In this problem I'd say 4.
Um, he was convinced he could settle privately with the bank president. I guess that, the major thing was a great number of people would be helped by the money.

[Item 4] My decision is 3.
Here he's got no guarantee the operation will cure him and also he was sure of being detected, but it seems, the most important thing here in making a decision was it's medical, it's crucial.

[Item 5] I'd say 3.
There's no guarantee that the operation would lead to a cure (pause). If caught he believes he can settle things privately with the bank president....Well I'd say the most crucial part is it's for a medical operation for a serious illness.

[Item 6] Here my decision is number 3.
He wants to lend the money to other people who need it while he's sure the theft would be detected...well the thing from the problem that was most important for me dealt with having the money to give and to help a great number of people.

[Item 7] My decision on this problem is 2.
Let's see, in this one, the employee's theft would go unnoticed by the bank. I'd have to say that most important was the fact that it's for a sickness, a medical operation.

[Item 8] In this one I'd say...I'd give it a 3.
Now sooner or later here, he feels his theft would be detected. Then let's see, looking at the problem overall I'd say the thing that struck me as the most important is the fact that it's medical.
[Item 9] I'd give this one a 4.
In this case he's sure no one will notice this theft at the bank...while the money would be enough to help very few people. Then again I'd have to say, the factor that was most important was that he would be lending the money to other people.

[Item 10] My decision for this problem will be (pause) a, ah 4.
Now here he knows that if he's caught he faces expulsion from the bank. (pause) Let's see now, well, the thing that struck me most was that the money is for very few people.

[Item 11] I'll give this one a 2.
The employee in this one had the feeling he could settle the whole thing privately with the bank president, I guess. Most important was that the employee would use the money to be operated on.

[Item 12] My choice for this one is 3.
He could get money in this problem which would be enough to help very few people and ah, well. I guess most important for the decision would be the lending of the money to other people who needed it.

[Item 13] For this one I'd have to say 2.
It seems here that he's sure he could settle it privately with the bank president, it's ah, well...I'd say most important for my decision, dealt with the idea that he'd be using the money to help very few people.

[Item 14] Here I'd say 2 again.
Well (pause) I'd say for this problem there's no guarantee from the surgeon about the operation being successful and ah, then I'd say for me the most critical thing was that a crucial medical operation could be done.

[Item 15] I'd give this one a 4.
Now in this one there's a guarantee that the operation would cure the illness while if caught he gets a chance to talk things over with the bank president and settle things. Well the thing, the major thing was that it's an operation that's crucial that he could get.

[Item 16] My decision on this one would be a 2. Here he's got a feeling of being detected in the theft. In a sense though I'd say the most important factor was he could get money which would be enough to help a great number of people.

Script - Gain Tape - Group Member Two

[Item 1] My decision for this problem is 3.
Here in this problem he knows that if he's caught he gets hit with a charge of criminal conduct, but for me the most important thing was he'd be getting enough money to help a great number of people.

[Item 2] In this case I'd have to say 2.
What you have here is a guarantee in this one, by the surgeon that the operation could cure him, while he's sure the theft would go unnoticed. I'd say the thing from the problem that was most important was he needed the money to pay for the operation.

[Item 3] My decision for this one is 3.
Well here the theft would go unnoticed by the bank, he'd be getting the money to lend it to other people. I guess I'd have to say...the crucial thing was helping so many people with the money he could get his hands on.

[Item 4] I'd give this one, this problem a 2.
In this case the theft would be detected sooner or later. Let's see...the main reason for my decision is he needs a medical operation and the money could pay for it.

[Item 5] My decision is 2.
The theft the employee feels, would go unnoticed by the bank. The problem has ah, well the medical operation was the most important part of the problem in arriving at my decision.

[Item 6] This one gets a 2.
The employee's convinced that if caught he could work things out in private with the bank president. In this case I'd have to say the major thing was having the money to help a lot of people.

[Item 7] This problem I'd give a 3.
There's no guarantee here that the surgeon would make about the operation being a success, while the employee knew he could be charged with criminal conduct. Though, considering it all I'd say the most important factor was that he needs the money for the operation.

[Item 8] Here I'd give it a 3.
Well, he feels he would be detected while he's also told by the surgeon that the operation would cure the illness. Then I'd say the most important thing would be he needed the money for a medical operation.

[Item 9] This one I'd give a 2.
Well...If he steals the money the employee feels the bank would not notice it ah, it would seem then, I'd say the most important thing here was the money was not for a great many people.

[Item 10] I go, I'd give, I guess this one a 4.
In this situation the employee is thinking of taking the money to help a few people, while also there's the fact that he could be brought up on criminal charges. Then I guess for me the

factor I thought was most important related to getting the money in order to lend it to other people.

[Item 11] Here my answer would be to give it a 4. In this one he's got a guarantee that he could get the illness cured. While in a way he's got a feeling that the theft would be detected sooner or later. All in all, the factor of greatest importance concerned paying for the medical operation.

[Item 12] Well, this one I'd give a 2. The employee wants to use the money to lend it to other people who needed it. He got an idea the bank president would settle up privately with the employee. Now, that the money he would get would be enough to help a very few people was most important in making my decision.

[Item 13] What should I give this one? (pause) I'd say 3. In that the employee got the feeling he would be detected while he thought if he were caught he could settle up privately with the bank president. Then let's see...the most crucial part would be his getting the money for lending it to others, to other people.

[Item 14] For this one I'd say 2. Here he feels that getting caught for the theft would mean being charged and expelled. Then also in this problem there's no guarantee in this case about a cure. It seems though I'd say the most important part was that he'd have cash to pay for the operation.

[Item 15] For this one I'd give it, I'd say 2.
Here's a case in which the operation has a guarantee of a cure by the surgeon (pause). The thing that stands out most is having the operation.

[Item 16] For this one my decision is 4.
The theft in this case will be detected sooner or later and the employee considers using the money to lend it to others. Then I'd say, the money given to help a great number of people is the thing that was most important.

Script - Censure Tape - Group Member One

[Item 1] I'd give this one a 4.
In this one the employee wants to get the money to give, to help a great number of people...Here he wants to lend it to them. I'd say the most important part of the problem in arriving at my decision was that if he's caught he gets expelled and charged with criminal conduct.

[Item 2] My decision is 4.
In this one ah let's see, the bank employee wants the money to pay for a crucial medical operation, ah let's see...The most important part here in arriving at my decision was the fact that he would be charged with criminal conduct.

[Item 3] In this problem I'd say 4.
Um, in this problem the employee is considering using the money to lend it to others. I guess that the major thing was he's convinced that he could settle up the matter of the theft with the bank president.

[Item 4] My decision is 3.
Here he's convinced that if he's caught he could settle up with the bank president, ah...also he's got no guarantee by the surgeon of the operations success. It seems the most important thing here in making a decision was the employee was sure his theft would be detected sooner or later.

[Item 5] I'd say 3.
Here he's stealing the money for the medical operation...In this case the operating surgeon can't give him any guarantee of the operations success. Well I'd say the most crucial part is the stealing of the money goes unnoticed.

[Item 6] Here my decision is number 3.
The employee wants to steal the money to lend it to other people and he feels that if he's caught he could work things out with the bank president. The thing from the problem that was most important for me dealth with that sooner or later he's sure of detection in the theft.

[Item 7] My decision on this problem is 2.
Let's see in this one the operating surgeon could not give the employee any guarantee about the success of the operation. I'd have to say the most important thing was the fact that he could get hit with expulsion from the bank and all the criminal stuff.

[Item 8] In this one I'd say...I'd give it a 3.
Now the employee was sure here that they'd find out and detect his theft sooner or later. The thing that struck me as most important is the fact that the theft would mean expulsion from the bank.

[Item 9] I'd give this one a 4.
In this case there was a sureness about the theft of the money going unnoticed. Here he wants to use the money which

would go towards helping very few people. The factor that was most important was that it looked like the bank could get him charged as a criminal.

[Item 10] My decision for this problem will be, ah 4. Now here the money stolen would only be enough to help a very few people. Let's see now, well, the thing that struck me most was that the employee could be expelled from the bank or charged.

[Item 11] I'll give this one a 2.
The employee in this one needed the money for the medical operation he needed. I guess most important was that the employee was sure he would be found out as the person who stole the money.

[Item 12] My choice for this one 3.
This time he wants the money to help a very few people and ah, well. I guess most important for the decision would be that he could settle up the matter privately at the bank.

[Item 13] For this one I'd have to say 2.
It seems here that the employee has got a chance of settling things up privately with the bank president. I'd say most important for my decision dealt with the idea that his being seen as the person who stole the money and being detected.

[Item 14] Here I'd say 2 again.
Well I'd say for this problem he wants the money for a crucial medical operation and ah. Then I'd say for me the most crucial thing was that he could be fired from the bank and the criminal thing.

[Item 15] I'd give this one a 4.
Now in this one he's got a guarantee from the surgeon that the operation would cure the illness, while he wants the money for the medical operation he needed. Well the thing, the major thing was that the employee is sure the theft would go unnoticed by the bank.

[Item 16] My decision on this one would be a 2.
Here he wants to steal the money which would be enough to help a great number of people. I'd say the most important factor was criminal conduct charges.

Script - Censure Tape - Group Member Two

[Item 1] My decision for this problem is 3.
Here in this problem the employee wants to steal the money to lend it to other people. The most important thing was he'd get expelled from the bank.

[Item 2] In this case I'd say 2.
What you have here in this one is he's sure the theft would go unnoticed and the surgeon has given him a guarantee about curing the illness. I'd say the thing from the problem that was most important was being fired from the bank.

[Item 3] My decision for this one is 3.
Well here, the employee is convinced that if he were caught he could settle things up privately with the president of the bank, while he could use the money to help a great number of people. The crucial thing was the employee is sure the theft would go unnoticed.

[Item 4] I'd give this one, this problem a 2.
In this case the operating surgeon could not give the employee any guarantee that the operation would cure the illness. Let's see...the main reason for my decision is the detection factor, being detected.

[Item 5] My decision is 2.
The employee could not get any guarantee from the operating surgeon that the operation would cure the illness. Well, being able to pass it off, settle things with the bank

president was the most important part of the problem in arriving at my decision.

[Item 6] This one gets a 2.
He feels that the money he could get would be enough to help a great deal of people. In this case I'd have to say...The major thing was they would find out he did it sooner or later.

[Item 7] This problem I'd give a 3.
He's sure here that this theft would go unnoticed and the money could be used to pay for a crucial medical operation. Though considering it all. The most important factor was that the theft would lead to his being charged with criminal conduct.

[Item 8] Here I'd give it a 3.
Well, the theft is going to be detected, also the operating surgeon had guaranteed the employee that the operation would cure the illness. Then I'd say the most important thing would be that in stealing he's got a chance of ending up expelled and charged.

[Item 9] This one I'd give a 2.
Well his theft would go unnoticed by the bank. It seems then, I'd say the most important thing here was possibly getting involved in a criminal conduct charge.

[Item 10] I'd give, I guess, this one a 4.
In this situation he was convinced that his theft would be detected, while also the theft would be to have some money to lend it to other people. Then I guess for me the factor I thought was most important related to getting the bank, bringing the guy up on charges.

[Item 11] Here my answer would be to give it a 4.
In this one he's convinced that if he's caught he can settle up with the bank president for the money. While also he's got a guarantee about the operation curing the illness. Now the factor of greatest importance for me concerned being detected.

[Item 12] Well this one I'd give a 2.
The employee would get money which would only be enough to help a very few people and the theft if he's caught could be settled privately with the bank president I guess. The feeling on the part of the employee of being sure that he would be unnoticed in the theft was most important in making my decision.

[Item 13] What should I give this one (pause) I'd say 3.
In that the employee in this one, the guy, wants to use the money in order to lend it to other people, and the money he could get would only help a few people. Then let's see, the most crucial part would be the theft would be detected sooner or later.

[Item 14] For this one I'd say 2.
Here he feels that his theft would be detected while he wants the money to pay for a crucial medical operation. It seems though I'd say the most important part was having to be involved in the criminal charging business with the bank.

[Item 15] This one I'd give it, I'd say 2.
Here's a case where he wants to steal the money to apy for a crucial medical operation (pause). The thing that stands out most is the employee's conviction of being able to settle up on the side you know privately with the bank president.

[Item 16] For this one my decision is 4.
The theft in this case is to be used for money to help a great deal of people while he feels he'll be detected for the theft sooner or later. Then I'd say, the bank could really bring him up on criminal charges and also fire him, which would be the thing that was most important.

Script - Random Tape - Group Member One

[Item 1] I'd give this one a 4.
In this one the employee wants to get the money to give it to a great number of people...here he wants to lend it to them. So I'd say the most important part of the problem in arriving at my decision was that if he's caught he gets expelled from the job and charged with criminal conduct.

[Item 2] My decision is 4.
Now the employee in this one...he needed the money for the medical operation he needed. So I guess the most important part here in arriving at my decision was the fact that the money that he stole would go unnoticed by the bank.
[Item 3] In this problem I'd say 4.
Um in this problem the employee is considering using the money to lend it to other people. I guess that the major thing was that the money would help a great number of people.

[Item 4] My decision is 3.
Now ah the employee couldn't get a guarantee from the surgeon about the operation being successful and if he's caught with the theft he could settle privately with the bank president. The most important thing here in making a decision was the fact that it's for a crucial medical operation.

[Item 5] I'd say 3.
Well here he is convinced of being able to settle things privately at the bank and also he doesn't have any guarantee

the operation will be successful and cure the illness...well I'd say the most crucial part is the employee is sure the theft would go unnoticed.

[Item 6] Here my decision is number 3.
In this case the employee is sure of being detected about the theft, while, he's convinced that if caught he could settle things up with the bank president. The thing from the problem that was most important for me dealt with him lending the money to others that needed it.

[Item 7] My decision on this problem is 2.
The employee in this problem knew that if he was caught he could get expelled from the bank and charged so...I'd have to say the most important was the fact that the surgeon can make a guarantee of curing the illness with the operation.

[Item 8] In this one I'd say...I'd give it a 3.
The guy here needs the money to pay for the operation so ah, I'd say the thing that struck me as most important is the fact that he'd be fired from the bank.

[Item 9] I'd give this one a 4.
Well here this one if he's caught he gets charged with criminal conduct and he'd have the money to help few people. The factor that was most important was that the employee thinks that no one will notice it was him who stole the money.

[Item 10] My decision for this problem will be, ah, a 4. Now he's convinced in this one that he'd be detected sooner or later so the thing that struck me the most would be that the employee would be lending the money to other people who needed the money.

[Item 11] I'll give this one a 2.
The bank employee in this one, he wants the money, ah, to pay for the medical operation that is needed. So I guess...most important was that the employee would be found out as the person who did it sooner or later.

[Item 12] My choice for this one is 3.
In this case he's going to steal the money in order to lend it to other people who need it. So I guess, most important for the decision would be that in stealing the money he only gets enough to help a few people.

[Item 13] For this one I'd have to say 2.
The employee's convinced that if he's caught he can settle the whole thing privately at the bank. I'd say most important for my decision dealt with the idea that he'd be faced with the feeling he'd be detected sooner or later.

[Item 14] Here I'd say 2 again.
Now here the employee wants to use the money here for a medical operation. Now, then I'd say for me the most crucial thing was that no guarantee could be given by the surgeon, whether the illness would be cured or not.

[Item 15] I'd give this one a 4.
In this one the surgeon is guaranteed here that the operation could cure the illness but the employee is sure the theft would be detected sooner or later at the bank. The major thing was that this is a case where he could settle the matter privately with the bank.

[Item 16] My decision on this one would be a 2.
Here he wanted to use the money to help a great number of people, while...I'd say the most important factor was that he could be expelled from the bank and charged with criminal conduct.

Script - Random Tape - Group Member Two

[Item 1] My decision for this problem is 3.
Let's see ah, here the theft would go unnoticed so I guess... the most important thing was he'd be able to use the money to help a great number of people.

[Item 2] In this case I'd say 2.
Well, I'd say in this problem he wants the money for a crucial medical operation and he's sure the theft would go unnoticed by the bank. Then ah...I say the thing from the problem that was most important was that the surgeon guaranteed he could cure the illness.

[Item 3] My decision for this one is 3.
Now in this one there's the idea of getting money to help a great number of people...while if he's caught he gets the chance to talk things over with the bank president and settle things...the crucial thing was that the employee is sure the theft would go unnoticed by the bank.

[Item 4] I'd give this one, this problem 2.
Here the bank employee wants to steal the money to use in a crucial medical operation and...I guess the main reason for my decision is that the surgeon in this case, can't in this case give any guarantee about curing the illness.

[Item 5] My decision is 2.
Now in this problem, this problem deals with the surgeon not being able to give a guarantee that the operation could

cure the illness...well having no one aware that he was not involved in the theft was the most important part of the problem in arriving at my decision.

[Item 6] This one gets a 2.
Here the employee has the conviction, he's sure if he gets caught in the theft he can work things out with the bank president...this one, the major thing was helping so many people with the money he could get his hands on.

[Item 7] This problem I'd give a 3.
This one he deals here with a crucial operation that's needed but at the same time there's no guarantee given by the surgeon about there being a cure that it would be successful. Though considering it all I'd say the most important factor was that he had a feeling that he was sure he'd be unnoticed in the theft.

[Item 8] Here I'd give it a 3.
Uh. The operation is needed by the employee in this one and the employee here knows that if he gets caught he faces criminal charges so...then I'd say the most important thing would be having a guarantee from the surgeon about having the operation to sure him.

[Item 9] This one I'd give a 2.
The theft here could lead to expulsion and criminal conduct charges...I'd say the most important thing here was the employee is sure about the theft not being noticed.

[Item 10] I go, ah I'd give I guess this one a 4. In this one for the theft he could be hit with the criminal conduct charges for stealing the money, this case...I guess for me the factor I thought was most important related to getting the money which would only help a few people.

[Item 11] Here my answer would be to give it a 4. In this case, this is a case where the surgeon had guaranteed the employee that the operation would cure the illness, while at the same time he'd feel sure that the theft would be detected sooner or later...The factor of greatest importance concerned the employee's conviction of being able to settle up on the side, to settle up privately with the bank president.

[Item 12] Well this one I'd give a 2. This one the employee feels he could settle up privately with the bank president on the theft for the money to go towards helping very few people. Not being noticed in the theft from the bank was most important in making my decision.

[Item 13] What should I give this one (pause) I'd say 3. The theft would be detected by the bank sooner or later and here the employee is convinced that if he's caught he could deal with the bank president to settle things up. Then let's see...the most crucial part would be that few people would be helped by the theft of the money.

[Item 14] For this one I'd say 2.
This one involves the employee getting expelled and charged if caught while stealing the money which in this case would involve no guarantee by the surgeon for the cure for the illness.

[Item 15] For this one I'd give it I'd say 2.
Here the money involved is to be used for the medical operation...the thing that stands out most was him being able to work things out privately with the bank president.

[Item 16] For this one my decision is 4.
He knows in this one that if he's caught he can get expelled from the bank and charged and he also feels that he will be detected sooner or later. But that the money would be enough to help a great number of people is the thing that was most important.

Appendix G: One-Tailed vs. Two-Tailed *t* Tests

In considering the directionality issue in reference to the manipulation checks the following opposing points of view exist:

1. For conditions in which manipulations were attempted, e.g., group:help (B1) and group:no help (B2), to achieve a specific relative relationship between the inducted conditions a one-tailed test is appropriate to test the effectiveness of these manipulations. For example, on the manipulation check it is only important if group:help (B1) is rated significantly more favorably than group:no help (B2). If B1 is not rated significantly higher than B2 the manipulation is not effective and there is no interest in determining if any other relationship exists since the manipulation is nullified. In the case of the group:no information condition (B3) no particular relative relationship was induced, as it is a baseline condition. Therefore, one is interested in detecting any difference on the manipulation checks in any direction between the B3 condition and the B1 and B2 conditions (see Dion et al. 1971, p. 402, footnote 5, for an example of one-tailed tests used with manipulation checks). As Messick notes:

> One uses a two tailed test when testing the hypothesis that two population means are equal, if he is interested in detecting a difference between them no matter which is larger. If it would only be of interest or importance if a specific one of the two means were larger than the other, then a one tailed test should be used. (Messick in McLintock, 1972, p. 563)

2. If one proposes to use a directional test one is in no position to examine any differences which may occur in the opposite direction. One is at a loss in detecting what may in fact be an important or interesting result. One may have to conclude there is no difference when in fact a significant difference in the opposite direction exists. As Burke notes:

> We counsel anyone who contemplates a one tailed test to ask of himself (before the data are gathered): 'If my results are in the wrong direction and significant at the one billionth of 1 percent level, can I publicly defend the proposition that this is evidence of no difference?' If the answer is affirmative we shall not impugn his accuracy in choosing a one tailed test. We may however question his scientific wisdom. (Burke, 1953, in Cohen 1965, p. 111)

Appendix H: One, Two and Three-Way Cell Means in 3 x 3 x 3 ANOVA Using Total BPS Scores

Table A

Main Effect Means Using Total BPS Scores

Conditions	Levels	M	SD
Gain tape	A1	51.89	8.43
Censure tape	A2	51.41	12.33
Random tape	A3	53.52	9.71
Group:help	B1	51.09	10.39
Group:no help	B2	51.43	12.43
Group:no information	B3	54.30	7.11
Group evaluation	C1	53.63	9.20
Individual evaluation	C2	50.81	10.11
No evaluation	C3	52.37	11.35

Note. n = 54/level

Table B

Two-Way Cell Means Using Total BPS Scores

AB summary table

	A1		A2		A3	
	M	SD	M	SD	M	SD
B1	52.61	8.83	50.44	13.19	50.22	9.12
B2	51.56	8.64	48.00	14.75	54.72	12.88
B3	51.50	8.25	55.78	7.07	55.61	5.20

AC summary table

	A1		A2		A3	
	M	SD	M	SD	M	SD
C1	52.22	8.04	52.61	10.98	56.06	8.32
C2	50.22	9.01	50.22	13.15	52.00	7.88
C3	53.22	8.41	51.34	13.32	52.50	12.33

BC summary table

	B1		B2		B3	
	M	SD	M	SD	M	SD
C1	53.67	6.34	53.72	13.79	53.50	5.77
C2	48.50	9.99	49.39	13.02	54.56	5.15
C3	51.10	13.55	51.17	10.59	54.83	9.83

Note. n = 18/cell

Table C

Three-Way Cell Means Using Total BPS Scores

ABC summary table

	B1			B2			B3		
	A1	A2	A3	A1	A2	A3	A1	A2	A3
C1	54.17	53.67	53.17	51.17	50.33	59.67	51.33	53.83	55.33
	(6.24)[a]	(8.80)	(4.45)	(12.25)	(16.43)	(12.75)	(4.89)	(7.28)	(5.16)
C2	44.82	50.83	49.83	51.00	45.00	52.17	54.83	54.83	54.00
	(8.33)	(9.50)	(12.45)	(9.57)	(20.72)	(4.54)	(7.36)	(3.19)	(5.02)
C3	58.83	46.83	47.67	52.50	48.67	52.33	48.33	58.67	57.50
	(5.91)	(19.79)	(9.46)	(3.27)	(4.76)	(18.35)	(11.31)	(9.54)	(5.72)

Note. n = 6/cell.

[a]Numbers in parentheses indicate standard deviations

Appendix I: Post Hoc Analyses and Discussion

Results

Post hoc analyses were undertaken to explore effects which may be of theoretical interest as well as suggestive of further experimentation. Two post hoc analyses were undertaken. One analysis examined subjects' judgments for each of the 16 BPS items as a function of main effect manipulations. The other analysis examined risk levels for each BPS item as a function of item content.

In the pre-planned comparisons responding by subjects was examined using the total BPS score as the dependent measure. The total BPS score in this experiment summarized the behavior of subjects to 16 separate simulated group interactions where judgments were required on the 16 BPS items. A further analysis was undertaken by examining subjects' judgments for each of the 16 items of the BPS.

Plotted in Figure A are the mean BPS judgments for the total experimental sample for each of the 16 BPS items. In addition the mean BPS judgments made by the simulated group to each of the 16 items is also plotted. Responding by the total sample to the items is generally higher than the item responding of the simulated group. This difference was reflected in the prior analysis using the total BPS scores, the total BPS mean being 52.27 versus 46.00 for the simulated group. Item judgments which are greater than those of the simulated group are not massed or accounted for by a few items but are the distributed over the entire 16 items.

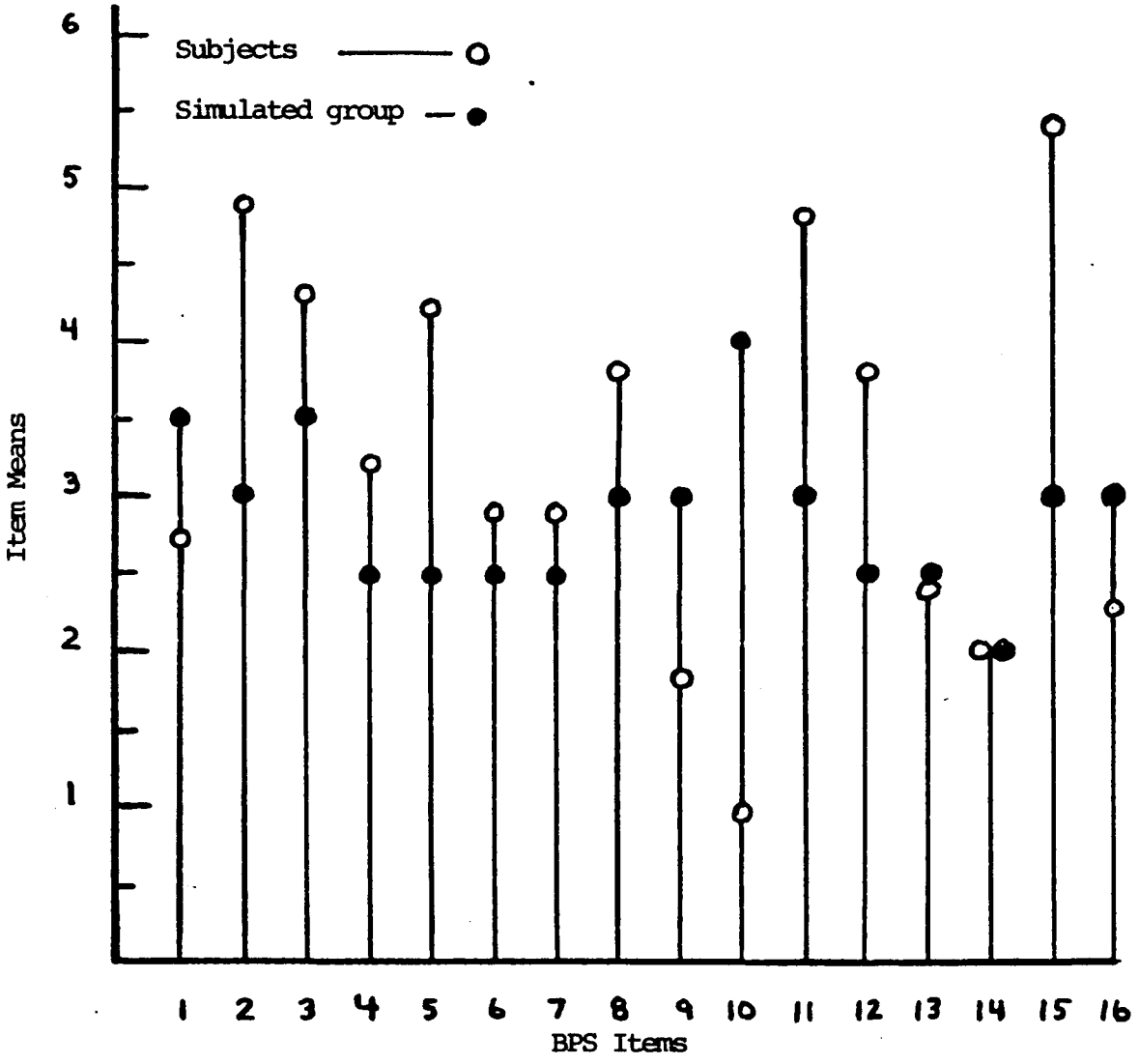


Figure A. BPS item means, total sample versus simulated group

Of the 16 mean judgments for the experimental subjects 10 were larger, two were about equal and four were below those of the simulated group.

The mean BPS judgments for each of the 16 BPS items for each factor were calculated. Figure B represents the mean item judgments for each of the three levels of the risk function factor. The mean judgments per items for the levels of the group gain factor appear in Figure C while those for the exposure to evaluation factor appear in Figure D.

The profiles of the three factors over the sixteen items are similar with differences between levels in each factor not large for most items. To summarize the relative effectiveness of different levels within a factor over the 16 items, judgment means for each level were rank ordered according to degree of predicted risk. For each item, judgment means produced by each level were rank ordered; high, medium or low. The judgment means used in these rankings are those that were plotted for each factor in Figures B, C, and D. For example, for item 2 of the risk function factor (see Figure B), random tape is ranked high; censure tape, medium; and gain tape, low. The judgment means for each of the 16 items for each factor are ranked in this fashion (16 rankings per main effect).

In each cell in Table D appears the number of times out of 16 a judgment mean for a level was higher, lower, or midway between the other two levels. For the risk function factor, the random tape (A3) was ranked higher than the gain

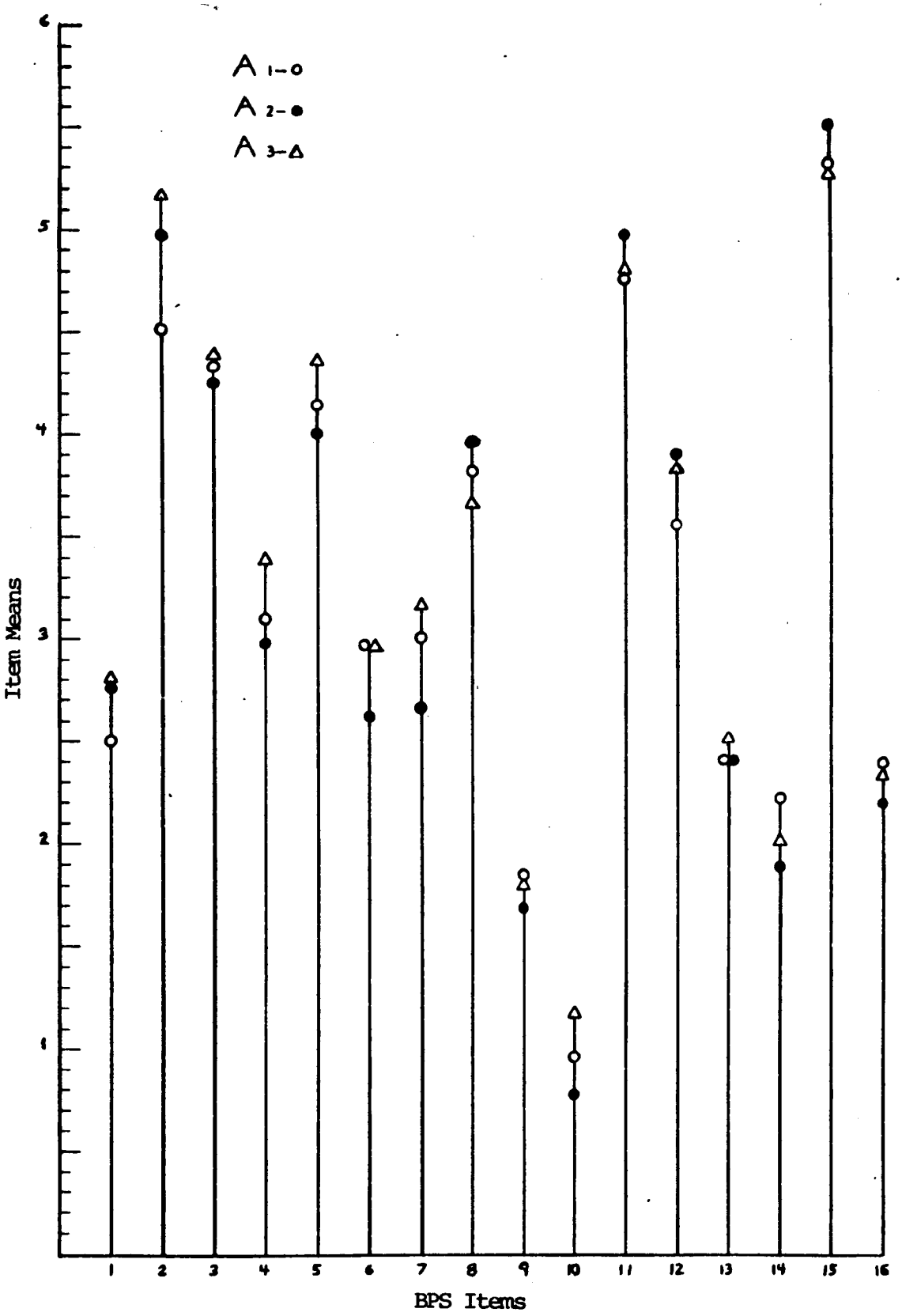


Figure B. Profile: item means for each of three levels of the risk function manipulation.

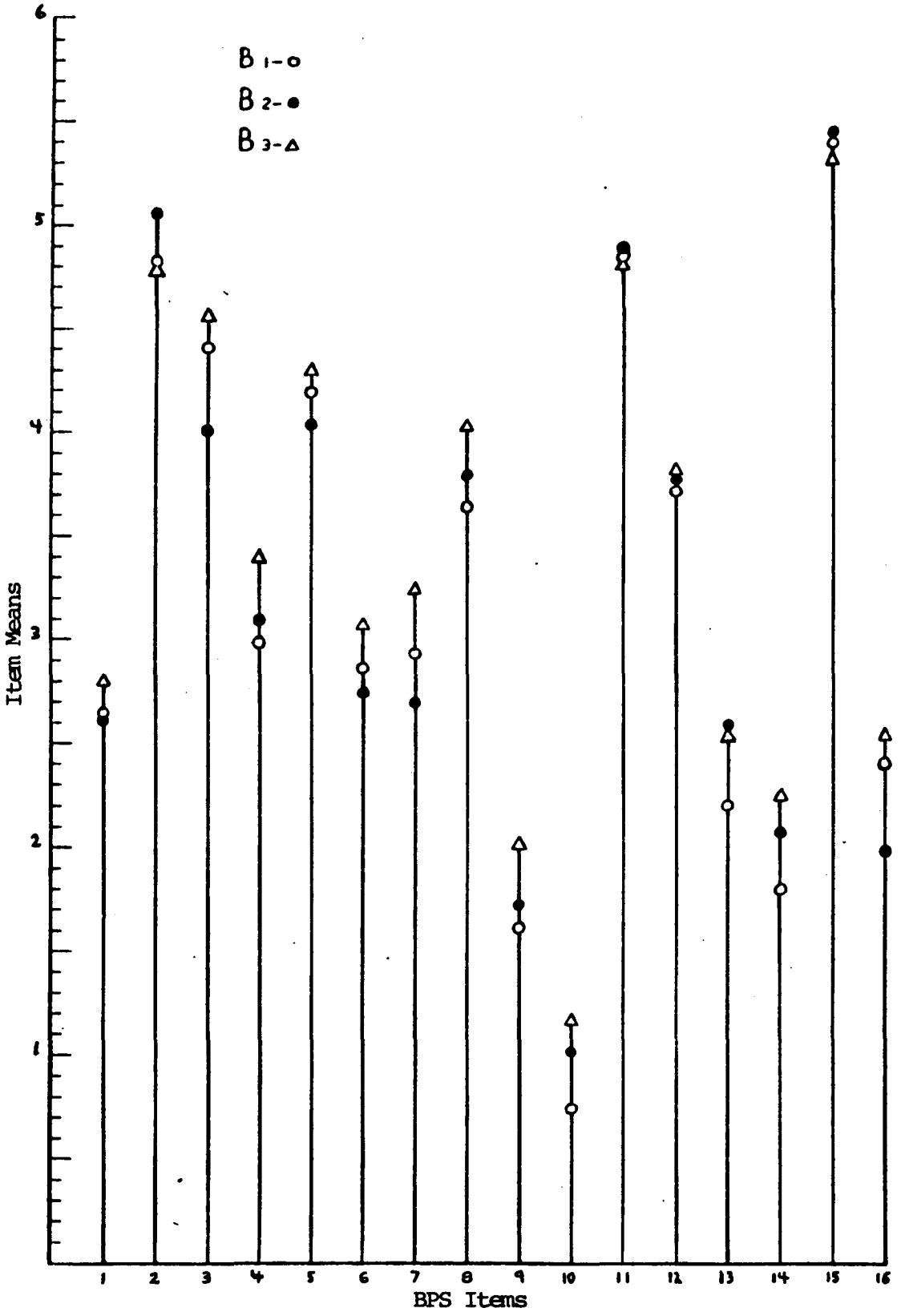


Figure C. Profile: item means for each of three levels of the group gain manipulation.

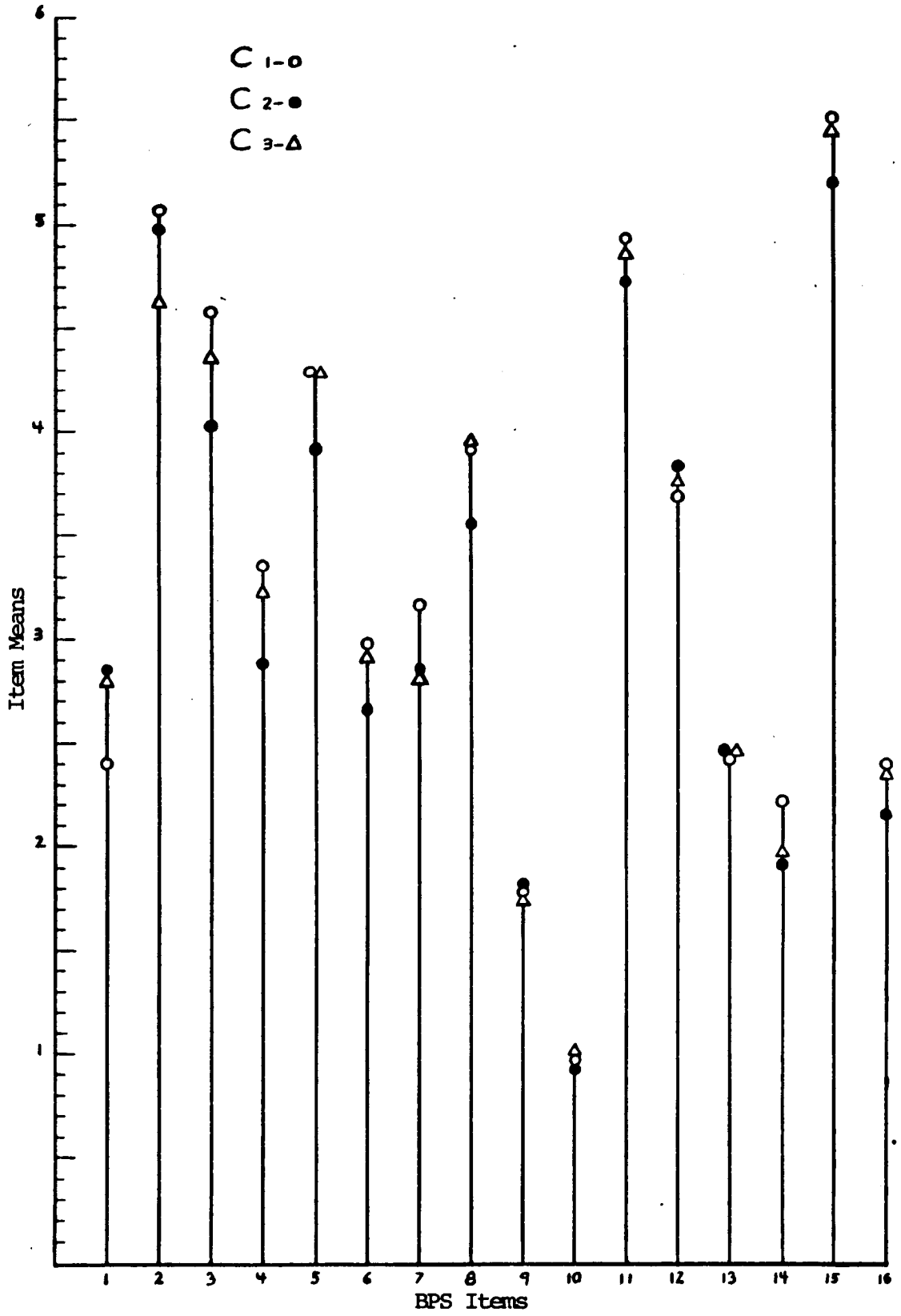


Figure D. Profile: item means for each of three levels of the exposure to evaluation manipulation.

Table D

Ranks of Items Means for 16 BPS Items as a Function of Main Effect Manipulations

Conditions	Levels	Rank		
		High	Mid	Low
Gain tape	A1	3.5	8.0	4.5
Censure tape	A2	4.0	2.5	9.5
Random tape	A3	8.5	5.5	2.0
		High	Mid	Low
Group:help	B1	0	9.0	7.0
Group:no help	B2	4.0	6.0	6.0
Group:no information	B3	12.0	1.0	3.0
		High	Mid	Low
Group evaluation	C1	10.0	3.0	3.0
Individual evaluation	C2	3.5	3.5	9.0
No evaluation	C3	2.5	9.5	4.0

Note. In each cell appears the number of times out of 16 a judgment mean for a level was higher, lower or midway between the other two levels. n = 54/level.

(A1) or censure tape (A2) most often. In 50% of the items (with one tied ranking) the random tape was associated with risk judgments which were greater than those of the other two videotape presentations. The censure tape was ranked lowest most often. In 16 comparisons the censure tape was associated with the lowest judgment mean in 9 items with one tie (or 59.4% of the comparisons). The gain tape (A1) was ranked between the censure (A2) and random tape (A3) most often (50% of the comparisons).

For the group gain factor, the group:no information (B3) condition was associated with the riskiest mean judgments on 12 out of 16 items (75%). The pattern of responding for the group:help (B1) and group:no help (B2) conditions is more ambiguous. The B2 level appears a bit more frequently than B1 at the high rank, but B1 occurs most frequently at the mid-ranked position.

For the exposure to evaluation factor the group evaluation (C1) condition was associated with the riskiest mean judgments on 10 of the 16 items (62.5%). The individual evaluation condition (C2) produced the lowest risk judgments on 9 of 16 items (56.3%). The no evaluation (C3) condition was mid-way between C1 and C2 most often.

In examining items the following pattern is suggested for each factor in terms of ranking conditions from more to less risk taking: Risk function factor-A3, A1, A2. Group gain factor-B3, B1 or B2. Exposure to evaluation factor-C1, C3, C2. It is interesting to note that the trends observed

in examining the effects of conditions on items are similar to the trends observed in examining total BPS scores (see Table 6.

The purpose of the present experiment was not to examine effects of item content on risk responses. However, the presentation of the data as a function of items has highlighted the extent to which item content, to a considerable degree, affects BPS responding. As a matter of documenting this influence in this experiment as well as understanding the context in which other variables functioned or failed to function, items and BPS responding were compared. In Table E the mean BPS scores for each item for the total sample are ranked from high to low predicted risk. The components and component levels (high vs. low) which make up each item are presented. On inspection risk taking varies from high to low as a function of degree of gain in an item relative to loss. The highest risk producing item, item 15, ($\underline{M}$ = 5.35) is composed of maximum gain (RVgn high + Egn high) and minimum loss (Ecens low + RVcens low). The lowest risk producing item, item 10, ($\underline{M}$ = .97) is composed of minimum gain (RVgn low + Egn low) and maximum loss (Ecens high + RVcens high). On a median split those eight items above the median consist mostly of gain components at the high level (RVgn, 6 out of 8 high; Egn 5 out of 8 high) as opposed to fewer loss components at the high level (Ecens high, 3 out of 8; RVcens high, 2 out of 8). For those eight items below the median the opposite was observed; loss components were

Table E

BPS Item Means Rank

Ordered From High to Low Risk

			BPS components and levels			
Rank	BPS Item	*M*	RVgn	Egn	Ecens	RVcens
1	15	5.35	H	H	L	L
2	2	4.88	H	H	L	H
3	11	4.83	H	H	H	L
4	3	4.32	L	H	L	L
5	5	4.17	H	L	L	L
6	8	3.81	H	H	H	H
7	12	3.76	L	L	L	L
8	4	3.15	H	L	H	L
Mdn						
9	7	2.94	H	L	L	H
10	6	2.85	L	H	H	L
11	1	2.68	L	H	L	H
12	13	2.44	L	L	H	L
13	16	2.30	L	H	H	H
14	14	2.04	H	L	H	H
15	9	1.78	L	L	L	H
16	10	.97	L	L	H	H

Note. *N* = 162.

mostly at high levels (Ecens high, 5 out of 8; RVcens high, 6 out of 8) while fewer gain components were at high levels (RVgn high, 2 out of 8; Egn high, 3 out of 8).

Discussion of Post Hoc Analyses

The post hoc analyses, as to the effects of the videotape manipulations of risk function on individual BPS items, reveal only trends. The absolute differences or effects in these post hoc analyses are judged minimal. However, these trends are interesting in relation to predicted effects, previous interpretations of the data and because of some unexpected trends as well. These trends will be discussed briefly in this context.

The effects of the videotape manipulation on each of the 16 BPS items was considered (see Figures B, C & D). A ranking procedure was employed in which the following trend emerged: a) The random videotape produced the riskiest mean judgments on the greatest number of items. b) The censure videotape produced the least risky mean judgments on the greatest number of items. c) The gain videotape produced means on most items which were ranked most often between the random videotape and censure videotape (see Table D). Thus the order of effectiveness on degree of predicted risk taking over the 16 items of the BPS can be described as: random videotape, gain videotape, and censure videotape. The same trend was observed in the presentation of total BPS scores (see Table 6).

The relative relationship of the effects produced by the gain videotape and censure videotape are consistent with predictions arising out of a risk emphasis or arguments point of view. However, the degree to which these effects

are minimal reinforces the arguments favoring the need for complementary decision information to increase the potency of risk function emphasis. The unexpected trend is the tendency of the random videotape to be associated with increased risk. In the random videotape condition risk components were emphasized randomly by simulated group members. From the subjects' point of view, the random tape condition represented exposure to the most heterogeneous set of arguments where a wide range of points of view were expressed. It seems, therefore, that in this experiment the heterogeneous expression of risk function emphasis in a group has some tendency to be associated with increased risk. This finding, though tenuous, may have some implications for release theory.

Release theory holds that increased risk occurs in group discussions because a single group member subscribes to a high risk position, releasing a more cautious member from the social constraints that hold him back (Pruitt, 1969). It has been reported (Vidmar, 1970) that the more heterogeneous the initial decisions made by group members, the larger the shift to risk. As Vidmar's findings are in part taken as supporting release theory (Pruitt, 1971a), it is all the more intriguing that heterogeneity of arguments appears associated with increased risks. As applied to the random videotape condition, a release mechanism is seen as mediated through the expression of a multiplicity of arguments rather than through the expression of an extreme decision. A group member perceiving a heterogeneous, less organized

(random) expression of views on BPS judgments may become more willing to express more of his own constrained tendencies This expression of his own tendencies would be in contrast to culturally derived constraints as well as any perceived group norms, which in the present experiment are the risk decisions by the simulated group members. The assumption that a tendency toward risk is released under a heterogeneous argument condition implies that underlying the individual attractiveness to this position is a pre-existing desire for risk. Thus one could conceive of the entire mechanism as consisting of a pre-existing desire for risk, a value theory position and a release mechanism mediated through heterogeneous expressions of arguments. Of course, more experimental support is needed to verify the speculations presented here.

In the post hoc analysis of the group gain manipulation trends were observed, but not in the direction predicted by locus of control theory. These trends are discussed to the extent that they elicit a number of issues as well as provide a possible explanation of the observed effects in this experiment.

In the post hoc analysis examining the effects of conditions on items (see Table D) the group:no information condition was found to be associated with relatively more risk taking than both the group:help condition and the group:no help condition. No clear pattern of differences was observed between the group:help condition and group:no help

condition, although there was a slight tendency for the group:no help condition to be associated with lower risks. These trends are similar to those observed in examining total BPS scores (see Table 6).

In the ranking procedure employed to ascertain the effects of the manipulations over the 16 BPS items (see Table D), the group:no information condition as compared to the group:help and group:no help condition was found to produce the riskiest mean judgments on the greatest number of items (12 out of 16). Of all the post hoc analyses undertaken, the differences observed between the group:no information condition and the group:help and group:no help conditions were the most robust.

The differences that were observed in the post hoc analyses may or may not have occurred as a function of a group influence process. However, a discussion of this possibility provokes a specificity issue within locus of control theory. Specifically, the expectancy gain variable is theoretically viewed as enhancing gains accruing to a risk. In addition, though, expectancy gain can be viewed as affecting group influence. As will be delineated, the dual role of expectancy gain arises in part because a group which is viewed as helpful by its members generally exerts greater influence on its members (behavior controls) than a non-helpful group. In terms of a different structural framework a helpful group is more attractive to group members, more cohesive and therefore exerts more influence over

group members. Thus expectancy of gain (e.g., helpful group) can theoretically elicit two processes: enhancement of gains accruing to a risk and enhancement of group influence. The group gain manipulation attempted to evaluate the process of enhancement of gains. However, it is felt that the results observed in the post hoc analysis may be attributable to a group influence process as mediated through group cohesiveness.

Cohesiveness can be defined as the resultant of all forces acting on all members to remain in the group (Cartwright & Zander, 1960). The assertion that group influence is mediated by cohesiveness is made in the context of findings that in cohesive groups, group members are influenced and exert more influence than in non-cohesive groups (Collins & Raven, 1969). In the present experiment, differential degrees of group cohesiveness may have been created as a by-product of establishing expectancies as to the degree of help to be provided by the different group conditions. In operational terms, aspects of the manipulation to induce expectancies concerning group gain also resemble cohesiveness manipulations (see Dion et al., 1971, for a sample procedure). In the present experiment risk decisions presented by simulated group members can be seen as providing experimental subjects with a set of standards for making judgments on the BPS. The proposition put forth, therefore, is that the group:help manipulation induced a greater degree of cohesiveness among subjects assigned to this condition

than those assigned to the group:no information condition. In terms of this analysis, subjects in the group:help condition may have been influenced more by the simulated group standard ($\underline{M}$ = 46.00) than subjects in the group:no information condition. It would be this influence factor, then, which would account for the observation that the group: help condition was relatively less risky (closer to the standard) than the group:no information condition . In this experiment, applying this interpretation, the greater influence of the group:help condition is viewed as inhibiting risk taking, as subjects utilize the simulated group standard in making their decisions.

It is less easy to apply the group influence analysis to the group:no help condition. The "matching" procedure used to induce this condition may have created a certain degree of attraction to the group. The induction of this manipulation stressed that while subjects would not be helped by the group neither would they be hindered by it. However, no further attempt will be made to create a "fit" between this condition and the general interpretation being presented.

The results of the group gain manipulation, viewed in terms of cohesiveness and group influence, resemble somewhat the work and findings of Dion et al. (1971). In testing the affective bonds hypthesis of the diffusion of responsibility explanation of the risky shift, cohesiveness was manipulated (high-low) in the standard test-retest choice

shift paradigm using the CDQ. Group discussions were to consensus. It was predicted that greater affective bonds (high cohesiveness) would diminish personal responsibility, and therefore increase risk taking. However the opposite was found, high cohesiveness inhibited the shift toward risk. A significant shift toward risk was found under the low cohesive condition, but not under the high cohesive conditions.

Notwithstanding the data from both the present experiment and from Dion's work, it appears that locus of control theory has to consider the potential of expectancy gain to affect group influence. In the present experiment a group influence process may have interacted with the controlled decisions made by simulated group members. However, other situations can be conceived of where enhancement of risk through expectations of group gain can be negated by a group influence process also enhanced by expectancy gain. For example, a low risk eliciting BPS item (e.g., RVcens high & RVgn low) could generate a distribution of cautious judgments within a group. If expectancy of group gain is aroused, will gains be enhanced and increased risks encouraged or will a group influence process induce group members to make decisions which are closer to the perceived group norms? The expanded form of locus of control theory presented here attempted to deal with the enhancement as opposed to the group influence issue. Predictions were made (hypotheses 5-8) as to the conditions under which expectancies could lead to group controls, interact with group norms as conveyed

through the risk functions emphasized to affect risk taking. However, the predictions made were not supported (see pages 88-90) for discussion.

Finally, in terms of the choice shift literature, the differential operation of group influence needs to be considered when generalizing from laboratory groups to natural groups. Most laboratory groups established in choice shift research are similar to the simulated groups established under the group: no information condition, in that they are low in cohesiveness and therefore may be low in group influence. Variables identified as affecting decisions in the laboratory may be much less potent as compared with established group influence processes in natural groups.

The differential effects observed in the post hoc analyses of the exposure to evaluation factor were parallel to the trends observed in the pre-planned comparisons; that is, more risk taking was observed under the group evaluation condition than under the individual evaluation condition. In the ranking procedure employed to ascertain the effects of the manipulations over the 16 BPS items, the group evaluation condition was found to produce the riskiest mean judgments on the greatest number of items, 10 out of 16. In addition, individual evaluation condition was found to produce the least risky mean judgments on the greatest number of items, 9 out of 16, (see Table D). The observed trend in the group evaluation condition over the entire 16 BPS items, as well as the trends in the pre-planned analyses, were the only main effect results which were in the direction predicted by locus of

control theory.

The pattern of results observed is taken as sustaining interest in the locus of control mechanism: expectancy low loss. The properties of the low loss manipulation may deserve future consideration as a mechanism by which groups ameliorate loss and therefore contribute to increased risk taking. The mechanism being through minimizing exposure of an individual group member's behavior to outside observations and evaluation.

Interest in this particular locus of control mechanism can also be taken as giving consideration to those positions which emphasize the cost ameliorating properties of groups as they relate to increased risk taking. This orientation in the choice shift literature has mainly been in the form of the responsibility diffusion position, a formulation which has generally been evaluated negatively (see Pruitt, 1971a). It is felt, however, that there are distinct differences between the responsibility diffusion formulation and the mechanism of the exposure to evaluation manipulation. In this context and in the context of examining the cost reducing potential of groups, with reference to future research efforts, the following will be considered: exposure to observation vs. responsibility diffusion, resistance to disconfirmation of the gain vs. loss expectation and the negativity bias of individuals vs. groups.

Of interest is the relationship between the operations utilized to induce the low loss expectation and the responsibility diffusion formulation. Although both processes

involve the minimizing of potential loss or negative consequences, it is felt that they are fundamentally different. The main thrust of the responsibility diffusion position is that the process of group discussion diffuses feelings of personal responsibility for failure among group members, which decreases anxiety about failure and increases risk taking. Loss is minimized in the responsibility diffusion process because it is viewed as shared by other group members. Responsibility diffusion is a process that does not primarily depend on the immediate properties and structure of the group and could theoretically operate independently of the reality of the situation. Expectancy of gain and/or low loss in a group have been viewed as related directly to the properties and structure of the group. Rettig (1969) argued that there are many reasons why group membership is likely to produce (or has produced in the past) more favorable outcomes. Likewise it can be argued that expectation of low loss can be reality based, as for example through low exposure to evaluation. The low loss manipulation (group evaluation with the individual's decision in the group obscured) reflects a fundamental property of groups, to obscure from the outside the specific behavior of individual group members. Without prior knowledge of a group's structure, one cannot attribute to any one member a product emerging from a group endeavor. A group, by obscuring the individual from without, minimizes specific evaluation and possible loss to the individual. An extreme non-laboratory

illustration, that non-observation of individual behavior in a group is viewed as increasing risk, is found in the behavior of personal growth groups (e.g., therapy, counseling groups, etc). Initial instructions to group members frequently deal with the requirement that all information exchanged within the group be kept from outsiders unless otherwise agreed upon by all group members. In this manner individual group members are encouraged to take what are subjectively very high risks; revealing to others private thoughts, feelings, behavior, etc. which normally carry with them, or are thought to carry with them, negative sanctions and costs. In this case revelations are made (increased risks are taken) not because all the group members will share in any possible loss but because the expected negative sanctions will not be administered.

Expectations as to the cost reducing properties of group membership may be more potent in the locus of control formulation than expectations of gain, because of the former's greater resistance to disconfirmation. Whether or not a group is being helpful on a task or in making a decision is more immediately discernable to a group member than whether or not costs will be ameliorated by the group. In the situation where low loss expectations are held, a group member may have to wait until the group task is completed before confirmation or disconfirmation of the expectation is obtained. The gain expectancy may be negated during the activity while the low loss expectancy can "hold"

until the end of the activity. There is some support that this occurred in the present experiment with regard to the manipulation of expectations of group gain. On the manipulation checks, a significant drop in ratings was observed in comparing the subjects' reaction to their expected group as opposed to their encountered group (see Table 3). The expectations of the group being helpful were to an extent negated by the reality of the encountered group which may have been a factor in the ineffectiveness of this variable. To the extent that the locus of control formulation relies on expectations it is important to distinguish which variables have "staying power" and which are easily disconfirmed or washed out by the reality of the situation. In this experiment gain expectations appeared to be more susceptible to disconfirmation.

A third factor which highlights the potential cost ameliorating properties of groups is the negativity bias of individuals. Out of concern with the problem of the attribution of value Kanouse and Hanson (1972) developed a concept termed negativity bias. The proposition developed was "that people are generally cost oriented in forming overall evaluations--they weigh negative aspects of an object more heavily than positive ones" (p. 47). Kanouse and Hanson considered several research areas in examining this proposition, among them risk taking by individuals. Risk taking by groups was not examined. However, it is plausible to consider that the negativity bias of individuals may be ameliorated

by groups, resulting in an increase in the risk taking of group members.

Kanouse and Hanson developed the proposition that a negativity bias existed on the part of individuals who were confronted with risk or engaged in risk taking situations. Risk taking of individuals using the CDQ, the BPS, actual risk situations and laboratory gambling experiments were reviewed. Noted were Kogan and Wallach, who, using the CDQ observed that "the deterrence value of costs for failure exceeds the attraction value of gain for success" (1967, p. 133). Also cited were ethical risk experiments using an extended form of the BPS. The negativity bias proposition was viewed as supported, in that the RVcens component was the major determinant of unethical risk in individuals, for predicted ethical risk taking (Rettig & Rawson, 1963) as well as in for actual ethical risk taking (Rettig & Pasimanick, 1964; Rettig & Sinha, 1966). Finally, after examining a number of gambling experiments Kanouse and Hanson concluded the following: "That potential costs are more heavily weighted than potential gains has become a truism within experimental gambling literature" (1972, p.52). Several experiments using gambling tasks (e.g., Solovic & Lichtenstein, 1968) have noted that losses have consistently been found to exert more influence on a gamble's attractiveness than potential gains of the same magnitude.

Kanouse and Hanson do not examine negativity bias in relation to group risk taking or the choice shift effect.

However, in terms of BPS research one can extrapolate the following analysis from the negativity bias concept. It has been empirically demonstrated that individuals emphasize loss when making risk decisions alone (e.g., RVcens). The emphasis on gains (e.g., RVgn) increases in comparing individuals to groups (Rettig 1966; Rettig 1969) with gains emphasized more than loss in groups. Risk taking increases from individuals to groups on the BPS (Rettig 1966; Rettig 1969). Locus of control theory was an attempt to suggest an intervening mechanism which accounted for these observations. However, by making use of locus of control variables the problem can be recast in terms of how these variables ameliorate the negativity bias of individuals.

In the present experiment the locus of control variable (as opposed to locus of control theory), expectation of low loss, deserves some future consideration as a variable that ameliorates the negativity bias. The post hoc analysis in the present experiment suggests that risk taking in the group evaluation condition may be greater than that of the individual evaluation condition. Furthermore, but pointed to with some caution, was the observation that RVgn was greatest, in comparison with all other main effects, under the group evaluation condition. That is, out of all main effects, gain sensitivity (RVgn) was greatest under the group evaluation condition. Perhaps, then, the individual less concerned with costs under the group evaluation condition takes higher risks. Though the shift in RVgn reported in the

literature can be taken as an indication that there is no longer a negativity bias; it is not clear, using the negativity bias analysis in conjunction with the expectation low loss variable, why RVgn may increase as opposed to RVcens decreasing. Although these assertions are speculative they do deserve to be evaluated in a less complicated experimental design which includes risk taking under individual and group conditions.

Appendix J: Supplementary Analyses, BPS Component Scores

Table F

Means of BPS Component Scores per Main Effects

Conditions	Levels	BPS Components			
		RVgn	Egn	RVcens	Ecens
Gain tape	A1	9.96	9.40	9.20	6.67
Censure tape	A2	10.19	10.74	9.86	8.07
Random tape	A3	10.13	9.30	9.37	8.14
Group:help	B1	9.85	10.80	9.93	8.20
Group:no help	B2	10.66	9.50	9.36	7.54
Group:no information	B3	9.74	9.15	9.14	7.15
Individual evaluation	C1	11.19	9.89	9.70	7.48
Group evaluation	C2	9.46	9.52	8.44	8.00
No evaluation	C3	9.63	10.03	10.28	7.41

Note. n = 54/level

Table G

Three-Way Analysis of Variance:Risk Function X Group Gain X Exposure to Evaluation Using RVgn Component

Source	df	MS	F
Risk Function (A)	2	.72	.01
Group Gain (B)	2	14.39	.24
Exposure to Evaluation (C)	2	48.72	.83
A X B	4	76.39	1.29
A X C	4	26.39	.45
B X C	4	46.33	.78
A X B X C	8	107.99	1.83
Error	135	58.95	

Table H

Three-Way Analysis of Variance:Risk Function X Group Gain X Exposure to Evaluation Using Egn Component

Source	df	MS	F
Risk Function (A)	2	34.89	1.13
Group Gain (B)	2	40.68	1.31
Exposure to Evaluation (C)	2	3.85	.12
A X B	4	6.32	.20
A X C	4	55.40	1.79
B X C	4	27.54	.89
A X B X C	8	158.10	5.11*
Error	135	30.94	

*$p < .01$

Table I

Three-Way Analysis of Variance:Risk Function X Group Gain X Exposure to Evaluation Using Ecens Component

Source	df	MS	F
Risk Function (A)	2	37.63	1.41
Group Gain (B)	2	15.39	.58
Exposure to Evaluation (C)	2	5.63	.21
A X B	4	38.88	1.46
A X C	4	34.70	1.30
B X C	4	10.29	.39
A X B X C	8	17.58	.66
Error	135	26.58	

Table J

Three-Way Analysis of Variance:Risk Function X Group Gain X Exposure to Evaluation Using RVcens Component

Source	df	MS	F
Risk Function (A)	2	6.12	.19
Group Gain (B)	2	8.78	.28
Exposure to Evaluation (C)	2	47.49	1.54
A X B	4	42.05	1.37
A X C	4	46.28	1.50
B X C	4	30.03	.97
A X B X C	8	38.08	1.24
Error	135	30.78	

References

Bateson, N. Familiarization, group discussion, and risk taking. Journal of Experimental Social Psychology, 1966, 2, 119-129.

Belovicz, M.W., & Finch, F.E. A critical analysis of the "risky shift" phenomenon. Organizational Behavior and Human Performance, 1971, 6, 150-168.

Brown, R. Social psychology. New York: Free Press of Glencoe, 1965.

Brown, R. Further comment on the risky shift. American Psychologist, 1974, 29, 468-470.

Burnstein, E. An analysis of group decisions involving risk ("the risky shift"), Human Relations, 1969, 22, 381-395.

Burnstein, E., Miller, H., Vinokur, A., Katz, S., & Crowley, J. Risky shift is eminently reational. Journal of Personality and Social Psychology, 1971, 20, 462-471.

Cartwright, D. Risk taking by individuals and groups: An assessment of research employing choice dilemmas. Journal of Personality and Social Psychology, 1971, 20, 361-378.

Cartwright, D. Determinants of scientific progress: The case of research on the risky shift. American Psychologist, 1973, 28, 222-231.

Cartwright, D. & Zander, A.F., (Eds.). Group dynamics: research and theory (2nd ed.). Evanston, Ill.: Row, Peterson, 1960, pp. 14-28.

Chapko, M. Source of increased emphasis of gain in predicted ethical risk taking of groups. Unpublished doctoral dissertation, City University of New York, 1972.

Clausen, G. Risk taking in small groups. Unpublished doctoral dissertation, University of Michigan, 1965.

Cohen, J. Some statistical issues in psychological research. In B.B. Wolman (Ed.), Handbook of Clinical Psychology. New York: McGraw-Hill, 1965, Chap. 5.

Collins, E. & Raven, R. Group structure: Attraction, coalition, communication and power. In G. Lindzey & E. Aronson (Eds.), Handbook of Social Psychology, (2nd ed.). Reading, Mass: Addison-Wesley, 1969, Vol. 4, Chap. 30.

Dion, K.L., Miller, N., & Magnan, M.A. Cohesiveness and social responsibility as determinants of group risk-taking. Journal of Personality and Social Psychology, 1971, 20, 400-406.

Ebbesen, E.B. & Bowers, R.J. Proportion of risky to conservative arguments in a group discussion and choice shift. Journal of Personality and Social Psychology, 1974, 29, 316-327.

Flanders, J.P., & Thistlethwaite, D.L. Effects of familiarization and group discussion on risk-taking. Journal of Personality and Social Psychology, 1967, 5, 91-98.

Kanouse, D.E. & Hanson, L.R. Jr. Negativity in evaluations. In E. Jones, D.E. Kanouse, H.H. Kelley, R.E. Nisbett, S. Valins & B. Weiner (Eds.), Attribution: Perceiving the causes of behavior. Morristown, N.J.: General Learning Press, 1972.

Kelley, H.H. & Thibaut, J.W., Group problem solving. In G. Lindzey & E. Aronson (Eds.), Handbook of Social Psychology, (2nd ed.). Reading, Mass.: Addison-Wesley, 1969, Vol. 4, Chap. 29.

Kogan, N., & Wallach, M.A. Risk-taking: A study in cognition and personality. New York: Holt, Rinehart, & Winston, 1964.

Kogan, N., & Wallach, M.A. Group risk taking as a function of members' anxiety and defensiveness levels. Journal of Personality, 1967, 35, 50-63. (a)

Kogan, N., & Wallach, M.A. Risk taking as a function of the situation, the person, and the group. In G. Mandler, P. Mussen, N. Kogan & M.A. Wallach (Eds.), New directions in psychology III. New York: Holt, Rinehart & Winston, 1967. (b)

Levinger, G., & Schneider, D.J. Test of the "risk is a value" hypothesis. Journal of Personality and Social Psychology, 1969, 11, 165-170.

Marquis, D.G. Individual responsibility and group decisions involving risk. Industrial Management Review, 1962, 3, 8-23.

McClintock, C.G. Experimental Social Psychology. New York: Holt, Rinehart & Winston, 1972.

Moscovici, S., & Zavalloni, M. The group as a polarizer of attitudes. Journal of Personality and Social Psychology, 1969, 12, 125-135.

Meyers, D.G., & Bishop, G.D. Enhancement of dominant attitudes in group discussions. Journal of Personality and Social Psychology, 1971, 20, 386-391.

Nordhøy, F. Group interaction in decision-making under risk. Unpublished master's thesis, Massachusetts Institute of Technology, 1962.

Pruitt, D.G. The "Walter Mitty" effect in individual and group risk-taking. Proceedings of the 77th Annual Convention of the American Psychological Association, 1969, 4, 425-426. (Summary)

Pruitt, D.G. Choice shifts in group discussion: An introductory review. Journal of Personality and Social Psychology, 1971, 20, 339-360. (a)

Pruitt, D.G. Conclusions: Toward an understanding of choice shifts in group discussions. Journal of Personality and Social Psychology, 1971, 20, 495-510. (b)

Pruitt, D.G., & Teger, A.I. Is there a shift toward risk in group discussion? If so, is it a group phenomenon? If so, what causes it? Paper presented at the meeting of the American Psychological Association, Washington, D.C., September 1967.

Pruitt, D.G. & Teger, A.I. The risky shift in group betting. Journal of Experimental Social Psychology, 1969, 5, 115-126.

Rettig, S. Group discussion and predicted ethical risk taking. Journal of Personality and Social Psychology, 1966, 3, 629-633.

Rettig, S. Locus of control in predictive judgments of unethical behavior. Proceedings of the 77th Annual Convention of the American Psychological Association, 1969, 4, 427-428. (Summary)

Rettig, S. Trust and locus of control; predictive judgments of unethical behavior. Unpublished manuscript, Hunter College, City University of New York, 1970.

Rettig, S. Trust and locus of control in predictive judgments of unethical behavior. Proceedings of the 80th Annual Convention of the American Psychological Association, 1972, 7, 221-222. (Summary)

Rettig, S. & Pasamanick, B. Differential judgment of ethical risk by cheaters and noncheaters. Journal of Abnormal and Social Psychology, 1964, 69, 109-113.

Rettig, S. & Rawson, H.E., The risk hypothesis in predictive judgments of unethical behavior. Journal of Abnormal and Social Psychology, 1963, 66, 243-248.

Rettig, S. & Sinha, J.B.P. Bad faith and ethical risk sensitivity. Journal of Personality, 1966, 43, 275-286.

Rettig, S., & Turoff, S.J. Exposure to group discussion and predicted ethical risk taking. Journal of Personality and Social Psychology, 1967, 7, 177-180.

Rotter, J.B. Social learning and clinical psychology, Englewood Cliffs, N.J.: Prentice-Hall, 1954.

Silverthorne, C.P. Information input and the group shift phenomenon in risk taking. Journal of Personality and Social Psychology, 1971, 20, 456-461.

Slovic, P. and Lichtenstein, S. Relative importance of probabilities and payoffs in risk taking. Journal of Experimental Psychology, 1968, 78, pt. 2.

St. Jean, R. Reformulation of the value hypothesis in group risk taking. Proceedings of the 78th Annual Convention of the American Psychological Association, 1970, 5, 339-340. (Summary)

Stoner, J.A.F. Risky and cautious shifts in group decisions: The influence of widely held values. Journal of Experimental Social Psychology, 1968, 4, 442-459.

Teger, A.I., Pruitt, D.G., St. Jean, R., & Haaland, G.A. A reexamination of the familiarization hypothesis in group risk-taking. Journal of Experimental Social Psychology, 1970, 6, 346-350.

Thibaut, J.W. & Kelley, H.H. The Social Psychology of Groups, New York: Wiley, 1959.

Vidmar, N. Group composition and the risky shift. Research Bulletin #108, Department of Psychology, The University of Western Ontario, London, Canada, 1968.

Vidmar, N. Group composition and the risky shift. Journal of Experimental Social Psychology, 1970, 6, 153-166.

Vidmar, N. & Burdeny, T.C. Interaction effects of group size and relative risk position with item type in the "group shift" effect. Research Bulletin #128, Department of Psychology, The University of Western Ontario, London, Canada, 1969.

Wallach, M.A., Kogan, N. & Bem, D.J. Group influence on individual risk taking. Journal of Abnormal and Social Psychology, 1962, 65, 75-86.

Wallach, M.A., Kogan, N., & Bem, J.D. Diffusion of responsibility and level of risk taking in groups. Journal of Abnormal and Social Psychology, 1964, 68, 263-274.

Wallach, M.A., Kogan, N. & Burt, R.B. Can group members recognize the effects of group discussion upon risk taking? Journal of Experimental Social Psychology, 1965, 1, 379-395.