

THE RISKY SHIFT PHENOMENON:
A LITERATURE REVIEW, A NORMATIVE EXPLANATION
AND AN EXPERIMENTAL STUDY

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Chapter I

Introduction

The purpose of this thesis will be to present a comprehensive review of the theory and research dealing with the "risky shift phenomenon"; that is, the tendency of groups to recommend riskier decisions after discussion than their individual members did prior to discussion. In light of the research that has been done, a reformulation of the theoretical approaches to the problem will be offered and tested.

As will be made clear in the following review, the weight of empirical evidence dealing with the risky shift favours one comprehensive explanation - the cultural value hypothesis (Brown, 1965). A reformulation of this hypothesis in terms of the constructs of norms and conformity behavior was attempted for two reasons: (1) to provide a more general explanation of the risky shift than that provided by the value hypothesis which would tie the phenomenon, theoretically, to the larger, more "established" psychological areas of norms and conformity behavior, and (2) to provide an approach which specifies the processes involved in the risky shift in a less ambiguous manner.

The experimental study presented in this thesis was conducted as a test of some of the implications of this reformulation.

Chapter II

The Risky Shift Phenomenon

A description of the basic risky shift phenomenon is in order. The phenomenon centers around a set of situational problems, the choice-dilemmas instrument, developed by Wallach and Kogan (1964) for use in studies of individual risk taking. In each of these problems the central character must choose between two courses of action, one riskier but with a more desirable outcome than the other. Subjects are asked to decide, individually, what minimum chance of success they would require before recommending the riskier alternative to the central character. A basic research finding has been that, after subjects have made individual decisions and have participated in group discussions of each problem, their decisions become riskier both in the group and in post-discussion individual decisions.

The research started with a study by Stoner (1961). While using the choice-dilemmas, he found that group decisions were riskier than initial individual decisions; his interest was in managerial decision-making and his subjects were male graduate students in management.

Wallach, Kogan and Bem (1962) hypothesized that Stoner's data may have resulted because his subjects were males playing the role of managers - a role consistent with aggressive and risk taking behavior; normally for group decisions, one might expect either an averaging effect (of initial decisions)

or increased conservatism. They repeated Stoner's study using male and female college students.

Their basic procedure is typical of that used in most subsequent studies. Subjects made initial individual decisions on the choice-dilemmas and then were formed into 5-6 member groups to discuss each problem to consensus; following this, subjects again made individual decisions. Control groups made a second set of individual decisions a week later.

The controls did not show a risky shift. Male and female experimental groups showed comparable, significant, risky shifts, for both group consensus and post-discussion decisions. A sociometric rating for influence indicated that high initial risk takers were rated as having more influence on the group decisions. When male subjects made "post-post" decisions two to six weeks later, a significant risky shift was retained with no significant change from post- to post-post-discussion decisions.

It is unfortunate that post-discussion decisions were made in the same booklet as the group consensus decisions, possibly making the group consensus more salient. The cover story for the group discussion was a further weak point: subjects were told that this was the primary task whereas the initial decisions were made to familiarize subjects with the material.

Wallach, Kogan and Bem offered two interpretations of their findings: (a) the diffusion-of-responsibility hypothesis,

and/or (b) high risk takers exert more influence and take the initiative in social situations. These will be discussed seperately below.

Clark and Willems (1969) have considered the role of instructions as a factor in the risky shift. Typically, subjects are asked to indicate the lowest probability acceptable for successful completion of the risky course of action to recommend that it be undertaken. Clark and Willems contended that the "lowest probability" may elicit a cognitive set for risk. Therefore, they constructed new, neutral instructions asking the subject to simply indicate the "probability" he would accept. The two sets of instructions were administered to two different groups of subjects. Subjects receiving the original instructions showed significant risky shifts, while subjects receiving the new instructions did not. Thus, Clark and Willems concluded that the risky shift is an instructional artifact.

However, Heathcock (1969) and MacNeill (1969) obtained significant risky shifts using a modified version (by W. C. Horne, University of Waterloo) of the Wallach-Kogan instructions. Here, the subject is to decide, by answering (yes or no to) a series of eleven questions, whether he would or would not recommend following the risky course of action if the odds for its success were 1 in 100, 10 in 100, 20 in 100,....., 99 in 100 - eleven different probability levels. The subject was not asked to indicate the lowest probability

acceptable. Since this version of the instructions obviated the cognitive set associated with the earlier instructions, Heathcock and MacNeill's work indicated that the risky shift is probably not as dependent on instructional set as Clark and Willems (1969) suggested.

The present review will be primarily restricted to studies concerned with group risk taking, which employed the choice-dilemmas. See Kogan and Wallach (1967a) for a review of individual and group risk taking in a variety of contexts. An excellent review by Dion, Baron and Miller (1970) cites studies attesting to the generality of the risky shift across subjects and situations (Blank, 1968; Chandler & Rabow, 1969; Flanders, 1970; Hunt & Rowe, 1960; Jamieson, 1968; Kessler & Wieland, 1970; Kogan & Carlson, 1967; Kogan & Doise, 1969; Lamm & Kogan, 1970; Lonergran & McClintock, 1961; Lupfer, 1970; Marquis, 1962; Pruitt & Teger, 1969; Siegel & Zajonc, 1967; Vidmar, 1970; Zajonc, Wolosin, Wolosin, & Loh, 1970; Zajonc, Wolosin, Wolosin, & Sherman, 1968, 1969) and to the reasonably high reliability of the risky shift (e.g.: Kogan & Wallach, 1964; Wallach & Kogan, 1961; Wallach, Kogan, & Bem, 1962). The risky shift has been demonstrated for other risk taking behaviors and phenomena (e.g.: Kogan & Wallach, 1961, 1964; Wallach & Kogan, 1961).

However, Slovic (1962) presented non-significant inter-correlations among nine risk taking measures indicating a

lack of convergent validity (Campbell & Fiske, 1959); he did not include the choice-dilemmas. Slovic argued that this evidence and other validity data (as reviewed by Slovic, 1964) indicate that risk taking propensity may not be a general trait but rather one varying with the individual and the situation. Thus, caution is warranted in extending the results of research involving the choice-dilemmas to other risk situations.

The following review of the literature will center mainly on two explanations of the phenomenon: (a) the diffusion-of-responsibility hypothesis (Wallach, Kogan & Bem, 1962), and (b) the cultural value hypothesis (Brown, 1965). Other approaches will be briefly considered.

A number of studies (Kogan & Wallach, 1967d; Minton & Miller, 1970; Myers, Murdoch, & Smith, 1970; Rim, 1963, 1964a, 1964b, 1964c, 1965a, 1965b, 1965c, 1966; Wallach, Kogan, & Burt, 1967) have examined the relationship between the risky shift and various personality variables; as the results of these studies do not have any direct theoretical implications for the positions to be discussed below, they will not be reviewed here.

Chapter III

Explanations of the Risky Shift Phenomenon

Less Salient Hypotheses and Approaches

Leadership Hypotheses

Various authors have proposed, in one form or another, that the risky shift may be attributed to the high risk-taker assuming a leadership position in the group. As previously noted, Wallach, Kogan and Bem (1962) offered this as one possible explanation of the risky shift.

Clausen (1966) showed that: (a) initial risk taking and subject confidence were positively related, (b) high-risk, high-confidence subjects were perceived as the most influential, and (c) they were able to move the group decision toward risk. This is in line with Burnstein's suggestion (1967) that subjects initially prone to risk may be more influential because of a greater commitment to and confidence in their initial decisions. However, Stoner (1961) and Teger and Pruitt (1967) have been unable to demonstrate a relationship between confidence and risk taking.

Wallach, Kogan and Burt (1968) showed that for female groups risk takers were judged slightly more persuasive than conservatives, but not at all for male groups; they concluded that the risky shift cannot be attributed to greater persuasiveness as a general characteristic of high risk takers, despite studies (Flanders & Thistlethwaite, 1967; Wallach, Kogan, & Bem, 1962; Wallach, Kogan, & Burt,

1965) reporting positive but low correlations between initial risk taking and ratings of perceived influence. Kelley and Thibaut (1968) suggested that these correlations may be a consequence, rather than a cause, of the risky shift; this notion is supported by studies demonstrating conservative shifts (Nordhoy, 1962; Rabow et al., 1966) where initially conservative subjects were perceived as more influential, and by Wallach, Kogan and Burt's (1965) demonstration that subjects were aware of a risky shift during the discussion but were inaccurate in estimating its magnitude.

Likewise, Hoyt and Stoner (1968) rejected the leadership explanation; their study, designed to neutralize any leadership effects of highly risk-prone subjects, showed that group discussion-to-consensus still produced risky shifts.

Kelley and Thibaut (1968) proposed a "rhetoric-of-risk" hypothesis to account for both the positive correlations between initial risk and perceived influence, and the risky shift. They view persuasiveness as intrinsic to a position rather than a person:

There are two related aspects of the risky position that may give the proponent of such a position a disproportionate weight in open discussion: (1) the "rhetoric of risk" is more dramatic, and (2) the conflicts and uncertainties entailed in accepting the riskier alternative might lead the proponent of such alternatives to state his arguments with a heightened intensity and amplitude. In short, he may have the advantage of a

more potent language, more intensively produced (Kelley & Thibaut, 1968, p. 82).

There is little evidence for this position: Kelley and Thibaut cite a study by Lonergran and McClintock (1961), which failed to find a risky shift in a betting situation, as indirect support.

Burns (1967) presented a variation on the leadership explanation. He assumed that groups behave more decisively than individuals and that those holding a more extreme position exert greater influence. Using only two parameters, the initial extremity of the most extreme group member and the within-group variance of initial decisions, this model showed a fair degree of predictive power (as reported by Dion, Baron, & Miller, 1970).

A leadership hypothesis as a comprehensive explanation of the risky shift is questionable because of the weak relationship between confidence and risk taking (Stoner, 1961; Teger & Pruitt, 1967) and between perceived influence and risk taking (Flanders & Thistlethwaite, 1967; Wallach, Kogan, & Bem, 1962; Wallach, Kogan, & Burt, 1965, 1968). It is discredited by the finding that when the factor of leadership is neutralized, a risky shift still occurs (Hoyt & Stoner, 1968). Hence, many authors (Jones & Gerard, 1967; Kelley & Thibaut, 1968; Kogan & Wallach, 1967a; Mackenzie & Bernhardt, 1968), including the present writer, consider that a leadership hypothesis can only be a limited, partial explanation of the risky shift.

The Familiarization Hypothesis

Bateson (1966) provided evidence to indicate that familiarization per se can lead to a risky shift. Subjects made initial decisions and then were asked to familiarize themselves with the problems through further study. They wrote notes while they studied as if playing the role of "a consultant preparing a brief"; there was no group discussion. Their post-familiarization decisions showed a risky shift equivalent to that shown by subjects in the usual discussion-to-consensus condition. Bateson interpreted these results as indicating that comprehension may be instrumental to the risky shift.

Flanders and Thistlethwaite (1967) criticized this conclusion on the grounds that no subjects were run in a condition exposing them to both familiarization and group discussion. Repeating Bateson's conditions and adding a familiarization-group discussion-to-consensus condition, they replicated Bateson's findings and showed that group discussion-to-consensus failed to have any increasing effect on risk taking over that of familiarization.

However, many studies (Bell & Jamieson, 1970; Cecil, 1968; Dion & Miller, 1969; Miller & Dion, 1970; Myers, 1968; Pruitt & Teger, 1967; Teger, Pruitt, St. Jean, & Haaland, 1970; Vidmar, 1970) have been unable to replicate these data.

Further, Marquis (1968) has demonstrated that subjects shift to caution after familiarization on caution oriented

items (Stoner, 1968); if the familiarization effect is interpreted as effecting shifts because of uncertainty reduction through increased comprehension, then it cannot account for cautious shifts. Because the familiarization data cannot be replicated and because of Marquis' (1968) findings, the familiarization hypothesis appears to be inadequate.

Optimism, Pessimism and the Risky Shift

Noting an observation by Madaras and Bem (1968) that the risky shift is accompanied by a pessimistic shift, Lamm, Trommsdorff and Kogan (1970) examined the relationship between optimism-pessimism and the risky shift. Subjects made the usual initial risk decisions and, as well, estimated the actual real-world probability of success of the risky alternative (a measure of optimism-pessimism). Group discussion-to-consensus then followed: in one condition, subjects discussed the items on the usual risk dimension, but made final individual decisions on the optimism-pessimism dimension; in a second condition, subjects discussed the items on the optimism-pessimism dimension, but made final individual decisions on the risk dimension. Both conditions showed a pessimistic shift, but only the former condition showed a risky shift. These results suggest that the content of group discussion must be risk-relevant to produce a risky shift. When group discussion is focused on the optimism-pessimism dimension, the discussion makes salient "all the

things that might go wrong" in pursuing a risky course of action; this, in turn, inhibits a risky shift, but facilitates a pessimistic shift.

Perlman and Oskamp (1970) examined optimism from a different viewpoint, suggesting that a risky shift should be accompanied by an increase in optimism, and a conservative shift by a decrease in optimism, that the risky alternative would be successful. Using both risk- and caution-inducing items, the authors obtained both risky and conservative shifts, but were unable to demonstrate a relationship between the shift and optimism.

The Social Comparison of Abilities

Jellison and Riskind (1970) presented a new approach to the risky shift:

The social comparison of abilities interpretation assumes that risk and ability are directly related and that the amount of risk chosen is an indication of a person's ability. Since persons want to be higher in ability than comparison others, they are motivated to take higher risks to demonstrate their ability (p. 375).

The first of a series of experiments was designed to show that the more risk another recommends the greater will be his perceived abilities. Subjects were given booklets that, they were told, had been filled out by a student in the course of a previous experiment; a description of this student was supplied. The booklets contained the usual initial, risk taking instructions plus 10 of the choice-dilemmas already filled in; actually, the experimenter had

filled in the booklets, answering them to create four risk levels: low, moderate, high and very high. Subjects were told that this was a study of impression formation, and they were asked to complete a series of rating scales in terms of this student. Results indicated that as level of risk taking increased there was a strong and consistent trend for the student to be rated higher on the favourable adjectives and lower on the unfavourable adjectives.

A second experiment tested the hypothesis that

If people assume that individuals usually chose a level of socially defined risk as a function of their perception of their own ability, then people should expect individuals of high ability to take higher risks than individuals of low ability (p. 380).

Subjects were given information about a student indicating whether he was high or low in ability, and were asked to complete the choice-dilemmas as this student would. Results indicated that higher risk taking was attributed to those high in ability. A third experiment manipulated the subject's motivations to demonstrate his abilities, through a role playing technique (Jones, Gergen, & Davis, 1962). The results indicated, in accord with predictions, that the more motivated the subject to demonstrate his abilities, the more risk he was willing to advocate. A final experiment demonstrated that subjects prefer to see themselves as higher in ability than comparable others: subjects filled in the initial booklet for themselves and for a comparable other, in terms of the likelihood for success of the risky alternative.

Results showed that subjects consistently viewed the risky alternative as having greater likelihood of success when self rather than other was involved. Thus, these experiments support the social comparison of abilities interpretation. However, it was not actually demonstrated that these factors were instrumental to or responsible for the risky shift.

The Diffusion-of-Responsibility Hypothesis

As noted above, Wallach, Kogan and Bem (1962) offered the diffusion-of-responsibility hypothesis as one interpretation of the risky shift. This hypothesis is a rather simple but intuitively appealing explanation. These authors proposed that a process of diffusion or spreading of responsibility may function in these decision-making groups as a result of knowing that one's decisions are being made jointly with others rather than alone; that is, "..... individuals are willing to assume greater risks in a group context because responsibility for failure of a risky course can be shared with others" (Kogan & Wallach, 1967b, p. 75). The group discussion enables the individual to feel less than proportionally to blame when he considers the possibly failure of a riskier position; however, the risky shift, as this hypothesis treats it, is a group effect and cannot occur with isolated individuals (Pruitt & Teger, 1967; Secord & Backman, 1964). Wallach and Kogan (1965) added the notion that the discussion allows emotionally tinged

interpersonal connections, or affective bonds, to develop. It is these, they maintained, that enable the diffusion process to take place.

To test this hypothesis, Wallach, Kogan and Bem (1964) used actual instead of hypothetical payoffs. Subjects answered College Board Exam questions. The monetary payoff for a correct answer was proportional to the difficulty level of the question. Control subjects made all decisions individually. In a second condition, 3-man groups of subjects made group decisions (consensus), but subjects solved the problems individually. In a third condition, 3-man groups were formed where each member individually decided on a risk level; then one person was selected by chance to answer the questions at his chosen level of risk. Two further conditions were as follows: (4) 3-man groups made decisions by discussion-to-consensus, and one member was selected by chance to answer the questions, and (5) 3-man groups made decisions by discussion-to-consensus and selected one member to answer the questions.

Thus, Wallach et al. manipulated two independent variables - group versus individual decision-making, and group versus individual responsibility. Here, "group responsibility" meant that one person's performance was responsible for the entire group's outcome. They argued that group decisions would lead to more diffusion of responsibility and, thus, greater risky shifts. They also expected that "group

responsibility" - the opposite of responsibility diffusion - would lead to less pronounced risky shifts.

Their results can be summarized as follows: (a) the second condition showed a significant risky shift, (b) the third condition showed a conservative shift, and (c) the fourth and fifth conditions showed highly significant risky shifts. Wallach et al. argued that these results supported the diffusion-of-responsibility hypothesis: in the second condition, group decision-making enhanced the risky shift while in the third condition, group responsibility induced a conservative shift; in the fourth and fifth conditions, the factor of group responsibility actually seemed to change its psychological character (a conservative agent in isolation) to become, when paired with group decision-making, a force toward greater risk taking.

Bem, Wallach and Kogan (1965) disproved a number of alternative hypotheses, using a situation involving direct risk for the subject. Subjects were given questionnaires outlining six different experiments involving physiological stimulation in which they would be participating. Each experiment listed varying levels of the particular stimulation coupled with percentages of the population that experienced side effects at each level; as the probability of experiencing side effects increased, so also did the monetary return to the subject. Subjects had to decide the level of stimulation they would undergo for each experiment.

Under ordinary discussion-to-consensus conditions concerning what level of risk the group would accept, there was a risky shift for both group consensus and post-discussion private decisions. In a second condition, subjects made initial decisions, and final decisions a week later with no intervening discussion; subjects were told their final decisions would be revealed to the other group members and discussed. There was no risky shift under these conditions of anticipated public disclosure, arguing against the notion that risk-taking may be socially more desirable than conservatism (for a further discussion of this issue, see the section concerning risk as a value).

In a third condition, subjects were told, before making final decisions, that they would undergo stimulation with two other subjects. There was no shift under these conditions of anticipated presence of others, discrediting the idea that the risky shift may be enhanced if the subject expects that the consequences of his decision will not be experienced alone.

Finally, subjects after making initial decisions were given a new questionnaire of the same experiments. They were asked to decide on the stimulation they would suggest the group use. They thought that when the time came to participate in the experiments, they would be required to discuss-to-consensus what level of stimulation the group would accept. Under this condition of anticipated discussion-to-

consensus, there was no risky shift, discrediting the idea that the previous two hypotheses might be operating simultaneously.

Bem, Wallach and Kogan (1965) argued that these results provided direct support for the diffusion-of-responsibility hypothesis because the alternative explanations suggested, and tested in the experiment, had been found inapplicable. This is a limited research strategy and the conclusion is unacceptable; although these findings provide support for several implications of the diffusion-of-responsibility hypothesis, they do not provide a direct test.

Cummings and Mize (1969) used another approach to test the diffusion-of-responsibility hypothesis. They reasoned that ".....diffusion of responsibility (an interpersonal phenomenon) is a manifestation of a more basic intra-personal phenomenon: namely, the lessening of the salience of personal responsibility as perceived by each group member" (p. 277; italics in the original). Subjects in one condition were given an "advisory" set of problems on which they made recommendations concerning the risky course of action; subjects in a second condition were given a "central person" set of problems on which they made decisions on taking the risky course of action. The former subjects were riskier than the latter, although the difference between them did not reach an acceptable level of significance ($p < .10$). The authors stated that the results

support their prediction that ".....those subjects having the lower relative degree of perceived salience of personal responsibility will exhibit a relatively higher risk-taking propensity than those subjects with the relatively higher degree of perceived salience of personal responsibility" (p. 277).

However, this interpretation and the diffusion-of-responsibility hypothesis were discredited by Graham and Harris (1970); in a similar study, they obtained the opposite results - "central person" subjects showed a significantly larger risky shift than "advisory" subjects.

Wallach and Kogan (1965) introduced the idea that affective bonds mediate the diffusion of responsibility process. They argued that via discussion people become emotionally attached to one another. These attachments lead people to feel linked to a common fate. Thus, when affective bonds are present, the responsibility for this outcome is diffused throughout the group. This hypothesis was based on evidence that (a) whether groups discussed the problems to consensus or not did not affect the shift to risk - it was as great under either condition, and (b) groups reaching a consensus on a problem without actually verbally discussing the problem showed no shift to risk. This consensus-without-discussion was accomplished by having group members write their decision on a slip of paper which was then collected and tallied on a blackboard under the

subject's name. This process was continued until all members agreed on a decision for each problem. The authors concluded that discussion was the necessary and sufficient condition for the risky shift to occur.

The concept of affective bonds was discredited, however, by Teger and Pruitt (1967) who claimed that Wallach and Kogan's consensus-without-discussion procedure encouraged group convergence on the mean of initial decisions; they claimed that the instructions and procedures used here resulted in a compromise rather than a unanimous decision. Using a better methodology, Teger and Pruitt showed that simple information-exchange is enough to produce a risky shift: subjects were given cards with the different probability levels printed on them, and held up the card indicating their decision for three rounds of the group members; they were not asked to come to a consensus. Blank (1968) and Pruitt and Teger (1969) have further substantiated this result in gambling situations. Teger and Pruitt (1967) concluded that this was evidence against Wallach and Kogan's assertion that discussion is the necessary and sufficient condition for the risky shift, as well as against their concept of affective bonds.

Assuming that affective bonds grow with increased interaction, groups should become riskier over time. Myers (1968) showed that the risky shift did not significantly increase over items, thus providing further evidence opposed to the

affective bonds hypothesis.

The affective bonds hypothesis was further discredited by several experiments (Dion, Miller, & Magnan, 1969; Pruitt & Teger, 1967, 1969) dealing with group cohesiveness and the risky shift; the affective bonds hypothesis would predict a positive relationship between these variables. Using an experimental gambling situation, Pruitt and Teger (1967) showed that there were positive correlations between the risky shift and an index of cohesiveness, as derived from a post-discussion sociometric questionnaire; this is weak evidence suggesting that more cohesive groups show greater risky shifts. In a second experiment (Pruitt & Teger, 1969), non-significant shifts toward caution resulted, suggesting that the mere presence of affective bias is not a sufficient condition for the risky shift. These studies, however, do not provide actual tests of the hypothesis in that the extent of "affective bonds" is not manipulated. Dion, Miller and Magnan (1969) corrected for this, examining high and low levels of group cohesiveness. Contrary to the affective bond hypothesis, low-cohesive groups showed greater risky shifts than did high-cohesive groups. In conclusion, it is apparent that the affective bonds hypothesis does not hold up to the empirical data. Further, there is no direct evidence for the diffusion-of-responsibility hypothesis; but, since there is no contradictory evidence, it remains as a possible explanation of the risky shift.

The Value Hypothesis

The value hypothesis (Brown, 1965) states that, due to cultural norms, subjects make their initial decisions on the basis of either a value of risk or a value of caution with which they have labelled the problems. Because of differential interpretation of these labels, there is much variability on initial decisions. The shift to risk occurs under the operation of two mechanisms. First, subjects discover, through information-exchange at the start of the discussion, that in comparison to others

.....they were taking only an average level of risk (or less). Hence they become more risky on the second decision, in an effort to conform to the value of risk as newly interpreted (Teger & Pruitt, 1967, Pp. 190-191).

Secondly, persuasive communication serves to enhance the risky shift: if it is agreed that risk is the correct value, the discussion will elicit arguments favouring risk, causing subjects to move further toward the value of risk.

Much evidence favours Brown's hypothesis, but some negative evidence exists questioning certain aspects of the value hypothesis. These and other issues will be examined below.

Information

The idea of information-exchange and information in general through the group discussion is important to Brown's hypothesis. As previously noted, Teger and Pruitt (1967) showed that information-exchange per se, without group

discussion, is enough to produce a risky shift. Other aspects of information will be examined here.

One way of examining the role of information is to manipulate the amount available to the group member. Kogan and Wallach (1967c) did this by eliminating the face-to-face visual component of social interaction. Subjects discussed the problems via an intercom system while physically separated from each other in booths. A significant risky shift was still obtained, indicating that the visual component of communication was unnecessary. However, the result is only partially valid because no face-to-face groups were run, so that there was no comparison between these and the separated groups. Kogan and Wallach also replicated the consensus versus non-consensus data (Wallach & Kogan, 1965).

A second way of examining the role of information is to observe the risk taking behavior of non-participating subjects exposed to group discussions. Several authors, using various procedures, have employed this method.

Thus, Lamm (1967) exposed subjects to a group discussion of the problems: either an "observer-viewer" viewed and listened to the group from behind a one-way mirror or an "observer-listener" listened to the discussion only from a separate room by way of a loudspeaker. The group discussed six problems without coming to a consensus, and then discussed six different problems and came to a consensus; the

same procedures and instructions as used by Wallach and Kogan (1965) were used here, replicating the previous consensus versus non-consensus data (Kogan & Wallach, 1967c; Wallach & Kogan, 1965). Viewers showed a risky shift equivalent to that of the discussion group, while listeners showed a risky shift somewhat less in magnitude. Rettig and Turoff (1967) obtained similar results. Using the ethical risk taking instrument, these authors found that single observing subjects exposed to a live discussion showed increases in verbal risk taking over that shown by single listening subjects exposed to a discussion on tape; the latter did not show increased risk.

These findings give strong support to Brown's value hypothesis: single viewers or observers, exposed to exactly the same amount of information-exchange as the discussion group, should show comparable shifts; single listeners - deprived of the visual component of information-exchange - should show smaller shifts. The diffusion-of-responsibility hypothesis, however, is discredited: treating the risky shift as a true group phenomenon, it cannot explain shifts for single observing subjects.

Kogan and Wallach (1967b) employed another experimental paradigm to test one information position. Groups of subjects listened to tapes of groups discussing the problems without consensus. In developing their hypothesis, Kogan and Wallach assumed that subjects in both conditions

received essentially the same amount of information. Thus, if information were the crucial variable, the two groups should have equivalent risky shifts. They did not: listening groups showed significant risky shifts, while interacting groups showed a risky shift significantly larger than the shift in the listening groups; these results are comparable to those of Lamm (1967). Kogan and Wallach claimed that this is evidence that an information-exchange hypothesis cannot adequately account for the risky shift.

However, if information exchange is given a broader meaning - to include all that goes on during the discussion - two criticisms can be made. First, as Kogan and Wallach were aware, the visual component of group interaction was excluded and there was not, therefore, a maximal information situation; hence, one would not expect the listening group to shift as much as the interacting group because they were not exposed to the same amount of information-exchange. Secondly, the listening group may have thought that the interacting group was, in some sense, atypical and reacted by taking a risk position less extreme than that advocated by the interacting group.

Two studies have attempted to meet these criticisms. Heathcock (1969) had interacting groups observed directly by non-interacting groups. Both groups showed small but significant risky shifts; the difference between the two conditions was not significant. MacNeill (1969) replicated

and expanded Heathcock's study. Observing groups were exposed to either a discussion-without-consensus group or a discussion-to-consensus group; unobserved discussion groups (consensus and non-consensus) served as controls. Groups in all six conditions showed significant risky shifts. The magnitude of the shift was equally great in all conditions, even though one might expect that the observed groups would show enhanced risk taking as mediated by social facilitation effects (Zajonc, 1965, 1968). As well, groups in the consensus conditions did not show significantly greater shifts than those in the non-consensus conditions, thereby replicating the previous consensus versus non-consensus data (Kogan & Wallach, 1967c; Lamm, 1967; Wallach & Kogan, 1965).

The conclusion was made that maximal exposure to information-exchange is sufficient to produce a risky shift. Not all means of exposing subjects to the information resulted in equally strong shifts. However, these differences can be explained within Brown's framework by noting that different means of transmitting information result in different amounts of information being transmitted.

Clark, Crockett and Archer (1970) provided data relevant to information considerations. They composed groups of subjects who in initial pre-testing considered themselves to be riskier than a reference group of peers; one condition consisted of the usual group discussion procedure, while in the other condition subjects were instructed to

discuss the items without revealing their initial decisions (an "arguments only" condition). Both conditions showed significant risky shifts. St. Jean (1970), in a similar study, presented evidence substantiating this data. The authors noted that the shift in the arguments only condition is inconsistent with the value hypothesis: subjects should only have had to revise their decisions upon learning that others were riskier. Clark et al. did concede, however, that this information could nevertheless have been conveyed because subjects participated in and listened to a group discussion, as in the previously discussed studies.

Risk as a Value and Other Considerations

Studies discussed in this section support one aspect of the first mechanism of the value hypothesis - that subjects initially see themselves as riskier than others - and also support the proposition that risk is a value.

Numerous studies (Baron, Dion, & Baron, 1968; Brown, 1965; Hinds, 1962; Levinger & Schneider, 1969; Pruitt & Teger, 1967; Wallach & Wing, 1968; Willems, 1969) have indicated that on risk oriented problems subjects initially consider themselves to be riskier than a reference group of peers. Stoner (1968) replicated this finding and further showed that on caution oriented problems subjects view others as riskier than they themselves; Pruitt and Teger (1967) and Levinger and Schneider (1969) have substantiated this. These results, of course, support this aspect of the hypothesis.

However, this effect may have little to do with the risky shift. Pruitt and Teger (1967) reasoned that the difference between one's initial risk and that attributed to others should predict the magnitude of the shift; only weak, non-significant evidence of a relationship could be demonstrated.

Clark, Crockett and Archer (1970) provided further data. Homogenous groups were formed of subjects who considered themselves to be either riskier or more cautious than others on at least four of six items; controls consisted of subjects who did not meet this criterion. The relative-risky groups showed significantly greater risky shifts than did the other two conditions; the relative-cautious groups did not differ significantly from the controls. Although these results suggest that the risky shift is dependent on the subject's perception of his own riskiness in relation to others, they must be considered against Pruitt and Teger's (1967), and the question of the relationship between relative risk and the risky shift must remain open.

Madaras and Bem (1968) showed that subjects who made initial decisions on ten items and then discussed only five of these, did not show risky shifts on the non-discussed items. If the value hypothesis proposes that subjects seek out and adjust their risk levels to those of others, then this finding is inconsistent with the model. However, Graham and Harris (1970), in a similar study, demonstrated risky

shifts on the non-discussed items, and the issue here must remain open.

There is evidence to indicate that risk is a value. Levinger and Schneider (1969) asked subjects to indicate the choice they would admire most. The admired choice was riskier than the subject's own choice. Pilkonis and Zanna (1969) reported comparable data. These data seem to indicate that risk is a value, but it is perplexing that the admired choice and the subject's own choice did not correspond. Stoner (1968) asked subjects to rank in order of importance a series of statements derived from the choice-dilemmas which corresponded to the risky and cautious alternatives explicit to each problem. On risk oriented problems, subjects ranked the risky alternative higher than the cautious, and on caution oriented problems, the cautious alternative was ranked higher. Further, subjects ranking the risky alternatives as more important were significantly riskier than subjects ranking the cautious alternatives as more important.

Madaras and Bem (1968) provided further evidence that subjects consider risk a value in that subjects rated ".... risk-acceptors as being more strong, active, successful, fast, hard and masculine, and somewhat more good and sociable, but less calm and kind than risk rejectors" (p. 355).

Pruitt (1969) has provided an explanation (the "Walter Mitty" effect) of why the values elicited by initial decision-

making are enhanced by discussion. In making initial decisions, subjects must do two things: (a) label the item as meriting either a risky or a cautious approach, and (b) determine acceptable odds for the risky alternative, if chosen. In a series of experiments separating these steps, Pruitt showed that: (a) when labelling preceded decision-making, subjects made subjectively cautious choices, and (b) when labelling followed or occurred simultaneously with decision-making, subjects considered themselves as risky. The Walter Mitty effect, then, is that initial decisions represent a compromise between two opposing forces: (a) the value elicited by the item compels subjects to make decisions accordingly, and (b) subjects are restrained (from extreme risk or caution) by fear of "putting themselves out on a limb"; this results in objectively cautious decisions which subjects regard as risky, subjectively.

A series of studies by Rettig and his co-workers (Krauss & Blanchard, 1970; Rettig, 1966a, 1966b, 1969; Rettig, Johnson, & Turoff, 1967; Rettig & Pasamanick, 1964; Rettig & Rawson, 1963; Rettig & Sinha, 1966; Rettig & Turoff, 1967) on ethical risk taking offered evidence opposed to a value hypothesis. The basic instrument used in most of these studies consisted of 64 items dealing with the unethical act of stealing money; these items varied along four dimensions, the reinforcement value and the expectancy of both gain and censure. The subject had to predict whether or not the money

would be taken. For individual risk taking, the negative reinforcement value of censure explained the most variance in predictive judgments; however, after group discussion, individuals became riskier and the positive reinforcement value of gain then explained the greater part of the variance. As it now stands, the value hypothesis cannot explain these data (Horne, 1970).

The conflict may be reconciled here on the basis of a study by Des Jarlais (1970). Subjects made the usual risk decisions and, as well, estimated the payoff associated with success of the risky alternative. After group discussion, there was the usual risky shift and also a "shift to reward"; that is, as subjects accepted greater risk, they also estimated that the payoff for the risky alternative would increase. Des Jarlais offered two possible interpretations of these data. First, the shift to reward may be an afterthought of the shift to risk. Conversely,

The shift to risk may be a result of the shift to reward. Money, prestige and victory, the rewards in the choice-dilemmas, are certainly valued in American culture, probably more than risk taking is valued. A group setting, as a microcosm of the culture, would enhance the value of these rewards. The shift to risk would then be secondary to and a result of the shift to reward (pp. 121-122).

This latter interpretation and these data may be comparable to Rettig's findings that the positive reinforcement value of gain (reward) explains the greater part of ethical risk taking following group discussion.

Vinokur (1969) investigated whether the risky shift

could be a function of the skewness of the distribution of initial decisions, but could find no relationship. This finding is in contrast to studies (Hermann & Kogan, 1968; Hoyt & Stoner, 1968) reporting a positive relationship between the range of initial risk taking and the magnitude of the shift. Further, Vidmar (1970), in comparing three types of homogenous groups - persons high, medium or low on initial risk taking - and heterogeneous groups, reported that the most homogenous groups did not show risky shifts. This is contrary to a possible value hypothesis prediction that they would: all subjects find they are not riskier than others and, hence, should shift toward greater risk to be riskier than the other group members. These studies argue against a social comparison interpretation (Festinger, 1954) of the value hypothesis. However, to foreshadow this author's approach, these data would not be inimical if the risky shift were viewed as a function of conformity to norms; the following studies, although questioning the value hypothesis, would be supportive of such an approach.

Baron, Dion and Baron (1968) composed groups of a naive subject and confederates. Confederates consisted of either a risky or a conservative majority opposed to the naive subject. Regardless of whether the item concerned was caution- or risk-inducing, naive subjects showed marked conformity to the unanimous majority; Cecil, Chertkoff and Cummings (1970) have substantiated this finding. A study

by Wallach and Mabli (1970) seems to contradict these data. In examining triads composed of either one risky and two conservative members or one conservative and two risky members, it was shown that: (a) conservatives showed strong and similar risky shifts whether they constituted a minority or a majority of the group, and (b) risk takers showed essentially no shift whether they constituted a minority or a majority of the group. However, categorization of subjects as risky or conservative was based on composite scores on 10 items; the studies cited above (Baron, Dion, & Baron, 1968; Cecil, Chertkoff, & Cummings, 1970) composed groups on the basis of scores on individual items. One wonders whether the method used by Wallach and Mabli actually yielded groups with a true risky-conservative minority-majority composition.

In conclusion, studies reviewed here support the notion that risk is a value (Levinger & Schneider, 1969; Madaras & Bem, 1968; Pilkonis & Zanna, 1969; Stoner, 1968). Strong support is given to Brown's notion that on risk oriented items subjects initially view themselves as riskier than others and to the converse of that notion (e.g.: Levinger & Schneider, 1969); whether this effect has anything to do with the risky shift must remain an open question, given the present contradictory data (Clark, Crockett, & Archer, 1970; Pruitt & Teger, 1967). These data support the value hypothesis. However, the implicit social comparison aspect of

Brown's hypothesis is not supported (Baron, Dion, & Baron, 1968; Cecil, Chertkoff, & Cummings, 1970; Vidmar, 1970).

Norms

Related to the value hypothesis and the issue of "risk as a value" is the concept of norms. Rabow, Fowler, Bradford, Hofeller and Shibuya (1966) have examined the norms relevant to group decisions. They pointed out that:

.....the risky alternatives appear to us to be clearly supported by societal norms. While there are other conflicting norms which point to a conservative choice, it was our impression that the conservative alternatives.....would have only a slight possibility of being expressed in public discussion.....(and) that shifts in decision making, regardless of their direction, would depend on the norms that respondents could utilize in their group discussions. If this were true, the explanation for the Wallach et al. results would be very different and should probably include the following two principles.

(1) An individual will be more effective in attempts to influence others if he can marshall normative support for his position.

(2) Group members will prefer to present ideas which they believe will be socially acceptable to and valued by others in the group. (Rabow et al., 1966, p. 17).

They reasoned that if the central character of the problem was a friend or relative, the particularistic norms salient to this relationship would counter the universalistic norm for risk in such a way that group decision-making would be neither more conservative nor riskier than individual decisions. Modifying several problems accordingly, Rabow et al. obtained results supporting their predictions. Their conceptual analysis will be considered in a reformulation of the approaches to the risky shift.

Guttentag and Freed (1971) similarly modified items so that the central character was female. Male subjects did not show risky shifts, while female subjects showed conservative shifts. These results for female protagonists suggest that the widely held norm in our society that the female should or does not show aggressive or risk taking behavior was made salient.

Alker and Kogan (1968) showed that the risky shift is curtailed if the content of the group discussion is restricted to the consideration of universalistic and particularistic norms unrelated to the choice-dilemmas items.

Moscovici and Zavalloni (1969), although not employing the choice-dilemmas, showed that discussion-to-consensus resulted in shifts (a polarization effect) toward the extremes of opinion and judgment scales; Doise (1969) provided supportive evidence. These authors suggested that a normative commitment may be the underlying variable responsible for the polarization effect, in particular, and the risky shift phenomenon, in general.

Finally, using a procedure designed to make normative values such as social responsibility (Berkowitz & Daniels, 1964) more salient, Kogan and Zaleska (1969) and Dion, Miller and Magnan (1970) have been unable to affect the riskiness of group decisions.

Chapter IV

A Normative Approach

Overview of the Literature

With some certainty, the following concrete statements may be made about the risky shift in small decision-making groups, using the choice-dilemmas:

- (1) Information-exchange is a necessary condition to produce a shift to risk (or caution).
- (2) Discussion serves to enhance the shift to risk (or caution); it is, by no means, a necessary condition for such a shift.
- (3) Individuals initially consider themselves to be riskier than a reference group of peers, on risk oriented problems; the converse holds for caution oriented problems.
- (4) Whether a discussion group reaches a consensus or not does not affect the magnitude of the shift to risk (or caution).
- (5) The issue of leadership in the groups does not seem to be an important variable.
- (6) There would seem to be some positive relationship between risk taking and the implicit and/or explicit universalistic and particularistic norms of the situational problems and the group discussion situation (Rabow et al., 1966).

Most of the preceding statements can be subsumed under Brown's value hypothesis. However, in several instances, the other main explanation of the risky shift - the diffusion-of-responsibility hypothesis - is discredited; such a process may occur, but the weight of empirical evidence would

indicate that this cannot be the full explanation of the risky shift. Brown's value hypothesis would then seem to be, at present, the best explanation. Theoretically and empirically, however, one issue central to Brown's hypothesis is unclear; this is the issue of risk as a value.

Brown (1965) held that each problem engages either a value on risk or a value on caution which are held to be North American cultural values. Evidence has been discussed which would indicate that in some circumstances risk is valued and in others caution is valued. These data (Levinger & Schneider, 1969; Stoner, 1968), however, must be considered as tentative because of the way they were obtained; ranking statements according to their importance must be considered ambiguous tasks. Another ambiguity is that various authors have interpreted the statement "risk is a value" differently. For example, Madaras and Bem (1968) have interpreted risk as a cultural value in the sense that a risk taker is perceived positively and it is rewarding to be a risk taker. Stoner's (1968) interpretation follows more closely to Brown's statement. He hypothesizes that:

(a) individuals make their own decisions in manners that are consistent with widely held values, (b) individuals consider their own decisions to be more consistent with widely held values than the decisions of other people similar to themselves (a self-chosen reference group), and (c) group discussion and decision-making will lead to individual and group decisions that are still more consistent with widely held values. Thus, it is hypothesized that on items for which widely held values favour a risky decision, individuals will tend to be rather risky, they will consider themselves to be more risky than a self-chosen

reference group (other people similar to themselves), and group discussion and decision-making will lead them to prefer still more risky decisions. On items for which widely held values favour a cautious decision, the converse will be true (Pp. 445-446; italics in the original).

This is a succinct, clear statement of what may be occurring. Its one point of ambiguity is in the phrase "widely held value". What is a widely held value? It will be the contention of this thesis that a widely held value, in this context, refers to a norm for risk (or caution); and that the risky shift can be explained in terms of processes of conformity, terms not inimical to the value hypothesis.

The Normative Approach

Deutsch and Gerard (1955) differentiate between normative and informational social influence. Normative social influence is defined as an influence to conform with the positive expectations of another; informational social influence is defined as an influence to accept information obtained from another as evidence about reality. The term "another" refers to another person, group and/or one's self.

Further, Hollander's differentiation (1958) between the individual's perceptual ability, his perceptual error and conformity to norms is considered relevant here. The individual's perceptual ability represents a general alertness to the social stimulus field, that is, ".....a capacity to perceive events and relationships in the social field" (p. 123). Associated with the individual's perceptual ability is a certain degree of error, perceptual error, which has

particular reference to group expectancies: the individual's capacity to perceive events and relationships in a particular social field (e.g., group expectancies) has an error factor associated with it.

The present author, then, proposes that the risky shift is a result of normative and informational social influence. Variability in initial individual risk taking positions (I_1) can be attributed to individual differences in perceptual ability - the capacity to perceive the events and the relationships in the social field; the social field is here defined as the particular problem under consideration, and that alone.

If the subject is then asked to indicate what recommendation others like himself would make (O_1), this makes salient the idea that there are group expectancies associated with the behavior of making recommendations on the particular problem under consideration. It is held, then, that the stimulus or the instruction to the subject to make O_1 , plus the "stimuli" of the particular problem, elicits, or makes salient, a social or cultural norm which states that, under these conditions, the problem merits either a risky or a cautious approach. However, because individuals differ in their ability to perceive the expectations inherent in norms, there will be a certain degree of variability across individuals in their O_1 positions.

Three things, then, are conceptualized here: (a) I_1

reflects individual perceptual ability, (b) O reflects both perceptual ability and perceptual error, and (c) a norm for risk is not made salient until O is requested from the subject.

Under information-exchange conditions (Teger & Pruitt, 1967), the information conveyed by other group members (through the process of holding up cards, etc.) will take the form of informational social influence for the individual to change his perception of the norm as he initially perceived it. Accepting this influence, the individual will shift to a riskier position in light of his new perception of the norm, this being normative social influence.

Under group discussion conditions, additional informational social influence will be provided (beyond that provided by simple information-exchange), enhancing the risky shift. The larger the group, the more will be, or the more varied will be, the informational social influence, thereby enhancing the risky shift.

The position outlined above cannot account for a familiarization effect (Bateson, 1966; Flanders & Thistlethwaite, 1967); however, the evidence for such an effect is conflicting - several studies have been unable to replicate the initial results (Bell & Jamieson, 1970; Cecil, 1968; Dion & Miller, 1969; Miller & Dion, 1970; Myers, 1968; Pruitt & Teger, 1967; Teger, Pruitt, St. Jean, & Haaland, 1970; Vidmar, 1970). Further, Madaras and Bem (1968) pointed out that the risky shifts in these studies (Bateson and

Flanders-Thistlethwaite) ".....could have been due to a culturally-induced predisposition to consider and favour risk arguments when anticipating group discussion" (Pp. 353-354); or in the present terms: anticipating group discussion may elicit an explicit or implicit O .

Two other considerations are relevant to the position¹ outlined here. The first comes from Kelman's (1958) analysis of conformity behavior. If we are dealing here with social or cultural norms, it can be assumed that, to some degree or other, these norms have been internalized by the individual as mediated by socialization processes. It is held, then, that the shift, as mediated by normative social influence, can be considered as conformity behavior as mediated by a process of internalization; as Kelman states, under internalization, "...an individual accepts influence because the content of the induced behavior - the ideas and actions of which it is composed - is intrinsically rewardingthe satisfaction derived from internalization is due to the content of the new behavior" (p. 142).

A second relevant consideration here is found in Festinger's (1953) analysis of compliant behavior. It is held that here one obtains public compliance (with the group) as well as private acceptance; post-discussion decisions retain the risky shift and it is retained over a 2-6 week time span (Wallach, Kogan, & Bem, 1962).

Finally, the data and analysis by Rabow et al. (1966)

can be seen to be perfectly congruent with this approach. That is, although the particularistic norms elicited by the procedure of making decisions about a close relative would conflict with and obviate the universalistic norm for risk, they would still provide normative social influence, taking the form of deterring a shift to risk.

It can be seen that the preceding is a restatement of Brown's value hypothesis in terms of the more general constructs of norms and conformity behavior. The main assumption utilized is that under certain conditions in our society it is normative to be risky, and under others it is normative to be cautious. A normative approach to the risky shift is seen to be relevant at this time given recent studies which seem to point in a norm-conformity direction (e.g., Alker & Kogan, 1968; Dion, Miller, & Magnan, 1970; Doise, 1969; Kogan & Zaleska, 1969; Moscovici & Zavalloni, 1969; Rabow et al., 1966). Perhaps the problems inherent in the value hypothesis are still present in this normative approach. However, it is felt that the present view provides a more general approach to the risky shift than that provided by the value hypothesis, and that the processes specified by this approach are less ambiguous.

Predictions Derived from the Normative Approach

Several hypotheses regarding O_1 , change in O_1 and change in I_1 can be generated from the normative position, where I_1 refers to pre-discussion, individual risk decisions,

O_1 refers to pre-discussion, individual decisions about how others would answer an item, I_1 refers to post-discussion, individual risk decisions, and O_2 refers to post-discussion, individual decisions about how others would answer an item.

Hypothesis 1a

In all conditions where subjects participate in a group discussion after having stated I_1 , I_1 will shift in the direction of risk as a result of normative social influence, as indicated by post-discussion measures (I_2). This will hold for the following conditions:

Condition I: I_1 , followed by group discussion-to-consensus, followed by I_2 .

Condition IO: I_1 made prior to O_1 , followed by group discussion-to-consensus, followed by I_2 and, finally, O_2 .

Condition OI: O_1 made prior to I_1 , followed by group discussion-to-consensus, followed by O_2 and, finally, I_2 .

The rationale for this hypothesis is as follows: For Conditions IO and OI, information-exchange and discussion in the group will provide informational social influence for the individual to change his perception of the norm for risk as he initially perceived it in making O_1 . Accepting this influence, the individual will shift to a riskier position (I_2) in light of his new perception of the norm, this being normative social influence. For Condition I, the normative position implies that the norm for risk is not made salient until subjects reach the group discussion; it is assumed that

subjects explicitly or implicitly make O_1 just before or as discussion begins, but after learning that they will be part of a discussion group. Hence, I will similarly show a risky shift as a result of normative social influence - the typical "risky shift" found in numerous other studies.

Hypothesis 1b

Similarly, in Conditions I, IO and OI, individuals will show greater risk taking as reflected in the group consensus, compared to their O_1 risk positions.

Hypothesis 2

In all conditions where subjects are in a group discussion after having stated O_1 , O_1 will shift in the direction of risk as a result of informational social influence, as indicated by post-discussion measures (O_2). This will hold for Conditions IO and OI, and for the following condition: Condition O: O_1 , followed by group discussion-to-consensus, followed by O_2 .

The rationale for this hypothesis is as follows: Informational social influence, as provided by information-exchange and discussion in the group, will cause the individual to change his perception of the norm for risk as he initially perceived it in making O_1 ; hence, the individual will come to see others as riskier than he had previously estimated them to be, and the O_2 measure will show a risky shift.

Hypothesis 3

As has been made clear, the I risky shift occurs as a

result of normative social influence as represented by O and the O risky shift. Thus, in both Conditions IO and OI, there will be some positive relationship between the I and O shifts.

Hypothesis 4a

In Condition IO, having made I_1 , and then in making O_1 - which now makes salient a norm favouring a risky approach - individuals will view themselves as riskier than a reference group of peers because the individual will consider his own previously made decision as exemplifying the norm for risk more consistently than others' decisions; also relevant here is that a risky approach, or conformity to the norm, has positive connotations - risk taking is rewarding and the risk taker is viewed positively. The converse will hold for a norm favouring a cautious approach; however, the consideration here will not be that conservatism has positive connotations, but rather more that risk taking has negative connotations - the risk taker will be viewed as foolhardy.

Hypothesis 4b

However, if O_1 is made prior to I_1 , as in Condition OI, the norm for risk has been made salient before the subject makes his own decision; the subject makes I_1 , then, under the pressure of normative social influence to conform to the norm for risk previously elicited in making O_1 . One prediction that may be derived is that subjects will view themselves as neither riskier nor more conservative than a reference group of

peers; however, this is in the form of a null hypothesis and, as such, cannot be statistically tested. A more conventional and testable prediction would be that subjects in Condition IO will view themselves as riskier than others to a significantly greater extent than subjects in Condition OI.

This analysis for hypotheses 4a and 4b is somewhat similar to the analysis of the "Walter Mitty" effect (Pruitt, 1969). Rather than having subjects make O_1 , however, Pruitt had subjects indicate whether they themselves thought each of the alternatives for each item merited either a risky or a cautious approach. When this was done after making I_1 - paralleling the I-O order above - subjects considered their previous I_1 decisions as risky. When subjects labelled the alternatives as risky or cautious prior to making I_1 - paralleling the O-I order above - they generally made subjectively cautious decisions when making I_1 .

Hypothesis 4c

For both Conditions IO and OI, following group discussion, all subjects will be under the pressure of normative social influence when making I_2 . Again, one untestable prediction would be that subjects will view themselves as neither more risky nor more conservative than others. A more conventional prediction would be that, in both of these conditions, subjects will initially view themselves

as riskier than others to a significantly greater extent than they will following the group discussion.

In conclusion, it should be stated that these hypotheses may be generated from Brown's value hypothesis (1965) if that hypothesis was to be logically extended and refined.

Chapter V

Method

Design

Subjects were scheduled in groups of four and five and were randomly assigned to one of four conditions:

- (1) Condition I: Twelve groups of subjects individually gave "own" decisions, held a group discussion, and individually gave post-discussion "own" decisions.
- (2) Condition O: Twelve groups of subjects individually gave decisions about how "250 of your fellow students" would respond, held a group discussion, and individually gave post-discussion decisions about "250 of your fellow students".
- (3) Condition IO: Twelve groups of subjects individually gave "own" decisions, followed by individually given decisions about "250 of your fellow students", held a group discussion, and individually gave post-discussion "own" decisions and decisions about "250 of your fellow students".
- (4) Condition OI: Twelve groups of subjects individually gave decisions about "250 of your fellow students", followed by individually given "own" decisions, held a group discussion, and individually gave post-discussion decisions about "250 of your fellow students" and "own" decisions.

Table 1 presents the breakdown of groups and subjects in each condition, as well as the number of groups of size four and five used in each condition.

TABLE 1

Number of Groups of Size Four and Five and
Number of Subjects used in each Condition

Condition:	I	O	IO	OI
Groups of Size Four	4	4	5	5
Groups of Size Five	8	8	7	7
Total Groups	12	12	12	12
Total Subjects	56	56	55	55

Subjects

A total of 222 males recruited from the introductory psychology course at the University of Manitoba were used in this study. They received one hour of credit in the course for their participation in the experiment.

Materials

Four of the original 12 situational problems from the choice-dilemmas instrument (Wallach & Kogan, 1964) were used in the experiment; they were selected on the basis of their having shown previously consistent risky shifts. These problems were: the electrical-engineer problem (problem A), the football problem (problem D), the chemistry-student problem (problem F) and the chess-player problem (problem G). These are described in Wallach and Kogan (1964).

Typically, subjects arrived one at a time at the experimental rooms. One of these rooms was, unfortunately, labelled as the "Group Dynamics Room". Because of this and because of the fact that four (or five) subjects at a time awaited the start of the experiment, it was suspected that subjects expected they would be participating in some type of group experiment.

The introduction and initial instructions (and all subsequent instructions) given to the subjects were based on a modified version (by W. C. Horne, University of Waterloo) of the original instructions used by Wallach and Kogan (1964). In past work with the original instructions, some subjects

thought that they were being asked what the probability actually was for the problem. This confusion arose from the fact that the subject was required to choose the lowest probability for success of the risky alternative. In the modified version, the subject was asked to imagine that he is advising the central character of the situational problem and to decide, by answering (yes or no to) a series of eleven questions, whether he would or would not recommend following the more desirable (risky) course of action if the odds for its success were 1 in 100, 10 in 100, 20 in 100,....., 99 in 100, a total of eleven different probability levels. These instructions were thought to make it more clear to the subject exactly what he was to do.

Full, written instructions and other materials for all measures and all conditions may be found in the Appendix.

Procedure

Initial decisions for Condition I. As in the previous literature, subjects were asked to make decisions individually on the series of risk taking problems; at no time, prior to making their initial decisions, were these subjects under the impression that they would subsequently be participating in a group discussion of the problems. Prior to making initial decisions, all subjects were given a written introduction and set of instructions, as previously described. These were the only instructions given to the subjects; apart from answering procedural questions, the experimenter

gave no oral instructions either at this stage of the experiment or at subsequent stages.

Initial decisions for Condition O. As in the previous condition, subjects were asked to make individual initial decisions on the four choice-dilemmas problems; however, the subjects were asked to make decisions about how they thought 250 of their fellow students would answer the problems. The instructions read in part:

....this questionnaire will be given to approximately 250 of your fellow students. What we are interested in here is having you attempt to guess how these 250 students will, typically, answer the questionnaire. Please attempt to estimate for each situation how 250 of your fellow students, on the average, would answer the series of eleven questions. That is, what would be the normal or typical set of answers to the series of eleven questions?

The wording of the problems was changed accordingly to accommodate these instructions, as, for example, problem A:

Imagine that 250 of your fellow students are advising Mr. A. Would 250 of your fellow students, typically, recommend that he take the job if the chances that the company would prove financially sound are.....

Apart from these instructional differences, procedures for this condition were identical to those for Condition I.

Initial decisions for Condition IO. As in the previous Condition I, subjects first of all gave their own initial individual decisions on the four problems; instructions and procedures did not differ from those in Condition I. Having made these decisions, the booklets were collected. Then, subjects were given a new booklet of the same problems,

with a new set of instructions asking them to make decisions about how they thought 250 of their fellow students would answer the problems. The instructions read in part:

Now that you have become familiar with these situations and have indicated how you would answer the questions, we would like you to attempt to guess how other people will answer the same questions. This questionnaire will be given to approximately 250 of your fellow students in introductory psychology. What we are interested in here is having you attempt to guess how these 250 students will, typically, answer the questionnaire. Please attempt to estimate for each situation how 250 of your fellow students, on the average, would answer the series of eleven questions. That is, what would be the normal or typical set of answers to the series of eleven questions?

The problems accompanying these instructions were altered in such a way as to make these instructions salient throughout the decision-making, as, for example, problem A:

Imagine that 250 of your fellow students are advising Mr. A. Would 250 of your fellow students, typically, recommend that he take the job.....

Initial decisions for Condition OI. As in the previous Condition O, subjects first of all gave initial individual decisions about how they thought 250 of their fellow students would answer the problems; instructions and procedures did not differ from those in Condition O. Having made these decisions, the booklets were collected. Then, subjects were given a new booklet of the same problems, with a new set of instructions asking them to give their own individual decisions for each of the four problems. The instructions

read in part:

Now that you have become familiar with these situations and have indicated how 250 of your fellow students would answer the questions, we would like you to indicate how you yourself would answer the series of eleven questions for each of the situations.

The problems accompanying these instructions were altered in such a way as to make these instructions salient throughout the decision-making, as, for example, problem A:

Imagine that you are advising Mr. A. Would you recommend that he take the job.....

Group discussion for all subjects. Upon completion of initial decisions, all booklets were collected. Subjects in all conditions were then given a new booklet of the same problems, with a new set of instructions asking them to discuss each of the problems as a group and to come to a consensus on each of the problems. They were to spend about five minutes on each problem. These instructions further informed subjects that these discussions were being held to develop materials for a human relations course; the materials, subjects were told, should generate a diversity of opinion and, the purpose of the experiment was then to see if the situational problems, for which they had just made decisions, would indeed generate a diversity of opinion through discussion.

Post-discussion decisions for Condition I. Following group discussion of all of the problems, the booklets were collected and new booklets of the same situational problems

were handed out. Subjects were then asked to reconsider each of the problems and to make a final individual decision on each.

Post-discussion decisions for Condition O. In a like manner, subjects in this condition were asked to make post-discussion individual decisions, on each of the problems, about how they thought 250 of their fellow students would answer the problems.

Post-discussion decisions for Condition IO. As in Condition I, post-discussion decisions were made for the I measure. Following this, new booklets were handed out with the instructions asking the subjects to make final individual decisions about how they thought 250 of their fellow students would answer the problems.

Post-discussion decisions for Condition OI. As in Condition O, post-discussion decisions were made for the O measure. Following this, new booklets were handed out with the instructions asking the subjects to make their own final individual decisions on the problems.

Chapter VI

Results

To verify the comparability of conditions, two preliminary analyses were performed. The first involved the subjects' own initial risk level (I_1). Within Conditions I and IO, a mean initial risk level was obtained by combining data both across all subjects and across all problems; the smaller the value, the more risky the decision. It was found that the mean initial risk level for Condition I ($M = 51.15$) was not significantly greater than that for Condition IO ($M = 47.50$), using a two-tailed large-sample significance test (Hays, 1963) for the difference between means ($t = .96, p < .34$).

In a similar fashion, mean O_1 scores were computed for Conditions O and OI; the smaller the value, the more risky are others seen. It was found that the mean O_1 level for Condition O ($M = 52.94$) was marginally significantly greater than that for Condition OI ($M = 47.64$), using a two-tailed large-sample significance test (Hays, 1963) for the difference between means ($t = 1.82, p < .07$).

Hypothesis 1a

To test Hypothesis 1a, an I shift score was computed by subtracting the post-discussion I scores from the pre-discussion I scores ($I_1 - I_2$). Data were combined over the four choice-dilemmas items. In doing analyses, instead of treating each subject as an independent source of data, the

results from the four (or five) subjects in each discussion group were combined into one I shift score. So that the reported I shift scores would be comparable to the risky shift of one subject on one problem, the overall I shift scores were divided by the appropriate denominator (16 or 20 - the number of problems times the number of subjects). The I shifts were scored so that positive values represent a shift toward risk; the larger the value, the greater the shift.

Analyzing the I shifts for discussion groups (rather than for individual subjects) reduced the degrees of freedom in the study from 56 (for Condition I) and 55 (for Conditions IO and OI) to 12 (the number of groups in each condition). However, this loss of statistical power was warranted for two reasons: (a) the "risky shift effect" is generally posited as a result of group decision making, so that in order to retain the effect of the group, pre and post individual measures were treated in terms of the group to which those individuals belonged, and (b) treating the data in this manner rendered them comparable with the data of previous studies.

As Table 1 indicated, groups of size four and five were used in all conditions. As Teger and Pruitt (1967) provided data showing a nonsignificant trend for larger groups to take more risk, the data for groups of size four and five were examined separately, first of all. Within Conditions

I, IO and OI, the mean I shift scores for groups of size four were not significantly different from those for groups of size five. Therefore, the data for groups of size four and five were combined.

In each of Conditions I, IO and OI, a separate one-tailed t -test for paired observations (Hays, 1963) was performed to determine if the mean shift toward risk for that condition was significantly different from zero (see Table 2).

As Table 2 indicates, the I shifts were all in the risky direction and reached significance in two out of three conditions (I, OI). The same trend was clearly present in the third condition (IO), but only reached the $p < .10$ significance level.

Further, the difference between the I shifts on Conditions I and IO was not significant ($t = .08$, $df = 22$); this was true also for Conditions I and OI ($t = .27$, $df = 22$) and for Conditions IO and OI ($t = .10$, $df = 22$).

Hypothesis lb

To test Hypothesis lb, a consensus shift score was computed and analyzed in a similar manner. Within Conditions I, IO and OI, the mean consensus shift scores for groups of size four were not significantly different from those for groups of size five; the data were therefore combined for groups of size four and five for further analysis.

In each of Conditions I, IO and OI, a separate one-

TABLE 2

Mean I Shifts over 4 Problems for 12 Groups
in each of Conditions I, IO and OI

Condition	<u>N</u>	I Shift	<u>S. D.</u>	<u>t</u>
I	12	.0600	.0810	2.46**
IO	12	.0636	.1308	1.61*
OI	12	.0681	.0577	3.91***

* non-significant ($p < .10$)

** $p < .025$

*** $p < .005$

TABLE 3

Mean Consensus Shifts over 4 Problems for 12
Groups in each of Conditions I, IO and OI

Condition	<u>N</u>	Consensus Shift	<u>S. D.</u>	<u>t</u>
I	12	.0684	.1294	1.66*
IO	12	.0694	.1296	1.78*
OI	12	.0627	.0700	2.97**

* non-significant ($p < .10$)

** $p < .01$

tailed t -test for paired observations (Hays, 1963) was performed to determine if the mean consensus shift toward risk was significantly different from zero (see Table 3).

Table 3 indicates that in all three conditions the consensus scores shifted toward risk. The results for Condition OI were significant ($p < .01$), but the consensus shift in the other two conditions (I, IO) only approached significance ($p < .10$).

Further, the difference between the consensus shifts of Conditions I and IO was not significant ($t = .08$, $df = 22$); this was also true for Conditions I and OI ($t = .05$, $df = 22$) and for Conditions IO and OI ($t = .12$, $df = 22$).

Hypothesis 2

To test Hypothesis 2, an O shift score was computed and analyzed in a similar manner. Within Conditions O, IO and OI, the mean O shift scores for groups of size four were not significantly different from those for groups of size five; the data were therefore combined, as before.

In each of Conditions O, IO and OI, a separate one-tailed t -test for paired observations (Hays, 1963) was performed to determine if the O shift toward risk was significantly different from zero (see Table 4).

Table 4 shows that all O shifts were in the risky direction and were significant. Further the difference between the O shifts of Conditions O and IO was not significant ($t = .16$, $df = 22$); this was true also for Conditions

TABLE 4

Mean O Shifts over 4 Problems for 12 Groups
in each of Conditions O, IO and OI

Condition	<u>N</u>	O Shift	S. D.	<u>t</u>
O	12	.1038	.0721	4.78***
IO	12	.0769	.1143	2.24*
OI	12	.0685	.0575	3.96**

* $p < .025$

** $p < .005$

*** $p < .001$

O and OI ($t = 1.27$, $df = 22$) and for Conditions IO and OI ($t = .22$, $df = 22$).

Hypothesis 3

The analyses of data relevant to all further hypotheses (3, 4a, 4b, and 4c) were conducted at the level of the individual subject; this was justified by the reasoning that these hypotheses, derived from the normative approach, were made in terms of the individual subject's behavior rather than in terms of the group's behavior.

Table 5 presents data pertaining to Hypothesis 3. The correlation coefficients between the I and O shifts in both Conditions IO and OI were computed over subjects for each problem. Although the resulting correlations were only moderately high (.39 to .65), all were positive and highly significant, suggesting that there was a positive relationship between the I and O shifts in these conditions.

Hypothesis 4a

For Hypothesis 4a, in Condition IO, the difference between O and I ($O - I$) was computed for each subject, over the combined problems. A mean of these difference scores was computed for 55 subjects to yield a mean I O difference score. Here, a positive value indicates that subjects view a reference group of peers as more cautious than they themselves; the larger the value, the more cautious is the reference group perceived as being.

A one-tailed t -test for paired observations (Hays, 1963)

TABLE 5
 Correlations, by Problems, Between the
 I and O Shifts in Conditions IO and OI

Condition	Problem	<u>r</u>	<u>df</u>	<u>t</u>
IO	A	.60	53	5.46*
	D	.64	53	6.05*
	F	.53	53	4.54*
	G	.65	53	6.22*
OI	A	.39	53	3.09**
	D	.44	53	3.56*
	F	.41	53	3.27*
	G	.44	53	3.56*

* $p < .001$

** $p < .005$

was performed to determine if the mean I O difference^{1 1} (M = 4.93, S. D. = 15.51) was significantly different from zero. Results indicated that this mean for Condition IO was significantly different from zero ($\underline{t} = 2.34$, $\underline{df} = 54$, $p < .025$), suggesting that subjects do indeed consider themselves to be riskier than others. These data, as well, replicated the findings of previous studies (Baron, Dion & Baron, 1968; Brown, 1965; Hinds, 1962; Levinger & Schneider, 1969; Pruitt & Teger, 1967; Stoner, 1968; Wallach & Wing, 1968; Willems, 1969).

Hypothesis 4b

Similarly, for Hypothesis 4b, in Condition OI, a mean I O difference score (M = 1.89, S. D. = 10.69) was computed.^{1 1} Using a two-tailed \underline{t} -test for paired observations, this score was not found to be significantly different from zero ($\underline{t} = 1.30$, $\underline{df} = 54$).

The mean I O difference scores, in Conditions IO and OI,^{1 1} were compared using a two-tailed large sample significance test (Hays, 1963) for the difference between means. Although the mean I O difference for Condition IO (M = 4.93)^{1 1} was numerically larger than that for Condition OI (M = 1.89), the difference between these means was not significant ($\underline{t} = 1.19$, $p < .24$); this suggests that subjects in Condition IO did not view themselves as riskier than others to a significantly greater extent than did subjects in Condition OI.

Hypothesis 4c

In a similar manner, mean $I O$ difference scores $(O_2 - I_2)$ were computed and analyzed for Conditions IO and OI.

For Condition IO, the mean $I O$ difference score $(M = 3.82, S. D. = 10.73)$ was significantly different from zero ($t = 2.62, df = 54, p < .01$), suggesting that subjects here continued to view themselves as riskier than others after the group discussion.

Further, for Condition IO, it was predicted that subjects would initially view themselves as riskier than others to a significantly greater extent than they would after the group discussion. The differences between $(O_1 - I_1)$ and $(O_2 - I_2)$ - that is, $(O_2 - I_2) - (O_1 - I_1)$ - were computed for 55 subjects in Condition IO; a mean of these difference scores was computed, and a two-tailed t -test for paired observations (Hays, 1963) was performed to determine if this mean difference score was significantly different from zero. Results indicated that this mean difference score for Condition IO ($M = -1.30$) was not significantly different from zero ($t = -.76, df = 54$).

For Condition OI, the mean $I O$ difference score $(M = 1.92, S. D. = 8.46)$ was not significantly different from zero ($t = 1.57, df = 54$).

Further, for Condition OI, a mean difference score - that is, as before, $(O_2 - I_2) - (O_1 - I_1)$ - was computed

for 55 subjects ($M = .22$), but was not found to be significantly different from zero ($t = .12$, $df = 54$).

Finally, the mean $I O$ difference scores, in Conditions $I O$ and $O I$, were compared using a two-tailed large-sample significance test for the difference between means. Although the mean $I O$ difference for Condition $I O$ ($M = 3.82$) was numerically larger than that for Condition $O I$ ($M = 1.92$), the difference between these means was not significant ($t = 1.02$, $p < .30$); this suggests that, following the group discussion, subjects in Condition $I O$ did not view themselves as riskier than others to a significantly greater extent than did subjects in Condition $O I$.

Chapter VII

Discussion

The results of this study do not decidedly confirm nor disconfirm the theory of normative influence which has been advanced as an explanation of the risky shift. Since the confirmations outnumber the disconfirmations, there is room for hope. And one hope is that the disconfirmations, in revealing the inadequacies of our first model, will lead to a productive reformulation of the theory.

Before discussing the main results of this study, however, the nearly significant ($p < .07$), pre-experimental difference between the O scores of subjects in Conditions O and OI warrants ¹ consideration. These data suggest that the random assignment of subjects to Conditions O and OI did not yield exactly comparable conditions. Although this is unfortunate, it is not crucial. Where subjects were initially quite risky (Condition OI), the O measure might hypothetically have been hampered by a ceiling effect for a shift in the risky direction. The fact that the O risky shift here was highly significant, and comparable to the O risky shifts in the other two conditions (O , IO), indicates that the ceiling effect was not a problem in the present study.

The results of this study, in part, replicate the typical risky shift phenomenon obtained in many previous studies: subjects in Condition I (the standard risky shift

paradigm) showed significant shifts in the risky direction, as a consequence of group discussion, on the I measure. This, however, did not hold for the consensus measure: subjects in Condition I showed non-significant shifts in the risky direction on the consensus measure. However, as indicated in the results, the trend of these data was clearly in the direction of greater risk taking, so that it may be reasonable to conclude that the risky shift phenomenon has been replicated.

The results for Condition IO indicated that neither the I shift nor the consensus shift were significant, although both were in the risky direction and showed a trend toward significance. Stoner (1968), using an I-O-group discussion-to-consensus paradigm (which did not include post-discussion I measures) found that groups (N = 33) showed highly significant consensus risky shifts. The data of the present study using a substantially smaller sample (N = 12) are very similar to Stoner's results. Probably, the loss of statistical power in the present study because of the small sample explains why the present author obtained only a non-significant trend while Stoner obtained a statistically significant difference.

Finally, as predicted, significant I risky shifts and consensus risky shifts were obtained for Condition OI.

The normative approach formulated as part of this thesis assumes that risky shifts occur after group discussion.

Indeed, the normative approach was developed to explain such shifts. Therefore, the validity of the present study as a test of the normative approach requires the replication of the risky shift phenomenon found in other studies. Although the risky shifts in the present study are not all statistically significant, the present data are, in the author's opinion, adequate for testing the hypotheses derived from the normative approach, especially since most of these hypotheses (i. e., 3 to 4c) pertain to individuals rather than groups as the unit of analysis. Thus, the present data provided a more powerful test of these hypotheses than they did of the risky shift phenomenon.

The results of this study most relevant to the normative approach are the significant O risky shifts. Within the normative approach, the O shift is interpreted as the result of informational social influence, as provided by information-exchange and discussion in the group, and it is assumed that the group represents a sample for the subject from the population of "250 of your fellow students".

It was further argued that the I risky shift is a result of normative social influence as mediated by O and the O risky shift. If this were true, then the I and O risky shifts would be highly correlated. Although the results did not reveal the predicted one-to-one relationship, all of the moderate correlations between the I and O risky shifts in Conditions IO and OI were positive and highly

significant; this suggests that although O shifts are not a necessary and sufficient prerequisite for I shifts, the I and O shifts are at least related.

The data concerning Hypotheses 4a, 4b and 4c were relatively clear. Hypothesis 4a was supported: subjects in Condition IO considered themselves to be riskier than others. This replicates results from previous studies (Baron, Dion & Baron, 1968; Brown, 1965; Hinds, 1962; Levinger & Schneider, 1969; Pruitt & Teger, 1967; Stoner, 1968; Wallach & Wing, 1968; Willems, 1969). Hypothesis 4b was not supported at the conventional $p < .05$ level of statistical significance: subjects in Condition IO did not view themselves as riskier than others to a significantly greater extent than did subjects in Condition OI. Hypothesis 4c was not supported: in both Conditions IO and OI, subjects did not initially view themselves as riskier than others to a significantly greater extent than they did following the group discussion; indeed, after the group discussion, subjects in Condition IO continued to view themselves as significantly riskier than others.

As in previous studies, subjects in Condition IO saw themselves as riskier than others. That is, they themselves initially take significantly more risk than they expect that others like themselves will take. For Condition OI, however, this was not significant, although subjects here did see themselves as numerically riskier than others.

Thus, the data relevant to Hypothesis 4b demonstrated a marked - albeit, a non-significant - trend in the predicted direction. This trend is, of course, predicted by our analysis of the risky shift situation. Whenever the individual subject makes his own decision (I) under the pressure of normative social influence - whether as a result of making O or as a result of participating in a group discussion where the individual gains information about how others make decisions - he does so in an effort to conform to the expectations inherent in this influence. He conforms to the norm for risk which has been made salient. Subjects in Condition IO do not make I₁ under the pressure of normative social influence; when they come to make O₁, which now makes salient a norm favouring a risky approach, subjects consider their own previously made decisions as exemplifying the norm for risk more closely than the decisions that they expect others like themselves will make. On the other hand, subjects in Condition OI make I₁ under the pressure of normative social influence to conform to the norm for risk made salient in making O₁; hence they consider their own decisions to exemplify the norm for risk as closely as the decisions that they expected others like themselves would make.

Following the group discussion, subjects in Condition IO continued to see themselves as riskier than others. That is, they continued to take significantly more risk than they

expect others like themselves will take. Our Hypothesis 4c predicted the opposite effect. These data make the normative approach, in its present form, questionable. However, they may not warrant a wholesale rejection of the normative approach to the risky shift, so much as a refinement of this position in light of this strong finding.

The assumption underlying Hypothesis 4c was that, following the group discussion, all subjects would be under the same pressure of normative social influence when making I_2 . This assumption was probably unwarranted. A more refined assumption which generates predictions consonant with the obtained data would be that the norm for risk becomes refined, more salient and better defined as the subject progresses from O_1 , through the group discussion-to-consensus, to O_2 . In making I_2 (here, prior to O_2), the subject does so under the pressure of normative social influence as mediated by the group discussion. That is, the subject makes I_2 in such a way as to conform to the norm for risk as defined implicitly in the group discussion. When the subject subsequently makes O_2 , he underestimates others' risk because he continues to consider his own previously made decision (I_2) as exemplifying the norm for risk more consistently than others' decisions. In essence it is being argued that the same conditions which prevailed prior to the group discussion for Condition IO remain after the group discussion.

For Condition OI, however, subjects make I under the pressure of normative social influence as mediated by O². That is, subjects make I in such a way as to conform to a norm for risk which has become even better defined - through O² - than it was previously defined - in the group discussion. Following the previous reasoning, the results here are as would be expected: although subjects continued to see themselves as numerically riskier than others following the group discussion, they did not take significantly more risk than they expected that others like themselves would take.

Such a refinement requires a further experimental test of the normative approach. In retrospect, this writer suggests the use of an "after-only" design. Such an approach would have two, somewhat overlapping advantages. First, an after-only design would obviate the demand characteristics usually associated with the before-after design. Secondly, in dispensing with pre-test measures, it may be determined whether the risky shift indeed is a real phenomenon; it is possible that the risky shift is a direct consequence of pre-testing. If the risky shift is a real phenomenon, on the other hand, pre-testing could conceivably have the effect of either deterring or magnifying the magnitude of the effect.

Thus, within the context of the normative approach and the present completed study, the following experiment is

proposed. Four conditions would be required, as follows:

- (1) group discussion - I - O
- (2) group discussion - O - I
- (3) I - O
- (4) O - I

The number of subjects used within each condition would be equal. In the first two conditions, 5-member groups would hold discussions-without-consensus.

The analysis of data would proceed as follows. Mean I, O and (I - O) scores would be computed for the number of subjects within each condition. Three 2 X 2 analyses of variance would then be performed, where one factor would be order (I-O versus O-I) and the other would be a treatment factor (group discussion versus no group discussion).

The normative approach would then make the following predictions:

(1) For the I measures:

(a) a significant main effect due to discussion - the I risky shift - because of normative social influence.

(b) a significant order effect - when I is made after O, I decisions will be riskier than when I is made prior to O, because of normative social influence.

(c) a significant order X treatment interaction - I decisions made after both group discussion and O will be riskier than those made under any of the other conditions, because of the greater pressure of normative social influence.

(2) For the O measures:

(a) a significant main effect due to discussion - the O risky shift - because of informational social influence.

(b) a significant order effect - when O is made prior to I, O decisions will be riskier than when O is made after I; this may be somewhat of an artifactual result of the fact that subjects under the latter conditions see themselves as significantly riskier than others.

(c) a significant order X treatment interaction - O decisions made after group discussion but before I will be riskier than O decisions made under any of the other conditions, because of informational social influence.

(3) For the (I - O) measures:

(a) a significant order effect only - regardless of whether subjects participate in a group discussion or not, when I is made prior to O, subjects will view themselves as riskier than others; further, these subjects will view themselves as riskier than others to a significantly greater extent than subjects who make O prior to I.

To summarize, this experiment would test those predictions of the previous experiment corresponding to Hypotheses 1, 2, 4a and 4b. As well, consonant with the refined normative approach, this experiment would test the implications of that refinement. Those implications are as follows, where the notations in parentheses refer to the predictions above:

(1) If the norm for risk becomes increasingly refined, more salient and better defined as the subject progresses through the experimental paradigm, then I decisions made after O will be riskier than I decisions made before O (1b), and I decisions made after both group discussion and O will be riskier than all other I decisions (1c).

(2) If the preceding is true and if it is also true that, regardless of the group discussion variable, subjects making I before O view themselves as riskier than others to a significantly greater extent than subjects who make O prior to I, then when O is made prior to I, O decisions will be riskier than when O is made after I (2b), and O decisions made after the group discussion but before I will be riskier than all other O decisions (2c).

The data of the present experiment then imply that:

(a) subjects' perceptions of the estimated risk positions of others like themselves (O) shift toward risk as a result of information-exchange and discussion (informational social influence) in the group.

(b) subjects' perceptions of the estimated risk positions of others like themselves affect the risk positions they initially adopt for themselves (I), although it is not exactly clear in what way this effect occurs; it is noted here that (1) if I is made prior to O, then subjects view themselves as significantly riskier than others, and (2) if O is made prior to I, this does not hold.

(c) the risk positions that subjects initially adopt for themselves shift in the risky direction, but the data of this experiment do not make it clear whether or not this occurs as a result of the hypothesized normative social influence.

Chapter VIII

Summary

A comprehensive review of the theory and research dealing with the "risky shift phenomenon" (the tendency of groups to recommend riskier decisions after discussion than their individual members did prior to discussion) was presented. The weight of empirical evidence favours the cultural value hypothesis (Brown, 1965) as an explanation of the risky shift. A reformulation of this hypothesis in terms of the constructs of norms and conformity behavior was offered for two reasons: (1) to provide a more general explanation of the risky shift than that provided by the value hypothesis which would tie the phenomenon, theoretically, to the larger, more "established" psychological areas of norms and conformity behavior, and (2) to provide an approach which specifies the processes involved in the risky shift in a less ambiguous manner.

The essence of this reformulation - the normative approach - held that the shift to risk of subjects' own decisions (I) is a result of normative social influence (Deutsch & Gerard, 1955): that is, as a result of subjects' efforts to conform to a norm for risk. It was further held that the norm for risk is made salient when subjects become aware of the idea that there are group expectancies associated with making risk decisions; it was assumed that in the typical paradigm, the norm for risk is made salient when

subjects discover they will be part of a group discussion, but not before. However, it may also be made salient by asking subjects to indicate how comparable others would make risk decisions (O); it was held that O would show a risky shift after group discussion because of informational social influence (Deutsch & Gerard, 1955), as provided by information-exchange and discussion in the group. It was further held that the I shift is a result of normative social influence provided by O and the O risky shift.

This normative approach was tested in an experimental study involving 222 males randomly assigned to one of four conditions: (1) subjects made I both before and after group discussion-to-consensus, (2) subjects made O both before and after discussion, (3) subjects made I and then made O both before and after discussion, and (4) subjects made O and then made I both before and after discussion.

Results indicated: (a) I showed a risky shift, (b) O showed a risky shift, (c) the correlations between the I and O shifts were positive and significant, (d) subjects in the third condition viewed themselves as significantly riskier than comparable others, both before and after the discussion, and (e) subjects in the fourth condition did not take significantly more risk than they expected others would take, both before and after the discussion. These results were interpreted as providing support for the normative approach to the risky shift.

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NAME: _____

Opinion Questionnaire

On the following pages you will find a series of situations that are likely to occur in everyday life. The central person in each situation is faced with a choice between two alternative courses of action. One of these alternatives is more desirable to the central character than the other. However, the more desirable alternative also involves greater risk.

For example, suppose Mr. Y is about to leave on a vacation trip when he suddenly experiences mild abdominal pains. These pains could, of course, reflect either an unimportant, temporary upset or may be the first signal of a severe condition. Mr. Y must choose between two alternatives: board an airplane for a long overseas flight or cancel his plans in order to see a doctor. In this case, boarding the airplane is more desirable if the pains are merely part of a temporary and unimportant upset. Thus this alternative is more desirable, but it involves more risk.

Suppose you had to advise the central character, Mr. Y, in the above situation. Would you recommend that he board the airplane if the chances that the pains are unimportant are 1 in 100? What if the chances are 10 in 100? What if the chances are 99 in 100? This is the type of question you will have to consider. Notice that you are not being asked what you think the probability actually is. Rather, you are being asked to indicate what recommendation you would make if the chances actually were 1 in 100, what recommendation you would make if the chances actually were 10 in 100, etc. You will answer eleven such questions for each situation.

The situations on the following pages will be followed by questions like those listed below.

Would you recommend that Mr. Y board the plane if the chances that the pains were part of an unimportant, temporary upset were

- _____ 1 in 100?
- _____ 10 in 100?
- _____ 20 in 100?
- _____ 30 in 100?
- _____ 40 in 100?
- _____ 50 in 100?
- _____ 60 in 100?
- _____ 70 in 100?
- _____ 80 in 100?
- _____ 90 in 100?
- _____ 99 in 100?

You should answer each of these questions by writing "Yes" or "No" in the space provided.

You might answer the series of questions in the following way:

Would you recommend that Mr. Y board the plane if the chances that the pains were part of an unimportant, temporary upset were

<u>No</u>	1 in 100?
<u>No</u>	10 in 100?
<u>No</u>	20 in 100?
<u>No</u>	30 in 100?
<u>No</u>	40 in 100?
<u>No</u>	50 in 100?
<u>No</u>	60 in 100?
<u>Yes</u>	70 in 100?
<u>Yes</u>	80 in 100?
<u>Yes</u>	90 in 100?
<u>Yes</u>	99 in 100?

Notice that the first few answers are "No"; the remaining answers are "Yes". You will see that, if you are consistent, it will always be the case that a "No" will never appear at a higher number than any "Yes" answer. It may be the case, of course, that you will answer "Yes" to all questions or "No" to all questions.

Read each situation carefully before you answer the questions. Try to place yourself in the position of the person you are advising.

When you understand these instructions, begin reading the first situation. Take as much time as you need. If you wish to return to any situation after reading some of the others, you may do so.

NAME: _____

Opinion Questionnaire

On the following pages you will find a series of situations that are likely to occur in everyday life. The central person in each situation is faced with a choice between two alternative courses of action. One of these alternatives is more desirable to the central character than the other. However, the more desirable alternative also involves greater risk.

For example, suppose Mr. Y is about to leave on a vacation trip when he suddenly experiences mild abdominal pains. These pains could, of course, reflect either an unimportant, temporary upset or may be the first signal of a severe condition. Mr. Y must choose between two alternatives: board an airplane for a long overseas flight or cancel his plans in order to see a doctor. In this case, boarding the plane is more desirable if the pains are merely part of a temporary and unimportant upset. Thus this alternative is more desirable, but it involves more risk.

This questionnaire will be given to approximately 250 of your fellow students in introductory psychology. Suppose each of these 250 introductory psychology students had to advise the central character, Mr. Y, in the above situation. Would they recommend that he board the airplane if the chances that the pains are unimportant are 1 in 100? What if the chances are 10 in 100? What if the chances are 99 in 100? This is the type of question they will have to consider. Notice that they are not being asked what they think the probability actually is. Rather, they are being asked to indicate what recommendation they would make if the chances actually were 1 in 100, what recommendation they would make if the chances actually were 10 in 100, etc. They would answer eleven such questions for each situation.

As indicated above, this questionnaire will be given to approximately 250 of your fellow students. What we are interested in here is having you attempt to guess how these 250 students will, typically, answer the questionnaire. Please attempt to estimate for each situation how 250 of your fellow students, on the average, would answer the series of eleven questions. That is, what would be the normal or typical set of answers to the series of eleven questions?

The situations on the following pages will be followed with questions like those listed below.

Would 250 of your fellow students typically, recommend that Mr. Y board the plane if the chances that the pains were part of an unimportant, temporary upset were:

_____ 1 in 100?
 _____ 10 in 100?
 _____ 20 in 100?
 _____ 30 in 100?
 _____ 40 in 100?
 _____ 50 in 100?
 _____ 60 in 100?
 _____ 70 in 100?
 _____ 80 in 100?
 _____ 90 in 100?
 _____ 99 in 100?

You should answer each of these questions by writing "Yes" or "No" in the space provided.

You might answer the series of questions in the following way:

Would 250 of your fellow students, typically, recommend that Mr. Y board the plane if the chances that the pains were part of an unimportant, temporary upset were:

No 1 in 100?
No 10 in 100?
No 20 in 100?
No 30 in 100?
No 40 in 100?
No 50 in 100?
No 60 in 100?
Yes 70 in 100?
Yes 80 in 100?
Yes 90 in 100?
Yes 99 in 100?

Notice that the first few answers are "No"; the remaining answers are "Yes". You will see that, if you are consistent, it will always be the case that a "No" will never appear at a higher number than any "Yes" answer. It may be the case, of course, that you will answer "Yes" to all questions or "No" to all questions.

Read each situation before you answer the questions.

When you understand these instructions, begin reading the first situation. Take as much time as you need. If you wish to return to any situation after reading some of the others, you may do so.

3. Example Problem (A) Accompanying Instructions for Conditions O and OI to Measure O

100

1

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 which has 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 250 of your fellow students are advising Mr. A. Would 250 of your students, typically, recommend that he take the job if the chances that the company would prove financially sound are:

- _____ 1 in 100?
- _____ 10 in 100?
- _____ 20 in 100?
- _____ 30 in 100?
- _____ 40 in 100?
- _____ 50 in 100?
- _____ 60 in 100?
- _____ 70 in 100?
- _____ 80 in 100?
- _____ 90 in 100?
- _____ 99 in 100?

NAME: _____

Opinion Questionnaire

Now that you have become familiar with these situations and have indicated how you would answer the questions, we would like you to attempt to guess how other people will answer the same questions. This questionnaire will be given to approximately 250 of your fellow students in introductory psychology. What we are interested in here is having you attempt to guess how these 250 students will, typically, answer the questionnaire. Please attempt to estimate for each situation how 250 of your fellow students, on the average, would answer the series of eleven questions. That is, what would be the normal or typical set of answers to the series of eleven questions? The procedure is the same as it was previously, except that the statement, as in the example, will now read:

Would 250 of your fellow students, typically, recommend that Mr. Y board the plane if the chances that the pains were part of an unimportant, temporary upset were

- _____ 1 in 100?
- _____ 10 in 100?
- _____ 20 in 100?
- _____ 30 in 100?
- _____ 40 in 100?
- _____ 50 in 100?
- _____ 60 in 100?
- _____ 70 in 100?
- _____ 80 in 100?
- _____ 90 in 100?
- _____ 99 in 100?

You should answer each of these questions by writing "Yes" or "No" in the space provided.

Again, if you are consistent, it will always be the case that a "No" will never appear at a higher number than any "Yes" answer. It may be the case, of course, that you will answer "Yes" to all questions or "No" to all questions.

Read each situation carefully before you answer the questions.

When you understand these instructions, begin reading the first situation. Take as much time as you need. If you wish to return to any situation after reading some of the others, you may do so.

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 which has 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 250 of your fellow students are advising Mr. A. Would 250 of your fellow students, typically, recommend that he take the job if the chances that the company would prove financially sound are:

- 1 in 100?
- 10 in 100?
- 20 in 100?
- 30 in 100?
- 40 in 100?
- 50 in 100?
- 60 in 100?
- 70 in 100?
- 80 in 100?
- 90 in 100?
- 99 in 100?

NAME: _____

Opinion Questionnaire

Now that you have become familiar with these situations and have indicated how 250 of your fellow students would answer the questions, we would like you to indicate how you yourself would answer the series of eleven questions for each of the situations. The procedure is the same as it was previously, except that the statement, as in the example, will now read:

Would you recommend that Mr. Y board the plane if the chances that the pains were part of an unimportant, temporary upset were

- _____ 1 in 100?
- _____ 10 in 100?
- _____ 20 in 100?
- _____ 30 in 100?
- _____ 40 in 100?
- _____ 50 in 100?
- _____ 60 in 100?
- _____ 70 in 100?
- _____ 80 in 100?
- _____ 90 in 100?
- _____ 99 in 100?

You should answer each of these questions by writing "Yes" or "No" in the space provided.

Again, if you are consistent, it will always be the case that a "No" will never appear at a higher number than any "Yes" answer. It may be the case, of course, that you will answer "Yes" to all questions or "No" to all questions.

Read each situation carefully before you answer the questions. Try to place yourself in the position of the person you are advising.

When you understand these instructions, begin reading the first situation. Take as much time as you need. If you wish to return to any situation after reading some of the others, you may do so.

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 which has 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. Would you recommend that he take the job if the chances that the company would prove financially sound are:

- _____ 1 in 100?
- _____ 10 in 100?
- _____ 20 in 100?
- _____ 30 in 100?
- _____ 40 in 100?
- _____ 50 in 100?
- _____ 60 in 100?
- _____ 70 in 100?
- _____ 80 in 100?
- _____ 90 in 100?
- _____ 99 in 100?

NAME: _____

Opinion Questionnaire

The questionnaire on the following pages is the same one you have just finished taking. You have taken it in order to familiarize yourself with all the situations. What we are really interested in now is having the group discuss each situation in turn, and to arrive at a unanimous decision or consensus for each probability question. Let me now describe the purpose of these discussions. We are trying to develop a set of case materials for a human relations course. This means that we would like to develop situations for which people are likely to hold many different points of view. We want to see whether the situations we constructed will generate a diversity of opinion, so your discussions will tell us how well the different situations are working out for our purposes. So that, in general, you are to discuss the pros and cons of any one answer utilizing as many arguments as seem appropriate, and then come to a unanimous decision for each probability question. You will recognize that a unanimous decision is different from a majority vote, by the way.

You are to discuss each situation for about five minutes and, at the end of that time, arrive at a consensus for the series of probability questions. This time don't return to any situation after the group has made its decisions. When the group completes each decision, each of you will mark it in your questionnaire, so that you will have a record of the decisions.

The experimenter is not going to participate in the discussion although he will answer any procedural questions which may arise and will be listening to parts of the discussion, as well.

When you understand these instructions, begin with the first situation.

NAME: _____

Opinion Questionnaire

The questionnaire on the following pages is the same one you have been working with, and we would like you to go through it again, individually, making a final decision on each problem. For some of you, the discussion may have raised issues that you had overlooked when making your original decisions. Now we would like to have you truly reconsider each situation. In some cases you may feel that the group decision was the best one that could have been made and, in other cases you may disagree with the group decision. When making your decision now, don't feel bound by what you did when making your first decision. We're not interested in your prior opinion, but rather, how you feel about the situation right now.

When you understand these instructions, begin with the first situation.

NAME: _____

Opinion Questionnaire

The questionnaire on the following pages is the same one you have been working with, and we would like you to go through it again, individually, and attempt to estimate for each situation how 250 of your fellow students, typically, would answer the series of eleven questions. For some of you, the discussion may have raised issues that you had overlooked when making your original decisions. Now we would like to have you truly reconsider each situation from the point of view of 250 of your fellow students. In some cases you may feel that the group decision was the best one that could have been made and, in other cases you may disagree with the group decision. When making your decision now, don't feel bound by what you did when making your first decision. We're not interested in your prior opinion, but rather, how you feel about the situation now.

When you understand these instructions, begin with the first situation.

NAME: _____

Opinion Questionnaire

Finally, the questionnaire on the following pages is the same one you have been working with, and we would like you to go through it again, individually, and attempt to estimate for each situation how 250 of your fellow students, typically, would answer the series of eleven questions. Again, when making your decisions now, don't feel bound by what you did when making your first decision. We're not interested in your prior opinion, but rather, how you feel about the situation right now.

When you understand these instructions, begin with the first situation.

NAME: _____

Opinion Questionnaire

Finally, the questionnaire on the following pages is the same one you have been working with, and we would like you to go through it again, individually, making a final decision on each problem. Again, when making your decision now, don't feel bound by what you did when making your first decision. We're not interested in your prior decision, but rather, how you feel about the situation right now.

When you understand these instructions, begin with the first situation.