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Risk Taking Behavior: Risky and Conservative Shifts

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RISK TAKING BEHAVIOR: RISKY

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VITA

Mary Ann Poprick was born in Chicago, Illinois on June 25, 1939. After graduating from SS. Peter and Paul High School in 1956, she attended De Paul University where she was awarded the degree of Bachelor of Arts in 1960 and the degree of Master of Arts in 1964. Prior to the formal awarding of the master's degree, she served a one-year internship at Elgin State Hospital. After completion of the internship, she worked as a staff psychologist until entering graduate school at Loyola University in 1964. While attending Loyola, she taught on a part-time basis in the Department of Psychology at the university. In September, 1967, she became a full-time faculty member, with the rank of assistant professor, at Lewis College in Lockport, Illinois.

ACKNOWLEDGEMENTS

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CHAPTER I

INTRODUCTION

Perhaps the oldest debate between sociology and psychology
has occurred over the effects of the group on the individual.
The sociologist Le Bon has best represented the historical so-
ciological position which saw the individual participating in
different and sometimes extreme behaviors within the group con-
text. Floyd Allport gave psychology's answer to this position
in that he argued that persons do the same thing both within and
outside the group context, although he conceded there may be some
facilitative effects of the group.

While there has been a good deal of experimentation comparing
group versus individual behaviors, not all of the research can be
related to what the sociologists were talking about. Recently,
however, Kogan and Wallach (1964) have devised a risk taking task
--the dilemmas-of-choice questionnaire--which deals with a vari-
ety of hypothetical situations which appears to fit more closely
to the behaviors of concern to the (older) sociologists.

CHAPTER II

REVIEW OF THE LITERATURE

Almost without exception, recent experiments investigating risk taking behaviors in groups have found a risky shift phenomenon. That is, decisions made in a group context are more "risky" than decisions made by individuals. Many studies have been conducted in an attempt to determine what occurs in the group context and which features of the testing situation are essential for the risky shift to occur.

Wallach, Kogan, and Bem (1962, 1964) found that the nature of the payoff--real or hypothetical--makes no difference; the risky shift in the group occurs in both cases. In another study (Bem, Wallach, & Kogan, 1965), they obtained the same results when subjects were presented with a real opportunity for reward (monetary gains) or punishment (physical pain and discomfort). Perhaps it should be noted that a certain degree of deception was used in this experiment. All subjects received a fixed amount of money for serving in the experiment, but there was no punishment. Nevertheless, subjects operated under the impression that there was the possibility of either reward or punishment so it would seem legitimate to assume this belief influenced their behavior.

It was also found that the influence of the group persisted

even after the group experience had ended (Wallach, Kogan, & Bem, 1962). Subjects performing on the dilemmas-of-choice questionnaire individually after having performed on the same task in the group showed a shift in risk taking when their scores were compared with prediscussion individual risk taking scores. The risky shift was still in evidence two to six weeks later when subjects again performed individually.

When decisions made following group discussion alone, discussion and consensus, and consensus alone were compared, Wallach and Kogan (1965) obtained the following results: (1) The risky shift occurred under the conditions of group discussion alone and discussion and consensus, but not under the condition of consensus alone. (2) There was no difference in the increase in risk taking between subjects working in the group discussion alone condition and those performing under the condition of discussion and consensus. On the basis of these findings, it was concluded that "group discussion provides the necessary and sufficient condition for generating the risky shift effect (Wallach & Kogan, 1965, p. 17)." In other words, it would appear that these two conditions do not make different demands on the subjects. If they do, they are not reflected in a difference in risk taking.

On the basis of their findings, Kogan and Wallach conclude that it is a diffusion of responsibility that accounts for the

risky shift phenomenon. That is, they suggest that a risky

shift results from group decision making since all members of

the group share in the responsibility for making the decisions.

Teger's study (1966), in which he found that risky shifts in-

creased as the size of the groups increased, would seem to offer

support for this view. There are, however, serious critics of

this explanation (Collins & Guetzkow, 1964; Festinger, Pepitone,

& Newcomb, 1962; Flanders & Thistlethwaite, 1967; Rettig, 1966).

Collins and Guetzkow (1964) suggest that the risky shift

might be explained by the presence of high risk takers in the

group. Festinger, Pepitone, and Newcomb (1962), on the other

hand, suggest that it is de-individuation that leads to an in-

crease in risk taking.

> There occurs sometimes in groups a state of affairs
> in which the individuals act as if they were "sub-
> merged in the group." Such a state of affairs may
> be described as one of de-individuation; that is,
> individuals are not seen or paid attention to as in-
> dividuals. The members do not feel that they stand
> out as individuals. Others are not singling a per-
> son out for attention nor is the person singling out
> others (pp. 290-291).

Further, these experimenters found de-individuation to be re-

lated to the members' attraction to the group.

Flanders and Thistlethwaite (1967) suggest yet another

factor to account for what happens when individual risk takers

are compared with subjects working in groups. Apparently, the

inspiration for their experiment came from a study conducted by

Bateson (1966) who found a risky shift for subjects working as individuals who were provided with an opportunity for further individual study of the risk taking items. Using the dilemmas-of-choice questionnaire (Kogan & Wallach, 1964), Flanders and Thistlethwaite (1967) found that:

> ...discussion to consensus has the effect of producing a risky shift among subjects who have not had inter-polated familiarization with the risk-taking problems. However, among subjects who have been given the op-portunity of further individual study of the risk-taking problems, discussion to consensus has no effect upon risk-taking scores (p. 95).

These findings were interpreted as being the result of "in-creased comprehension, which is theorized to be the outcome of interpolated familiarization or discussion procedures (p. 91)."

Finally, Rettig (1966) proposes that censure testing ac-counts for the increase in risk taking. Rettig and Turoff (in press) found the risky shift when subjects were exposed to a live discussion, but not when they were exposed to the same dis-cussion on tape. While the other experiments reviewed here deal with a variety of everyday-life situations (e.g., the dilemmas-of-choice questionnaire), the scale used by Rettig deals only with ethical dilemmas or situations (Rettig & Rawson, 1963). All of the items in this scale deal with stealing money from a bank. It seems possible that this task is not comparable to the tasks used by other experimenters. While censure testing may operate when subjects are confronted with ethical dilemmas,

there is no reason to assume this happens when the decisions to be made concern situations not involving an ethical dilemma.

While all of the experiments considered thus far found a risky shift (at least under certain circumstances) it would be misleading to omit examples of studies whose results did not include the risky shift phenomenon. In an extensive review of experiments in the area of risk taking, Kogan and Wallach (1967) turn their attention to several studies in which the risky shift did not occur in the group context. The first study considered was that conducted by Hunt and Rowe (1960). These experimenters compared decision making by subjects working as individuals with that of subjects working in groups of three. Groups performed under the condition of discussion and consensus. The findings indicated no difference in risk taking between subjects working alone and those working in groups. Kogan and Wallach (1967) conclude that the results of this study are inconclusive for the following reasons: "First, the group interaction was quite brief--fifteen minutes in length. Secondly, the meetings of the various groups took place within sight of one another in a single large room (p. 232)."

In another study, Lonergan and McClintock (1961) predicted a shift in the conservative direction for subjects working in groups of three under the condition of group discussion alone. They found, instead, a shift in the risky direction, but the dif-

ference between individuals and groups was not statistically significant. Kogan and Wallach (1967), once again, evaluate these findings as inconclusive. Their criticism is based on two factors: (1) the nature of the task and (2) the opportunity for only minimal discussion in the group condition.

Finally, Atthowe (1961) compared pair-groups with individuals. Subjects working in pairs performed under the condition of discussion and consensus. The results of this study indicated that subjects in pair-groups were more conservative in their choices than individuals. One of the factors suggested by Kogan and Wallach (1967) to account for these results was that "Generation of discussion may be more constrained in a dyadic situation than when three or more persons are present (p. 233)."

The only way to resolve the difficulties raised by studies such as the above, according to Kogan and Wallach (1967), is by further investigation into the nature of risk taking in the group context. In the designing of research projects in this area, they strongly urge that:

> First, the issue of risk taking should be a prominent and involving one for the subjects. Second, the group situation should be of such a nature that we can feel confident of its power to capture the essentials of what transpires in the give-and-take of open, intensive discussion (p. 233).

CHAPTER III

STATEMENT OF PROBLEM

It appears to be clearly implied by Kogan and Wallach (1967) that, if their suggestions for further research are followed, the risky shift phenomenon will emerge. But will it? It is suggested here that this finding--the risky shift phenomenon--is the result of the way in which the risk taking scores are treated in the analyses. To illustrate this point, consider the following hypothetical example: Subject A (initially a medium (M) risk taker with a score of 65) is paired with Subject B (initially a low (L) risk taker with a score of 85). They are instructed to discuss each item on the dilemmas-of-choice questionnaire and then individually and privately make their responses to each item. Their scores after discussion are 60 and 80 respectively--a mean value of 70. Now this mean value is subtracted from the mean of their initial ratings--a value of 75. This would reveal a shift in the risky direction. If the same subjects are instructed to reach consensus after discussing each item, they might decide (compromise) on a score of 70. The subtraction of this value from the mean of their initial ratings --75--would again reveal a shift in the risky direction. What has happened here? Under the second condition (discussion and consensus), B's score, in relation to his initial score, indi-

cates a shift in the risky direction; whereas A's score shifted in the conservative direction. Thus, although under both conditions there is a shift in the risky direction when mean scores are used, the effects of the group on the individual are quite different. In the first case, both subjects shift in the risky direction, while in the second case, this is not true.

Consequently, it is proposed (hypothesized) that the discussion and consensus condition (hereafter to be called simply the consensus condition) and the discussion alone condition (to be called simply the discussion condition) make different demands on the subjects in the group and that this difference is revealed when the scores of each individual in the group, rather than the mean of the scores of all the members in the group are analyzed. In other words, it is proposed here that the individual scores of each group member must be treated separately in order to clearly see the effects of the group on the individual. It is expected that all subjects will not shift in the risky direction in the consensus condition, whereas subjects in the discussion condition will all shift in the risky direction. It is also suggested that the initial level of risk taking (the score attained when working as individuals) of the members of the group is an important factor. Using pair-groups, it is expected that in the consensus condition: (1) Subjects paired with partners whose initial risk taking scores fall within the same range, i.e.,

both subjects are H, M, or L, will exhibit a risky shift.
(2) When initial scores fall within different ranges, the more
conservative partner will become "riskier," whereas the more
risky partner will become more conservative (in relation to their
initial scores).

In addition to these expectations or hypotheses, it is ex-
pected that the inclusion of items designed to measure satis-
faction will help to determine the factors related to the shifts
in risk taking. De-individuation, according to Festinger, Pepi-
tone, and Newcomb (1962), is related to satisfaction and these
experimenters suggest it is de-individuation which leads to an
increase in risk taking. Consequently, if Festinger, Pepitone,
and Newcomb are correct, there should be differences in satis-
faction corresponding to the differences in shifts in risk tak-
ing.

CHAPTER IV

METHOD

Subjects

A total of 653 undergraduates (442 males, 211 females) en-
rolled in psychology courses at Loyola University served as sub-
jects. All subjects were volunteers who received either extra-
credit points to be applied to their course grade or credit in
partial fulfillment of a course requirement.

Procedure

All testing was done in classrooms with the number of sub-
jects attending a testing session varying from approximately 5
to 40. Subjects were randomly assigned to one of three experi-
mental conditions--control, consensus, or discussion. There
were 87 control subjects, 320 subjects in the consensus condition,
and 246 subjects in the discussion condition.

Each testing session consisted of three parts. During the
first part, all subjects performed individually on the dilemmas-
of-choice questionnaire. Scores obtained during the first part
of the session were used as the basis for trichotomizing the
entire testing sample into high (H), medium (M), and low (L)
risk takers. The procedure for the second and third parts of
the session are described below.

Control Condition. Subjects assigned to this condition

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performed individually on the dilemmas-of-choice questionnaire
during the second part of the testing session. Immediately fol-
lowing the second administration of the questionnaire, subjects
in this condition were required to respond to one item regarding
their satisfaction with the decisions made on the second copy of
the dilemmas-of-choice questionnaire. No group experience was
provided.

Consensus Condition. Subjects in this condition were as-
signed partners for the second part of the testing session. The
pair-groups consisted of all combinations of H, M, and L subjects
--H with H, H with M, H with L, M with M, M with L, and L with L.
The members of a given pair-group were of the same sex and were
unacquainted with one another. Each pair-group was then given
one copy of the dilemmas-of-choice questionnaire and instructed
to read and discuss each item until the two members of the group
could arrive at one answer or response to each item, i.e., arrive
at consensus. Upon completion of the questionnaire, the members
of each pair-group were instructed to separate (part three of
the session) and respond individually and privately to six items
dealing with their satisfaction with various aspects of the group
experience.

Discussion Condition. Subjects in this condition were as-
signed partners during the second part of the session in the same
manner as that described above. After being assigned to pair-

groups, however, each member of each group received a copy of the dilemmas-of-choice questionnaire. Subjects were instructed to discuss each item, but immediately following discussion, each subject responded individually and privately. During the third part of the session, subjects separated from their partners and responded to six satisfaction items individually and privately.

Each testing session was ended with a de-briefing period during which the experimenter briefly explained the general nature of the experiment.

Risk Taking Task

The dilemmas-of-choice questionnaire constructed by Kogan and Wallach (1964) was used to obtain a measure of risk taking. This is a paper-and-pencil task which describes twelve situations in each of which a central person is faced with a choice between two alternative courses of action. One of these courses is more desirable or rewarding than the other, but it also involves a greater risk of failure. For each of the twelve situations, the subject is instructed to advise the central person by indicating the lowest probability of success felt to be acceptable if the risky course of action is to be followed. Responses are made on a six-point scale. The questionnaire in its entirety appears in the appendices.

Satisfaction Items

The items used to obtain measures of satisfaction were fashioned after those used by Festinger, Pepitone, and Newcomb (1962). These items are partially reproduced in the results section of this paper and appear in their entirety in the appendices.

CHAPTER V

RESULTS

Before the major analyses of the data were made it was ne-
cessary to determine if the groups were equated. In other words,
it was necessary to determine if there were significant differ-
ences, for example, among H subjects who subsequently worked
alone and those who were later paired with either H, M, or L
partners. Consequently, the first two analyses, dealing with
initial risk taking scores (obtained during the first part of the
testing session), were designed to yield this information. All
analyses were either 3 x 4 or 3 x 3 factorial designs for un-
equal cell frequencies--unweighted-means analyses (Winer, 1964).

Table 1 presents the mean initial risk taking scores for H,
M, and L subjects who subsequently worked alone or with H, M, or
L partners in the consensus condition. The higher the score, the
more conservative the subjects; the lower the score, the more
risky the subjects. The analysis of these scores revealed a
significant difference as a function of initial ratings of H, M,
and L--significant beyond the .01 level of confidence, F (2, 395)
= 741.95. There was no significant difference as a function of
working as individuals or with H, M, or L partners. The inter-
action was also not significant.

Table 1

Mean Initial Risk Taking Scores for Subjects Categorized into
Three Levels Who Subsequently Worked as Individuals and with H,
M, and L Partners in the Consensus Condition

Subjects	Worked as Individuals	Worked with H Partners	Worked with M Partners	Worked with L Partners
H	55.23 (n=30)	54.79 (n=38)	55.07 (n=30)	53.92 (n=36)
M	66.48 (n=25)	67.17 (n=30)	67.95 (n=40)	67.35 (n=34)
L	82.09 (n=32)	83.25 (n=36)	84.21 (n=34)	82.29 (n=42)

Table 2 gives the mean initial risk taking scores for H,
M, and L subjects who subsequently worked alone or with H, M,
or L partners in the discussion condition. Once, again, the
higher the score, the more conservative the subjects; the lower
the score, the more risky the subjects. The analysis of the
mean scores appearing in Table 2 reveals a significant differ-
ence as a function of initial ratings of H, M, and L--signifi-
cant beyond the .01 level, F (2, 321) = 22.82. The difference
as a function of working alone or with H, M, or L partners and
the interaction were not significant.

Table 2

Mean Initial Risk Taking Scores for Subjects Categorized into
Three Levels Who Subsequently Worked as Individuals and with H,
M, and L Partners in the Discussion Condition

Subjects	Worked as Individuals	Worked with H Partners	Worked with M Partners	Worked with L Partners
H	55.23 (n=30)	53.15 (n=34)	52.12 (n=26)	52.52 (n=21)
M	66.48 (n=25)	67.92 (n=26)	67.22 (n=36)	67.64 (n=25)
L	82.09 (n=32)	82.19 (n=21)	80.44 (n=25)	81.81 (n=32)

On the basis of these two analyses, it can be concluded
that the groups were equated. The significant differences ob-
tained would be expected as a result of trichotomizing the test-
ing sample into H, M, and L categories.

The next three analyses were performed on shift scores.
These were the scores obtained when the second risk score was
subtracted from the first risk taking score. Shift scores with
a + sign indicate a shift in the risky direction, whereas shift
scores with a - sign indicate a shift in the conservative direc-
tion.

The following analysis was designed to determine whether the
shift in risk taking is a function of (1) the initial level of

risk taking and/or (2) the condition under which the subjects
perform--control (as individuals), consensus (in pairs), or
discussion (in pairs). Table 3 gives the mean shift scores for
H, M, and L subjects working as individuals and in pair-groups
in the consensus and discussion conditions.

Table 3

Mean Shift Scores for H, M, and L Subjects Working as Individuals
and in Pair-groups

	High	Medium	Low
Working as Individuals (control condition)	+.80 (n=30)	+.20 (n=25)	+2.13 (n=32)
Working in Pair-groups (consensus condition)	-6.96 (n=104)	+1.01 (n=104)	+8.54 (n=112)
Working in Pair-groups (discussion condition)	-1.44 (n=81)	+1.72 (n=87)	+7.14 (n=78)

While the difference as a function of the condition under
which the subjects performed (alone or in pair-groups in the con-
sensus and discussion conditions) was not significant, the dif-
ference as a function of initial level of risk taking was found
to be significant beyond the .01 level of confidence, F (2, 644)
= 30.97. The interaction was also significant beyond the .01
level, F (94, 644) = 7.28.

With regard to these significant findings: H subjects showed an overall shift in the conservative direction, whereas M and L subjects showed a shift in the risky direction. L subjects demonstrated a greater shift in the risky direction than did the M subjects. An analysis of simple effects (Winer, 1964) was performed to investigate further the nature of the significant interaction. It revealed that the interaction was caused by H subjects who were ranked from smallest shift to largest shift as follows: (1) H subjects in the control condition--risky shift, (2) H subjects in the discussion condition--conservative shift, (3) H subjects in the consensus condition--conservative shift. The above groups of H subjects were found to differ significantly beyond the .01 level, F (2, 644) = 9.10. L subjects also contributed to the significant interaction. They were ranked from smallest shift to largest shift as follows: (1) L subjects in the control condition, (2) L subjects in the discussion condition, (3) L subjects in the consensus condition. All shifts were in the risky direction. These groups were found to differ significantly beyond the .01 level, F (2, 644) = 6.48.

To analyze these results even further, Kramer's adaptation of the Duncan multiple-range test for unequal N's was employed (Kramer, 1956). All significant findings reported here are at the .05 level of confidence. The rows of Table 3 are considered first.

There were no significant differences found in Row 1 of Table 3. In other words, there were no differences in shift among H, M, and L subjects working as individuals in the control condition.

H, M, and L subjects working in pair-groups in the consensus condition (Row 2) were all found to differ significantly from one another. They were ranked from smallest shift to largest shift as follows: (1) M subjects--risky shift, (2) H subjects--conservative shift, (3) L subjects--risky shift.

H, M, and L subjects working in pair-groups in the discussion condition (Row 3) all differed significantly from one another also. They were ordered from smallest shift to largest shift as follows: (1) H subjects--conservative shift, (2) M subjects--risky shift, (3) L subjects--risky shift.

When the columns were considered, it was found that, for Column 1, H subjects in the consensus condition (conservative shift) differed significantly from H subjects in the control condition (risky shift). Further it was found that H subjects in the consensus condition showed a significantly greater shift in the conservative direction than did H subjects in the discussion condition. H subjects in the control condition did not differ significantly from H subjects in the discussion condition.

No significant differences were found among M subjects in the three conditions (Column 2).

For Column 3, it was found that L subjects in the control condition showed a significantly smaller shift in the risky direction than did the L subjects working in pair-groups in the consensus condition and the L subjects working in pair-groups in the discussion condition.

In the remaining analyses, the consensus and discussion conditions are treated separately. Wherever possible, the performance of subjects in each of these conditions is compared to the performance of subjects working alone (control condition).

Table 4 gives the mean shift scores for H, M, and L subjects when working alone or with H, M, or L partners in the consensus condition. The analysis of these scores was designed to determine whether subjects working in pair-groups in the consensus condition exhibit differences in shift as a function of (1) their initial level of risk taking and/or (2) the type (H, M, or L) of partner.

The analysis of these scores indicated that the difference as a function of initial level of risk taking (rows of Table 4) was found to be significant beyond the .01 level of confidence, F (2, 395) = 65.75. The difference as a function of working as individuals or with H, M, or L partners (columns of Table 4) was also found to be significant beyond the .01 level, F (3, 395) = 41.07. Finally, the interaction was significant beyond the .01 level, F (6, 395) = 6.08. H, M, and L subjects in the control

Table 4

Mean Shift Scores for Subjects Categorized into Three Levels when
Working as Individuals and with H, M, and L Partners in the
Consensus Condition

Subjects	Working as Individuals	Working with H Partners	Working with M Partners	Working with L Partners
H	+.80 (n=30)	-3.37 (n=38)	-3.80 (n=30)	-13.39 (n=36)
M	+.20 (n=25)	+8.30 (n=30)	+2.05 (n=40)	-6.65 (n=34)
L	+2.13 (n=32)	+15.94 (n=36)	+10.21 (n=34)	+.86 (n=42)

condition account for the interaction. An analysis of simple
effects revealed no significant differences among these subjects.
With regard to the other significant findings, it was found that,
for the columns, the subjects were ordered from smallest shift
to largest shift as follows: (1) H, M, and L subjects paired
with L partners--conservative shift, (2) H, M, and L subjects
working alone--risky shift, (3) H, M, and L subjects paired with
M partners--risky shift, (4) H, M, and L subjects paired with H
partners--risky shift. For the rows, subjects were ordered from
smallest shift to largest shift as follows: (1) M subjects--
risky shift, (2) H subjects--conservative shift, (3) L subjects--
risky shift.

Kramer's test was used to further analyze these results. All significant findings reported here are at the .05 level. For Row 1 of Table 4: H subjects working as individuals (risky shift), H subjects working with H partners (conservative shift), and H subjects working with M partners (conservative shift) all differed significantly from H subjects working with L partners (conservative shift). The largest shift in the conservative direction was found for H subjects working with L partners. No other comparisons of mean shift scores in this row proved to be significant.

For Row 2 of Table 4: (1) M subjects working alone (risky shift) differed significantly from M subjects working with H partners (risky shift) and from M subjects working with L partners (conservative shift). M subjects working with H partners showed the greatest shift in the risky direction. (2) M subjects working with H partners (risky shift), in addition, differed significantly from M subjects working with M partners (risky shift) and M subjects working with L partners (conservative shift). Again, the M subjects working with H partners showed the greatest shift in the risky direction. (3) M subjects working with M partners (risky shift) were also significantly different from M subjects working with L partners (conservative shift). All other comparisons were not significant.

For Row 3 of Table 4: (1) L subjects working as individuals

(risky shift) differed significantly from L subjects working with H partners (risky shift) and L subjects working with M partners (risky shift). Both L subjects working with H partners and L subjects working with M partners exhibited larger shifts in the risky direction than did L subjects working alone. (2) Further, L subjects working with H partners (risky shift) were also significantly different from L subjects working with M partners (risky shift) and L subjects working with L partners (risky shift). L subjects working with H partners showed the greatest shift in the risky direction. (3) L subjects working with M partners (risky shift) were also significantly different from L subjects working with L partners (risky shift). L subjects working with M partners showed the larger shift in the risky direction. No other comparisons of means in this row were found to be significant.

Comparisons of mean values in each column reveal that, for Column 1 of Table 4, there are no significant differences in risk taking. In other words, H, M, and L risk takers do not differ in the control condition.

For Column 2 of Table 4: H subjects working with H partners (conservative shift), M subjects working with H partners (risky shift), and L subjects working with H partners (risky shift) all differ significantly from one another with regard to a shift in risk taking. The risky shift is greatest for L sub-

jects working with H partners. The same kinds of differences are found for subjects with M partners (Column 3).

Finally, Column 4 of Table 4 indicates that H subjects working with L partners (conservative shift), M subjects working with L partners (conservative shift), and L subjects working with L partners (risky shift) are all significantly different from one another. The greater shift in the conservative direction is found for H subjects working with L partners.

The next analysis deals with subjects working alone and subjects working in pair-groups in the discussion condition. It is designed to test the hypothesis that all subjects working in pair-groups in the discussion condition will exhibit a shift in the risky direction. Table 5 gives the mean shift scores for H, M, and L subjects working alone or with H, M, or L partners in the discussion condition.

The difference as a function of initial level of risk taking was found to be significant beyond the .01 level of confidence, F (2, 321) = 24.78. The difference as a function of working alone or with H, M, or L partners was also significant beyond the .01 level, F (3, 321) = 10.16. Finally the interaction was found to be significant at the .05 level, F (6, 321) = 2.63. Once again, an analysis of simple effects was performed to clarify the nature of the significant interaction, and, as in the previous case, it was accounted for by the H, M, and L subjects in

Table 5

Mean Shift Scores for Subjects Categorized into Three Levels when
Working as Individuals and with H, M, and L Partners in the
Discussion Condition

Subjects	Working as Individuals	Working with H Partners	Working with M Partners	Working with L Partners
H	+.80 (n=30)	+1.18 (n=34)	-3.27 (n=26)	-3.43 (n=21)
M	+.20 (n=25)	+4.96 (n=26)	+.72 (n=36)	-.20 (n=25)
L	+2.13 (n=32)	+12.71 (n=21)	+8.24 (n=25)	+2.63 (n=32)

the control condition. No significant difference was found for this group of subjects.

Regarding the other significant findings, subjects were ordered from smallest shift to largest shift as follows: (1) H subjects--conservative shift, (2) M subjects--risky shift, (3) L subjects--risky shift. For the columns, subjects were ordered from smallest shift to largest shift as follows: (1) H, M, and L subjects paired with L partners--conservative shift, (2) H, M, and L subjects working alone--risky shift, (3) H, M, and L subjects paired with M partners--risky shift, (4) H, M, and L subjects paired with H partners--risky shift.

Kramer's adaptation of Duncan's multiple-range test was em-

ployed to further analyze and clarify these findings. All sig-
nificant findings reported are at the .05 level of confidence.
For Row 1 of Table 5, it was found that H subjects working with
H partners showed a significant difference in shift from both H
subjects paired with M partners and H subjects paired with L
partners. H subjects paired with H partners exhibited a risky
shift, while H subjects paired with either M or L partners showed
a conservative shift. No other comparisons proved to be signi-
ficant.

Row 2 of Table 5 is considered next. The only significant
difference was found between M subjects working with H partners
(risky shift) and M subjects working with L partners (conserva-
tive shift).

For Row 3 of Table 5: (1) L subjects working alone (risky
shift) differed significantly from L subjects working with H
partners (risky shift) and L subjects working with M partners
(risky shift). Both L subjects working with H partners and L
subjects working with M partners exhibited larger shifts in the
risky direction than did L subjects working alone. They did not
differ significantly from L subjects paired with L partners
(risky shift). (2) L subjects working with L partners (risky
shift) were found to differ significantly from L subjects work-
ing with H partners (risky shift) and L subjects working with M
partners (risky shift). Both L subjects working with H partners

and L subjects working with M partners showed larger shifts in the risky direction than did L subjects working with L partners. All other comparisons were not significantly different.

For Column 1 of Table 5: Kramer's test indicates that H, M, and L subjects working alone do not differ significantly from one another.

The only significant difference in Column 2 is in the form of a greater risky shift for L subjects working with H partners than for either H subjects working with H partners or M subjects working with H partners. H subjects paired with H partners (risky shift) do not differ significantly from M subjects paired with H partners (risky shift).

In Column 3 of Table 5, it was found that L subjects paired with M partners (risky shift) differed significantly from both H subjects paired with M partners (conservative shift) and M subjects paired with M partners (risky shift). L subjects working with M partners were shifting in the risky direction to a greater extent than M subjects working with M partners. H subjects working with M partners (conservative shift) did not differ significantly from M subjects working with M partners (risky shift).

The only significant difference in Column 4 is between L subjects working with L partners (risky shift) and H subjects working with L partners (conservative shift).

The remaining analyses deal with the various satisfaction

measures taken during the third part of the test session.
Scores for subjects working alone are found only for the first
item since the remaining items deal with the group experience.
These analyses are designed to determine whether there are dif-
ferences in satisfaction corresponding to the differences in
risk taking shifts.

Mean satisfaction scores for Item 1 for H, M, and L subjects
working alone or with H, M, and L partners in the consensus con-
dition appear in Table 6. Item 1 for subjects working alone read
as follows: "To what extent do you feel satisfied with the de-
cisions you have just made?" The corresponding item for subjects

Table 6

Mean Satisfaction Scores (Item 1) for Subjects Categorized into
Three Levels when Working as Individuals and with H, M, and L
Partners in the Consensus Condition

Subjects	Working as Individuals	Working with H Partners	Working with M Partners	Working with L Partners
H	5.93 (n=30)	6.13 (n=38)	5.70 (n=30)	5.92 (n=36)
M	5.88 (n=25)	5.47 (n=30)	5.88 (n=40)	5.44 (n=34)
L	5.75 (n=32)	5.58 (n=36)	5.50 (n=34)	6.07 (n=42)

working in pair-groups in the consensus condition read: "To
what extent do you feel satisfied with the decisions reached by
you and your partner after discussion?" All subjects responded
on a seven-point scale (1 = definitely dissatisfied, 7 = defi-
nitely satisfied). The analysis of these scores revealed no sig-
nificant differences.

Mean satisfaction scores for Item 1 for H, M, and L subjects
working alone or with H, M, or L partners in the discussion con-
dition are presented in Table 7. Item 1 for subjects in the dis-
cussion condition was as follows: "To what extent do you feel
satisfied with the decisions you have just made after discussing
the problems with your partner?" The same seven-point scale

Table 7

Mean Satisfaction Scores (Item 1) for Subjects Categorized into
Three Levels when Working as Individuals and with H, M, and L
Partners in the Discussion Condition

Subjects	Working as Individuals	Working with H Partners	Working with M Partners	Working with L Partners
H	5.93 (n=30)	5.88 (n=34)	6.08 (n=26)	5.86 (n=21)
M	5.88 (n=25)	5.73 (n=26)	5.89 (n=36)	5.72 (n=25)
L	5.75 (n=32)	6.10 (n=21)	6.08 (n=25)	6.03 (n=32)

(described above) was presented to the subjects for their responses. There were no significant differences.

Item 2 for subjects in both the consensus and discussion conditions was: "To what extent would you like to work with your partner again on a similar task?" The mean satisfaction scores for this item for H, M, and L subjects working with H, M, or L partners in the consensus condition are given in Table 8. The mean satisfaction scores for the same item for H, M, and L sub-

Table 8

Mean Satisfaction Scores (Item 2) for Subjects Categorized into
Three Levels when Working with H, M, and L Partners in the
Consensus Condition

Subjects	Working with H Partners	Working with M Partners	Working with L Partners
H	5.24 (n=38)	4.90 (n=30)	5.36 (n=36)
M	5.13 (n=30)	5.30 (n=40)	4.88 (n=34)
L	5.19 (n=36)	5.09 (n=34)	5.55 (n=42)

jects working with H, M, or L partners in the discussion condition are given in Table 9. Subjects in both the consensus and discussion conditions made their responses to this item on a

seven-point scale (1 = definitely do not want to work with part-
ner again, 7 = definitely want to work with partner again).
Separate analyses of the scores appearing in Tables 8 and 9 re-
vealed no significant differences.

Table 9

Mean Satisfaction Scores (Item 2) for Subjects Categorized into
Three Levels when Working with H, M, and L Partners in the
Discussion Condition

Subjects	Working with H Partners	Working with M Partners	Working with L Partners
H	5.21 (n=34)	5.38 (n=26)	5.33 (n=21)
M	5.23 (n=26)	5.14 (n=36)	5.16 (n=25)
L	5.38 (n=21)	5.04 (n=25)	5.06 (n=32)

Item 3 for subjects in the consensus condition read: "I
think that my partner would support the decisions that we have
just made..." The corresponding item for subjects in the discus-
sion condition read: "I think that my partner would support the
decisions I have just made..." Responses to this item were made
on a five-point scale (1 = not at all, 5 = 100 per cent). Mean
scores for Item 3 for subjects in the consensus condition are

given in Table 10. No significant differences were revealed by

Table 10

Mean Satisfaction Scores (Item 3) for Subjects Categorized into
Three Levels when Working with H, M, and L Partners in the
Consensus Condition

Subjects	Working with H Partners	Working with M Partners	Working with L Partners
H	3.84 (n=38)	3.50 (n=30)	3.53 (n=36)
M	3.63 (n=30)	3.78 (n=40)	3.50 (n=34)
L	3.64 (n=36)	3.56 (n=34)	3.74 (n=42)

the analysis of these scores. Mean scores for Item 3 for sub-
jects in the discussion condition are given in Table 11. Once
again, the analysis of these scores indicated no significant
differences.

Table 11

Mean Satisfaction Scores (Item 3) for Subjects Categorized into
Three Levels when Working with H, M, and L Partners in the
Discussion Condition

Subjects	Working with H Partners	Working with M Partners	Working with L Partners
H	3.26 (n=34)	3.31 (n=26)	3.24 (n=21)
M	3.31 (n=26)	3.53 (n=36)	3.28 (n=25)
L	2.95 (n=21)	3.48 (n=25)	3.53 (n=32)

Item 4 for subjects in the consensus condition was as follows: "I would support the decisions my partner and I have just made..." The corresponding item for subjects in the discussion condition read: "I would support the decisions I have just made ..." The five-point scale described above was presented to the subjects for their responses to this item. Mean scores for Item 4, consensus condition, are given in Table 12. The analysis of these scores revealed no significant differences among these subjects.

Table 12

Mean Satisfaction Scores (Item 4) for Subjects Categorized into
Three Levels when Working with H, M, and L Partners in the
Consensus Condition

Subjects	Working with H Partners	Working with M Partners	Working with L Partners
H	4.00 (n=38)	3.63 (n=30)	3.50 (n=36)
M	3.77 (n=30)	3.70 (n=40)	3.68 (n=34)
L	3.58 (n=36)	3.65 (n=34)	3.83 (n=42)

The mean scores for Item 4, discussion condition, are presented in Table 13. Again, there were no significant differences.

Table 13

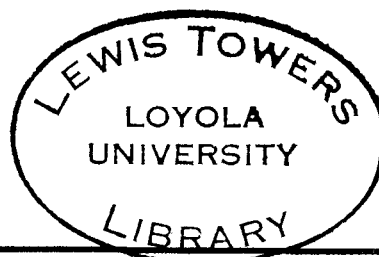Mean Satisfaction Scores (Item 4) for Subjects Categorized into
Three Levels when Working with H, M, and L Partners in the
Discussion Condition

Subjects	Working with H Partners	Working with M Partners	Working with L Partners
H	4.15 (n=34)	3.96 (n=26)	4.14 (n=21)
M	4.12 (n=26)	3.86 (n=36)	3.92 (n=25)
L	6.62 (n=21)	4.12 (n=25)	3.97 (n=32)

Item 5 for subjects in both the consensus and discussion conditions read as follows: "The discussion with my partner was..." Responses to this item were made on a six-point scale (1 = definitely limited, 6 = quite free). The mean scores for subjects in the consensus condition are given in Table 14.

Table 14

Mean Satisfaction Scores (Item 5) for Subjects Categorized into Three Levels when Working with H, M, and L Partners in the Consensus Condition

Subjects	Working with H Partners	Working with M Partners	Working with L Partners
H	4.95 (n=38)	5.00 (n=30)	4.83 (n=36)
M	5.00 (n=30)	5.00 (n=40)	4.65 (n=34)
L	5.00 (n=36)	4.85 (n=34)	4.74 (n=42)

Only the interaction was found to be significant beyond the .01 level, F (4, 311) = 8.76. An analysis of simple effects was performed to further analyze this finding. None of the values of F proved to be significant. The significant interaction seems to be accounted for by M subjects who exhibit equal satisfaction with both H and M partners, but are relatively dissatisfied when paired with L subjects as partners.

The mean scores for Item 5 for subjects in the discussion condition are presented in Table 15. No significant differences were found when these scores were analyzed.

Table 15

Mean Satisfaction Scores (Item 5) for Subjects Categorized into Three Levels when Working with H, M, and L Partners in the Discussion Condition

Subjects	Working with H Partners	Working with M Partners	Working with L Partners
H	5.15 (n=34)	5.00 (n=26)	4.95 (n=21)
M	5.31 (n=26)	4.72 (n=36)	4.64 (n=25)
L	5.10 (n=21)	5.28 (n=25)	4.78 (n=32)

Item 6 for subjects in both the consensus and discussion conditions was as follows: "In the group (with my partner) I felt that..." Responses were made on a five-point scale (1 = I was to a great extent restrained in expressing my views, 4 = I expressed my views freely and was not limited in any way by my partner). Mean scores for this item for subjects in the consensus condition are given in Table 16. The analysis of these scores revealed a significant difference as a function of initial level of risk taking--H, M, L--at the .05 level of confidence,

F (2, 311) = 3.97. Subjects were ordered from the smallest amount of felt freedom to the greatest feeling of freedom as follows: (1) L subjects, (2) M subjects, (3) H subjects. Kramer's test revealed no significant differences among the various H, M, and L subjects.

Table 16

Mean Satisfaction Scores (Item 6) for Subjects Categorized into Three Levels when Working with H, M, and L Partners in the Consensus Condition

Subjects	Working with H Partner	Working with M Partner	Working with L Partner
H	3.71 (n=38)	3.57 (n=30)	3.61 (n=36)
M	3.53 (n=30)	3.63 (n=40)	3.56 (n=34)
L	3.42 (n=36)	3.32 (n=34)	3.48 (n=42)

Finally, the mean scores for Item 6 for subjects in the discussion condition are given in Table 17. No significant differences were revealed by the analysis of these scores.

Table 17

Mean Satisfaction Scores (Item 6) for Subjects Categorized into
Three Levels when Working with H, M, and L Partners in the
Discussion Condition

Subjects	Working with H Partners	Working with M Partners	Working with L Partners
H	3.68 (n=34)	3.69 (n=26)	3.48 (n=21)
M	3.69 (n=26)	3.61 (n=36)	3.68 (n=25)
L	3.81 (n=21)	3.72 (n=25)	3.53 (n=32)

CHAPTER VI

DISCUSSION

On the basis of the analyses of risk taking shift scores,
several of the hypotheses tested in this experiment have not been
supported in all cases. That is: (1) There was no overall dif-
ference between the discussion and the consensus conditions.
(2) In the consensus condition, H subjects paired with H partners
did not exhibit a risky shift. On the other hand, with the ex-
ception of the H subjects paired with H partners in the consen-
sus condition, subjects did exhibit shifts in the predicted di-
rections. That is: (a) subjects paired with partners whose
initial risk taking scores fall within the same range exhibited
a risky shift and (b) when initial scores fall within different
ranges, the more conservative partner became "riskier," whereas
the more risky partner became more conservative. The importance
of these findings, however, must be carefully qualified since all
differences were not significant and there is no overall differ-
ence among subjects working alone and subjects working in pair-
groups in the consensus condition and in the discussion condition.
Nevertheless, the results of this study indicate several points
of theoretical relevance.

To begin, there is no greater overall increase in risk tak-
ing for subjects working in pair-groups than for subjects working

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alone (Table 3). This finding is opposed to the findings of
Bem, Wallach, and Kogan (1965) and Wallach, Kogan, and Bem (1962,
1964) and apparently, to some extent, in agreement with the
findings of Flanders and Thistlethwaite (1967) and Bateson (1966).
The overall shift for H subjects, however, was not in the risky
direction but rather in the conservative direction. This would
not be expected on the basis of the findings of Flanders and
Thistlethwaite and Bateson. It is suggested here that, perhaps,
H risk takers have in a sense gone as high as they can and sub-
sequently become more conservative.

There must be some qualification of the above, however,
since different patterns exist. While there is no overall dif-
ference in risk taking among subjects working alone or in pair-
groups, (1) H subjects in the consensus condition (conservative
shift) differed significantly from H subjects working alone
(risky shift) and (2) H subjects in the consensus condition ex-
hibited a significantly larger shift in the risky direction than
did H subjects in the discussion condition. Further, L subjects
working alone showed a significantly smaller shift in the risky
direction than did L subjects in the consensus condition and in
the discussion condition. One factor of particular concern here
is the difference between H subjects working in pair-groups in
the consensus condition and H subjects working in pair-groups in
the discussion condition. According to Kogan and Wallach (1965),

these two conditions do not result in a difference in risk taking. The present study, on the other hand, indicates that there is a difference at least for H risk takers.

Another point of interest is that, in all of the analyses of risk taking scores, there appeared both risky and conservative shifts. As mentioned earlier, almost all previous research indicates that the shifts resulting in studies of this type are in the risky direction. Consequently, it would appear that the prediction that all subjects would not shift in the risky direction is at least partially confirmed. That is, all subjects did not shift in the predicted direction and the differences among groups of subjects were not all significant. For example, while the overall differences as a function of initial level of risk taking and of working alone or with H, M, and L partners were significant for both the consensus and discussion conditions (Tables 4 and 5), different patterns are revealed when the rows and columns are examined more closely. That is to say, when Kramer's test was employed, the differences found among the various H, M, and L subjects working alone and with H, M, and L partners were not the same in the two conditions (consensus and discussion). For example: while H subjects working with L partners in the consensus condition were found to differ significantly from H subjects working alone, H subjects working with L partners in the discussion condition were not found to differ

significantly from H subjects working alone.

One final point of concern was the finding that there were no significant differences between: (1) H subjects working alone and H subjects working with H partners, (2) M subjects working alone and M subjects working with M partners, (3) L subjects working alone and L subjects working with L partners. This seems to suggest that those theories that postulate explanatory concepts such as responsibility diffusion (Bem, Wallach, & Kogan, 1965; Wallach, Kogan, & Bem, 1962, 1964) or de-individuation (Festinger, Pepitone, & Newcomb, 1962) are inadequate to explain these results.

How then can these findings best be interpreted? It is not believed that Rettig's (1966) explanation of censure testing is appropriate since, as stated earlier, the problems used in this study did not involve ethical dilemmas. The suggestion of Flanders and Thistlethwaite (1967) also appears to be inadequate since all of the subjects in this experiment had an opportunity to increase their comprehension of the problem situations (either alone or with a partner) and significant differences in shift were found--some in the risky direction, others in the conservative direction. There remains, then, the explanation offered by Collins and Guetzkow (1964) that the presence of high risk takers in the group results in a risky shift. Within limits, this explanation appears to account for some of the findings

of this study.

Consider first the subjects in the consensus condition. To determine if Collins and Guetzkow (1964) are correct, it is necessary to look at those subjects whose partners were high risk takers. The three groups of subjects of concern are (1) H subjects working with H partners, (2) M subjects working with H partners, and (3) L subjects working with H partners. Kramer's test (1956) indicates significant differences among these three groups of subjects. H subjects paired with H partners, however, shifted in the conservative direction. The L subjects paired with H partners showed the greatest shift in the risky direction (greater than that for any other group of subjects), whereas M subjects paired with H partners were significantly different from all other subjects except L subjects paired with M partners. The explanation of Collins and Guetzkow (1965) is adequate only insofar as the most "extreme" pairing--L with H--is concerned. The same holds true for the discussion condition. The converse of this--that a conservative shift might be due to the presence of low risk takers in a group--seems to account for the most conservative shift in the consensus condition. That is, the greatest shift in the conservative direction was found for H subjects working with L partners. This, however, was not true in the discussion condition.

Very little can be gained from the satisfaction items ad-

ministered in this experiment. One of the items which yielded significant results (Item 6, Table 16) dealt with freedom in expressing one's views during the discussion. A significant difference was found to be a function of the initial level of risk taking. The subjects working in the consensus condition were ranked, from a feeling of most freedom to least freedom, as follows: (1) H subjects, (2) M subjects, (3) L subjects. It will be recalled that all H subjects working in pair-groups in the consensus condition exhibited a shift in the conservative direction. The implications of this finding, therefore, are not clear.

The other item (Item 5, Table 14) which yielded a significant finding in the form of a significant interaction also dealt with freedom. This seems to be accounted for by M subjects who exhibit equal satisfaction with H and M partners, but are relatively dissatisfied when paired with L partners. (This is true for subjects in the consensus condition, not for those in the discussion condition.)

If (1) a feeling of freedom is involved in de-individuation as suggested by Festinger, Pepitone, and Newcomb (1962) and (2) de-individuation accounts for an increase in risk taking; all subjects exhibiting a risky shift should have experienced a feeling of freedom regardless of initial level of risk taking or type of partner. Consequently, the analyses of the satisfaction items

fail to support an explanation of the findings in terms of de-individuation.

Finally, some consideration should be given to the objections raised by Kogan and Wallach (1967) to experiments which failed to obtain the risky shift phenomenon. Their criticisms were of (1) tasks that are not involving ones for the subjects, (2) lack of sufficient time for discussion, (3) two-person groups, and (4) subjects in different groups being within sight of one another. Since Kogan and Wallach appear to consider the dilemmas-of-choice questionnaire (which they constructed) to be an involving task for the subjects, the first criticism cannot be directed against this experiment. The second criticism, lack of sufficient time for discussion, is not appropriate either since no time limits were imposed on the subjects. The third and fourth criticisms are also questionable since, under these conditions, some of the significant shifts which were obtained were in the risky direction.

CHAPTER VII

SUMMARY

H, M, and L risk takers working alone and with H, M, and L partners in consensus and discussion conditions performed on the dilemmas-of-choice questionnaire and responded to various items designed to measure satisfaction. While all of the hypotheses were not confirmed, the main findings may be summarized as follows: (1) There was no greater overall increase in risk taking for subjects working in pair-groups than for subjects working alone. (2) H subjects in the consensus condition, however, were more conservative than H subjects in the discussion condition. (3) Subjects paired with partners of the same risk taking level did not exhibit any difference in risk taking than persons of the same level working alone. (4) Both risky and conservative shifts appeared. (5) The greatest shift in the risky direction occurred for L subjects working with H partners in both the consensus and discussion conditions, while the greatest shift in the conservative direction occurred for H subjects working with L partners in the consensus condition. The only position which explains these findings even partially is that offered by Collins and Guetzkow (1964) who argue that a risky shift is the result of the presence of H risk takers in the group. The reverse of this position, that a conservative shift is the result of the presence of L risk

takers in the group, offers a partial explanation of the conservative shift in the consensus condition.

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APPENDICES

APPENDIX A

The Dilemmas-of-Choice Questionnaire

OPINION QUESTIONNAIRE

Instructions:

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, which we might call X and Y. Alternative X is more desirable and attractive than alternative Y, but the probability of attaining or achieving X is less than that of attaining or achieving Y.

For each situation on the following pages, you will be asked to indicate the minimum odds of success you would demand before recommending that the more attractive or desirable alternative, X, be chosen.

Read each situation carefully before giving your judgment. Try to place yourself in the position of the central person in each of the situations. There are twelve situations in all. Please do not omit any of them.

Name _____

Age _____

Sex _____

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 life-time 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. Listed below are several probabilities or odds of the new company's proving financially sound.

Please check the <u>lowest</u> probability that you would consider acceptable to make it worthwhile for Mr. A to take the new job.

____ The chances are 1 in 10 that the company will prove financially sound.
____ The chances are 3 in 10 that the company will prove financially sound.
____ The chances are 5 in 10 that the company will prove financially sound.
____ The chances are 7 in 10 that the company will prove financially sound.
____ The chances are 9 in 10 that the company will prove financially sound.
____ Place a check here if you think Mr. A should <u>not</u> take the job no matter what the probabilities.

2. Mr. B, a 45-year-old accountant, has recently been informed by his physician that he has developed a severe heart ailment. The disease would be sufficiently serious to force Mr. B to change many of his strongest life habits--reducing his work load, drastically changing his diet, giving up favorite leisure-time pursuits. The physician suggests that a delicate medical operation could be attempted which, if successful, would completely relieve the heart condition. But its success could not be assured, and in fact, the operation might prove fatal.

Imagine that you are advising Mr. B. Listed below are several probabilities or odds that the operation will prove successful.

Please check the <u>lowest</u> probability that you would consider acceptable for the operation to be performed.

____ Place a check here if you think Mr. B should <u>not</u> have the operation no matter what the probabilities.
____ The chances are 9 in 10 that the operation will be a success.
____ The chances are 7 in 10 that the operation will be a success.
____ The chances are 5 in 10 that the operation will be a success.
____ The chances are 3 in 10 that the operation will be a success.
____ The chances are 1 in 10 that the operation will be a success.

3. Mr. C, a married man with two children, has a steady job that pays him about $6000 per year. He can easily afford the necessities of life, but few of the luxuries. Mr. C's father, who died recently, carried a $4000 life insurance policy. Mr. C would like to invest this money in stocks. He is well aware of the secure "blue-chip" stocks and bonds that would pay approximately 6% on his investment. On the other hand, Mr. C has heard that the stocks of a relatively unknown Company X might double their present value if a new product currently in production is favorably received by the buying public. However, if the product is unfavorably received, the stocks would decline in value.

Imagine that you are advising Mr. C. Listed below are several probabilities or odds that Company X stocks will double their value.

Please check the <u>lowest</u> probability that you would consider acceptable for Mr. C to invest in Company X stocks.

____ The chances are 1 in 10 that the stocks will double their value.
____ The chances are 3 in 10 that the stocks will double their value.
____ The chances are 5 in 10 that the stocks will double their value.
____ The chances are 7 in 10 that the stocks will double their value.
____ The chances are 9 in 10 that the stocks will double their value.
____ Place a check here if you think Mr. C should <u>not</u> invest in Company X stocks, no matter what the probabilities.

4. Mr. D is the captain of College X's football team. College X is playing its traditional rival, College Y, in the final game

of the season. The game is in its final seconds, and Mr. D's team, College X, is behind in the score. College X has time to run one more play. Mr. D, the captain, must decide whether it would be best to settle for a tie score with a play which would be almost certain to work or, on the other hand, should he try a more complicated and risky play which would bring victory if it succeeded, but defeat if not.

Imagine that you are advising Mr. D. Listed below are several probabilities or odds that the risky play will work.

Please check the <u>lowest</u> probability that you would consider acceptable for the risky play to be attempted.

____ Place a check here if you think Mr. D should <u>not</u> attempt the risky play no matter what the probabilities.
____ The chances are 9 in 10 that the risky play will work.
____ The chances are 7 in 10 that the risky play will work.
____ The chances are 5 in 10 that the risky play will work.
____ The chances are 3 in 10 that the risky play will work.
____ The chances are 1 in 10 that the risky play will work.

5. Mr. E is president of a light metals corporation in the United States. The corporation is quite prosperous, and has strongly considered the possibilities of business expansion by building an additional plant in a new location. The choice is between building another plant in the U. S., where there would be a moderate return on the initial investment, or building a plant in a foreign country. Lower labor costs and easy access to raw materials in that country would mean a much higher return on the initial investment. On the other hand, there is a history of political instability and revolution in the foreign country under consideration. In fact, the leader of a small minority party is committed to nationalizing, that is, taking over, all foreign investments.

Imagine that you are advising Mr. E. Listed below are several probabilities or odds of continued political stability in the foreign country under consideration.

Please check the <u>lowest</u> probability that you would consider acceptable for Mr. E's corporation to build a plant in that country.

____ The chances are 1 in 10 that the foreign country will remain politically stable.

___ The chances are 3 in 10 that the foreign country will remain
politically stable.
___ The chances are 5 in 10 that the foreign country will remain
politically stable.
___ The chances are 7 in 10 that the foreign country will remain
politically stable.
___ The chances are 9 in 10 that the foreign country will remain
politically stable.
___ Place a check here if you think Mr. E's corporation should
not build a plant in the foreign country, no matter what the
probabilities.

6. Mr. F is currently a college senior who is very eager to pur-
sue graduate study in chemistry leading to the Doctor of Philoso-
phy degree. He has been accepted by both University X and Uni-
versity Y. University X has a world-wide reputation for excel-
lence in chemistry. While a degree from University X would sig-
nify outstanding training in this field, the standards are so
very rigorous that only a fraction of the degree candidates
actually receive the degree. University Y, on the other hand, has
much less of a reputation in chemistry, but almost everyone ad-
mitted is awarded the Doctor of Philosophy degree, though the de-
gree has much less prestige than the corresponding degree from
University X.

     Imagine that you are advising Mr. F. Listed below are
several probabilities or odds that Mr. F would be awarded a de-
gree at University X, the one with the greater prestige.

     Please check the lowest probability that you would consider
acceptable to make it worthwhile for Mr. F to enroll in Univer-
sity X rather than University Y.

___ Place a check here if you think Mr. F should not enroll in
University X, no matter what the probabilities.
___ The chances are 9 in 10 that Mr. F would receive a degree
from University X.
___ The chances are 7 in 10 that Mr. F would receive a degree
from University X.
___ The chances are 5 in 10 that Mr. F would receive a degree
from University X.
___ The chances are 3 in 10 that Mr. F would receive a degree
from University X.
___ The chances are 1 in 10 that Mr. F would receive a degree
from University X.

7. Mr. G, a competent chess player, is participating in a national chess tournament. In an early match he draws the top-favored player in the tournament as his opponent. Mr. G has been given a relatively low ranking in view of his performance in previous tournaments. During the course of his play with the top-favored man, Mr. G notes the possibility of a deceptive though risky maneuver which might bring him a quick victory. At the same time, if the attempted maneuver should fail, Mr. G would be left in an exposed position and defeat would almost certainly follow.

Imagine that you are advising Mr. G. Listed below are several probabilities or odds that Mr. G's deceptive play would succeed.

Please check the <u>lowest</u> probability that you would consider acceptable for the risky play in question to be attempted.

___ The chances are 1 in 10 that the play would succeed.
___ The chances are 3 in 10 that the play would succeed.
___ The chances are 5 in 10 that the play would succeed.
___ The chances are 7 in 10 that the play would succeed.
___ The chances are 9 in 10 that the play would succeed.
___ Place a check here if you think Mr. G should <u>not</u> attempt the risky play, no matter what the probabilities.

8. Mr. H, a college senior, has studied the piano since childhood. He has won amateur prizes and given small recitals, suggesting that Mr. H has considerable musical talent. As graduation approaches, Mr. H has the choice of going to medical school to become a physician, a profession which would bring certain prestige and financial rewards; or entering a conservatory of music for advanced training with a well-known pianist. Mr. H realizes that even upon completion of his piano studies, which would take many more years and a lot of money, success as a concert pianist would not be assured.

Imagine that you are advising Mr. H. Listed below are several probabilities or odds that Mr. H would succeed as a concert pianist.

Please check the <u>lowest</u> probability that you would consider acceptable for Mr. H to continue with his musical training.

___ Place a check here if you think Mr. H should <u>not</u> pursue his musical training, no matter what the probabilities.

____ The chances are 9 in 10 that Mr. H would succeed as a concert pianist.

____ The chances are 7 in 10 that Mr. H would succeed as a concert pianist.

____ The chances are 5 in 10 that Mr. H would succeed as a concert pianist.

____ The chances are 3 in 10 that Mr. H would succeed as a concert pianist.

____ The chances are 1 in 10 that Mr. H would succeed as a concert pianist.

9. Mr. J is an American captured by the enemy in World War II and placed in a prisoner-of-war camp. Conditions in the camp are quite bad, with long hours of hard physical labor and a barely sufficient diet. After spending several months in this camp, Mr. J notes the possibility of escape by concealing himself in a supply truck that shuttles in and out of the camp. Of course, there is no guarantee that the escape would prove successful. Recapture by the enemy could well mean execution.

    Imagine that you are advising Mr. J. Listed below are several probabilities or odds of a successful escape from the prisoner-of-war camp.

    Please check the lowest probability that you would consider acceptable for an escape to be attempted.

____ The chances are 1 in 10 that the escape would succeed.
____ The chances are 3 in 10 that the escape would succeed.
____ The chances are 5 in 10 that the escape would succeed.
____ The chances are 7 in 10 that the escape would succeed.
____ The chances are 9 in 10 that the escape would succeed.
____ Place a check here if you think Mr. J should not try to escape no matter what the probabilities.

10. Mr. K is a successful businessman who has participated in a number of civic activities of considerable value to the community. Mr. K has been approached by the leaders of his political party as a possible congressional candidate in the next election. Mr. K's party is a minority party in the district, though the party has won occasional elections in the past. Mr. K would like to hold political office, but to do so would involve a serious financial sacrifice, since the party has insufficient campaign funds. He would also have to endure the attacks of his political opponents in a hot campaign.

Imagine that you are advising Mr. K. Listed below are several probabilities or odds of Mr. K's winning the election in his district.

Please check the <u>lowest</u> probability that you would consider acceptable to make it worthwhile for Mr. K to run for political office.

____ Place a check here if you think Mr. K should <u>not</u> run for political office no matter what the probabilities.
____ The chances are 9 in 10 that Mr. K would win the election.
____ The chances are 7 in 10 that Mr. K would win the election.
____ The chances are 5 in 10 that Mr. K would win the election.
____ The chances are 3 in 10 that Mr. K would win the election.
____ The chances are 1 in 10 that Mr. K would win the election.

11.   Mr. L, a married 30-year-old research physicist, has been given a five-year appointment by a major university laboratory. As he contemplates the next five years, he realizes that he might work on a difficult, long-term problem which, if a solution could be found, would resolve basic scientific issues in the field and bring high scientific honors. If no solution were found, however, Mr. L would have little to show for his five years in the laboratory, and this would make it hard for him to get a good job afterwards. On the other hand, he could, as most of his professional associates are doing, work on a series of short-term problems where solutions would be easier to find, but where the problems are of lesser scientific importance.

Imagine that you are advising Mr. L. Listed below are several probabilities or odds that a solution would be found to the difficult, long-term problem that Mr. L has in mind.

Please check the <u>lowest</u> probability that you would consider acceptable to make it worthwhile for Mr. L to work on the more difficult long-term problem.

____ The chances are 1 in 10 that Mr. L would solve the long-term problem.
____ The chances are 3 in 10 that Mr. L would solve the long-term problem.
____ The chances are 5 in 10 that Mr. L would solve the long-term problem.
____ The chances are 7 in 10 that Mr. L would solve the long-term problem.
____ The chances are 9 in 10 that Mr. L would solve the long-term problem.

___ Place a check here if you think Mr. L should <u>not</u> choose the long-term, difficult problem, no matter what the probabilities

12. Mr. M is contemplating marriage to Miss T, a girl whom he has known for a little more than a year. Recently, however, a number of arguments have occurred between them, suggesting some sharp differences of opinion in the way each views certain matters. Indeed, they decide to seek professional advice from a marriage counselor as to whether it would be wise for them to marry. On the basis of these meetings with a marriage counselor, they realize that a happy marriage, while possible, would not be assured.

Imagine that you are advising Mr. M and Miss T. Listed below are several probabilities or odds that their marriage would prove to be a happy and successful one.

Please check the <u>lowest</u> probability that you would consider acceptable for Mr. M and Miss T to get married.

___ Place a check here if you think Mr. M and Miss T should <u>not</u> marry, no matter what the probabilities.

___ The chances are 9 in 10 that the marriage would be happy and successful.

___ The chances are 7 in 10 that the marriage would be happy and successful.

___ The chances are 5 in 10 that the marriage would be happy and successful.

___ The chances are 3 in 10 that the marriage would be happy and successful.

___ The chances are 1 in 10 that the marriage would be happy and successful.

APPENDIX B

Instructions Given to Subjects in the Control, Consensus, and
Discussion Conditions for the Second Administration of
the Dilemmas-of-Choice Questionnaire

Control Condition

On the following pages, you will find the same series of
everyday-life situations as those described to you in the first
opinion questionnaire. Both the items and instructions remain
exactly the same. The instructions, once again, are as follows:

The central person in each situation is faced with a choice
between two alternative courses of action, which we might call X
and Y. Alternative X is more desirable and attractive than al-
ternative Y, but the probability of attaining or achieving X is
less than that of attaining or achieving Y.

For each situation on the following pages, you will be asked
to indicate the minimum odds of success you would demand before
recommending that the more attractive or desirable alternative,
X, be chosen.

Read each situation carefully before giving your judgment.
Try to place yourself in the position of the central person in
each of the situations. There are twelve situations in all.
Please do not omit any of them.

Consensus Condition

On the following pages, you will find the same series of
everyday-life situations as those described to you in the first
opinion questionnaire. The central person in each situation is
faced with a choice between two alternative courses of action,
which we might call X and Y. Alternative X is more desirable and
attractive than alternative Y, but the probability of attaining
or achieving X is less than that of attaining or achieving Y.

You are to discuss with your partner each of the situations
on these pages. In every case, you are to discuss the situation
until you both feel that you have had an opportunity to complete-
ly indicate to your partner the minimum odds of success you would

demand before recommending that the more attractive or desirable alternative, X, be chosen. Your discussion should involve a statement of your reasons for holding this opinion and a discussion of them rather than a mere statement of your opinion. As a pair, you must then decide on a single response to the statement for both of you. In other words, you must arrive at a unanimous decision.

Read each statement carefully before discussing it with your partner. Try to place yourself in the position of the central person in each of the situations. Immediately following your reading of the statement, discuss it with your partner and as a pair make a single response to the statement. Then go on to the next statement and follow the same procedure. There are twelve situations in all. Please do not omit any of them.

Discussion Condition

On the following pages, you will find the same series of everyday-life situations as those described to you in the first opinion questionnaire. The central person in each situation is faced with a choice between two alternative courses of action, which we might call X and Y. Alternative X is more desirable and attractive than alternative Y, but the probability of attaining or achieving X is less than that of attaining or achieving Y.

You are to discuss with your partner each of the situations on these pages. In every case, you are to discuss the situation until you both feel that you have had an opportunity to completely indicate to your partner the minimum odds of success you would demand before recommending that the more attractive or desirable alternative, X, be chosen. Your discussion should involve a statement of your reasons for holding this opinion and a discussion of them rather than a mere statement of your opinion.

Read each statement carefully before discussing it with your partner. Try to place yourself in the position of the central person in each of the situations. Immediately following your reading of the statement, discuss it with your partner. Following your discussion, you should each individually and privately indicate your responses to the item. Then go on to the next statement and follow the same procedure. There are twelve situations in all. Please do not omit any of them.

APPENDIX C

Satisfaction Items Administered to Subjects in the Control, Consensus, and Discussion Conditions

Control Condition

Please answer the following question by placing a check on the line in front of the one statement which best expresses your opinion. This question should be answered in regard to your second responses to the opinion questionnaire.

To what extent do you feel satisfied with the decisions you have just made?

___ definitely satisfied
___ fairly strongly satisfied
___ slightly satisfied
___ feel neutral about them
___ slightly dissatisfied
___ fairly strongly dissatisfied
___ definitely dissatisfied

Consensus Condition

Please answer the following questions by placing a check on the line in front of the one statement which best expresses your opinion.

To what extent do you feel satisfied with the decisions reached by you and your partner after discussion?

___ definitely satisfied
___ fairly strongly satisfied
___ slightly satisfied
___ feel neutral about them
___ slightly dissatisfied
___ fairly strongly dissatisfied
___ definitely dissatisfied

To what extent would you like to work with your partner again on a similar task?

___ definitely want to work with partner again
___ fairly strong desire to work with partner again
___ slight desire to work with partner again
___ feel neutral about it
___ slight desire not to work with partner again
___ fairly strong desire not to work with partner again
___ definitely do not want to work with partner again

I think my partner would support the decisions that we have just made

___ not at all
___ to a slight extent
___ generally
___ to a great extent
___ 100 per cent

I would support the decisions my partner and I have just made

___ not at all
___ to a slight extent
___ generally
___ to a great extent
___ 100 per cent

The discussion with my partner was

___ definitely limited
___ somewhat limited
___ slightly limited
___ slightly free
___ somewhat free
___ quite free

In the group (with my partner), I felt that

___ I expressed my views freely and was not limited in any way by
    my partner
___ I expressed my views somewhat freely and was generally not
    limited in any way by my partner
___ I was somewhat restrained in expressing my views
___ I was to a great extent restrained in expressing my views

Discussion Condition

Please answer the following questions by placing a check on the line in front of the one statement which best expresses your opinion.

To what extent do you feel satisfied with the decisions you have just made after discussing the problems with your partner?

____ definitely satisfied
____ fairly strongly satisfied
____ slightly satisfied
____ feel neutral about them
____ slightly dissatisfied
____ fairly strongly dissatisfied
____ definitely dissatisfied

To what extent would you like to work with your partner again on a similar task?

____ definitely want to work with partner again
____ fairly strong desire to work with partner again
____ slight desire to work with partner again
____ feel neutral about it
____ slight desire not to work with partner again
____ fairly strong desire not to work with partner again
____ definitely do not want to work with partner again

I think that my partner would support the decisions that I have just made

____ not at all
____ to a slight extent
____ generally
____ to a great extent
____ 100 per cent

I would support the decisions I have just made

____ not at all
____ to a slight extent
____ generally
____ to a great extent
____ 100 per cent

The discussion with my partner was

____ definitely limited
____ somewhat limited
____ slightly limited
____ slightly free
____ somewhat free
____ quite free

In the group (with my partner), I felt that

____ I expressed my views freely and was not limited in any way by
my partner
____ I expressed my views somewhat freely and was generally not
limited in any way by my partner
____ I was somewhat restrained in expressing my views
____ I was to a great extent restrained in expressing my views

APPROVAL SHEET

The dissertation submitted by Mary Ann Poprick has been
read and approved by three members of the Department of Psy-
chology.

The final copies have been examined by the director of the
dissertation and the signature which appears below verifies the
fact that any necessary changes have been incorporated, and
that the dissertation is now given final approval with reference
to content, form, and mechanical accuracy.

The dissertation is therefore accepted in partial fulfill-
ment of the requirements for the Degree of Doctor of Philosophy.

Jan. 19 1968
Date

Paul J. von Ebers.
Signature of Adviser