THE EFFECTS OF GROUP SIZE AND SEX COMPOSITION
ON GROUP RISK TAKING AND DURATION

by

Robert Clifford Erikson

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STATEMENT BY AUTHOR

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SIGNED: Robert Erickson

APPROVAL BY THESIS DIRECTOR

This thesis has been approved on the date shown below:

William J. MacKINNON
WILLIAM J. MacKINNON
Professor of Psychology

October 28, 1971
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ABSTRACT

This study investigated the effects of group size and sex composition on increased risk taking as a result of group discussion, and on the amount of time required to reach consensus agreements, in terms of absolute duration and man-hours. Eighty-four males and eighty-four females solved a set of twelve dilemmas, first independently, and subsequently in sexually homogeneous discussion groups of size two, three, four, or five. Increased risk taking was found in all but one condition of a two by four factorial design. The degree of enhancement of risk taking increased as group size increased, but was unrelated to sex of group members. There was no effect on absolute duration of group discussion due either to group size or sex of members, although it was found that man-hours increased as a function of group size. Sex of members was not related to man-hours. It was also discovered that risk taking was unrelated to the length of time needed to reach agreement.
INTRODUCTION

A sizable body of recent social psychological research has focused on the frequently replicated finding that individuals, after making independent decisions among uncertain alternatives, accept greater levels of risk when re-deciding the issues as members of a decision-making group. While the occurrence of this phenomenon, variously termed the shift toward risk or risky shift, is no longer in doubt, its explanation remains a subject of controversy. The effect was first observed experimentally in 1965 by J. Stoner in an unpublished master's thesis. His sample was made up of graduate students in industrial management. Wallach, Kogan, and Bem (1962) speculated that such students might make more risky judgments in groups because the presence of their peers would serve to remind them that in the executive role to which they presumably aspire, willingness to take risks in making decisions would be a desirable characteristic. They further suggested that the effect might not hold across sex. This suggestion was based on the assumption that riskiness is probably a masculine value, and so would be less salient in a female group. Consequently, they replicated the Stoner study using a sample of undergraduate liberal arts students, both male and female, at a large state university. The results
were fairly conclusive in demonstrating the stability of the risky shift. In groups of six subjects, both male and female, the group decisions were more risky than the mean individual pre-discussion decisions. These findings have since been replicated virtually undiminished both in the United States and abroad (e.g., Rim, 1963; Bateson, 1966; Bell and Jamieson, 1970).

The majority of studies in this area have used one instrument, the "choice dilemmas" questionnaire published by Kogan and Wallach in 1964. Successes in producing the risky shift have been reported with other measures, however, such as test questions (Wallach, Kogan, and Bem, 1964) and games of chance (Blank, 1968; Pruitt and Teger, 1969). Even among those using the questionnaire there has been distinct methodological variability. Some investigators (e.g., Vidmar, 1970; Jellison and Riskind, 1970) have deleted items 5 and 12, which consistently elicit a conservative shift. Others (Marquis, 1962; Rim, 1963) have shortened the questionnaire to six items, and Bateson (1966) used only five. As a result, it is often difficult to compare quantitatively the results of these investigators, although all achieved a shift in the risky direction.

In spite of a proliferation of research publications, some potentially important questions remain unanswered. Among these are the effects of group size, and a comparison of sex differences across a size range.
Although Wallach et al. (1962) reported no sex differences, groups of only one size (six) were used. If there are, in fact, sex differences, it may be that these would appear as an interaction with group size. Wallach et al. (1964), for example, claimed that female discussants were less interested in maximizing gain than in including all group members in the decision-making task. This may imply that with an increasing number of females, there will be correspondingly less attention directed toward the task items and more directed toward the co-members. In that case, enhancement of risk taking might be expected to be inhibited, even to the point of a conservative shift. Males, on the other hand, appear to be motivated by more task-related considerations. The theories which follow would thus predict increased risk taking with increased size.

A further aspect of group decision-making in the risk taking context is the temporal dimension. Collins and Guetzkow (1964) have concluded that as groups increase in size, the number of man-hours required to reach agreement also increases. If this conclusion is correct, it should be particularly apparent in the present study, wherein twelve consensual agreements must be reached by the group. Nevertheless, it is also possible that the absolute amount of time required for discussion by groups may not vary as a function of size. It may well be that forces of social
influence will resist protracted argument by a minority, and almost certainly would militate against a lone deviant. Furthermore, the *ad hoc* nature of these groups should serve to reduce further any long disputation, presumably a source of stress. Clearly, these two predictions relating to the time dimension need not be mutually exclusive, since man-hours would increase multiplicatively as a function of group size, whereas duration of discussion would not.

Considerations of group size and group discussion duration both have relevance for the various explanatory mechanisms proposed to account for the risky shift. One explanation, supported by Wallach et al. (1964) is that in a group, individuals tend to perceive responsibility for the decision as being diffused among all the members, with each individual being less than directly accountable. The restraint of accountability being removed, persons more freely recommend the risky course of action at lower probabilities of success. If this hypothesis is accurate, then larger groups should be able to diffuse responsibility more readily, and more "thinly," than smaller groups. Consequently, larger groups would be expected to endorse greater risk.

An alternative hypothesis proposed by Brown (1965) is that in Western culture, risk taking is a desirable attribute, and so would have positive social value. When members discover, in the course of group discussion, that
they are conservative relative to some of their peers, they will shift to the risky end of the spectrum to realign themselves with cultural expectations. Since risk taking is also, by this argument, conceivably a masculine virtue, the shift should be greater for males than for females. This prediction, however, has not been confirmed by research to date. The prediction of greater risk taking in larger groups is fairly clear under this hypothesis, since it would seem to follow that as group size increases, the probability of an extremely risky position being represented would also increase, thus setting a more extreme example.

A modification of the value hypothesis is presented by Jellison and Riskind (1970), based on Festinger's theory of social comparison processes. Jellison and Riskind note that persons tend to attribute an ability component to decision-making, such that if another person opts for high risk, he may be perceived to be acting in a manner congruent with high ability and confidence. In comparison to others, Festinger (1954) suggests that "the individual is oriented toward some point on the ability continuum slightly better than . . . the performance of those with whom he is comparing himself [p. 126]." This idea, combined with the proposal that risk taking is a perceived measure of ability, suggests that the individual revises his risk-taking level upward when confronted with
more-risky group members. The social comparison approach does not appear to contradict results predicted under the value hypothesis, but rather to provide a firmer and more general theoretical foundation.

A third general approach, presented by Bateson (1966), is that greater risk taking in the group is a function of the potentially greater amount of information made available to the group through discussion. If this is so an increase in the number of sources of information should lead to more information being divulged, resulting in concomitantly greater risk being advocated. Bateson assumes that the individual will be cautious in his initial encounter with the questionnaire material, having only his own information available to him. In the group context, he has in addition the combined experience and information of his co-members as well. Although various investigators have used groups of varying size (e.g., Pruitt and Teger, 1969, 4- and 5-man groups; Wallach et al., 1962, 6-man groups), no one has studied the variable systematically in its own right.

The question of discussion duration has also arisen with respect to the problem of explanation. Bateson (1966) suggested that the length of time required by a group should be a rough measure of the amount of information presented during discussion. In accord with his hypothesis, risk taking should be positively correlated with the
amount of time needed for agreement. Bateson did not test this proposal, however, since in his research the subjects were told roughly how much time to take in discussion.

Brown's value hypothesis makes no clear prediction on this question, but presumably, the dominant value in the group should manifest itself more readily if there are more persons present who espouse it. A finding in line with Bateson's speculation would therefore present a problem for the Brown position.

The responsibility-diffusion hypothesis would similarly predict that greater risk taking would be associated with shorter duration. In a brief discussion, the affective bonds presumed to be associated with responsibility diffusion must ipso facto be easily formed, and so could be expected to have enhanced effect.

The present experiment was designed to answer some of the above questions by exploring further the relationships between group composition and risk taking, and group composition and time needed for agreement. It should be noted that the groups in this study were ad hoc aggregates of strangers, and so may lack the stability and resiliency of established groups more commonly encountered in the natural environment (Hall and Williams, 1966).

The hypotheses to be tested are the following:

1. That the extent of the risky shift will increase as a function of group size.
2. That there will be an interaction between group size and sex composition such that for the male groups, size will be directly related to risk taking, while for the female groups this relationship will not hold.

3. That duration of group discussion will be related to the extent of the shift toward risk.

4. That absolute duration will be unrelated either to group size or to sex composition.

5. That man-hours consumed will increase as a function of group size but not as a function of sex.
METHOD

Subjects
A total of 168 volunteers, 84 males and 84 females, were recruited from introductory psychology classes at The University of Arizona. All but four were of Anglo-American extraction, the others being two Negroes and two Mexican-Americans. The minority group members were not distinctive in any way in their performance.

Materials
The instrument used to assess risk taking was the Choice-Dilemmas Questionnaire (Kogan and Wallach, 1964; see Appendix A). It is composed of twelve dilemmas represented in one paragraph each. Subjects filled out these questionnaires by indicating the minimum odds of success they would require before advising the central figure in each case to adopt a risky course of action.

Procedure
Subjects were recruited for a "study in the general area of problem-solving and decision-making," and asked to sign up for participation at specified times. Since groups were made up of only like-sexed members, some time periods were reserved for males and others for females, in alternating sequence. Subjects were not told that they would be
participating in group discussions, nor were they given other particulars, except to plan for a maximum of two hours. Subjects reported to the psychology building, where they were met by the Experimenter (E) and led to individual cubicles equipped with table and chair. When all Ss had arrived, E thanked them for participating and passed out questionnaire booklets. After Ss had read the instructions and perused the first item, E said,

I would like to emphasize two points in the instructions. First, in each case, the less likely alternative is assumed to be more desirable or attractive, if it is successful. Second, in each case, you are to indicate the lowest odds of success you would be willing to accept and still recommend the less likely alternative. There is no time limit, so please work carefully. You may return to earlier items if you wish. Are there any questions?

If there were no questions, E set the door to each cubicle ajar and retired to the end of the hall. Although there was no time limit, nearly all Ss finished within twenty minutes, and no one took longer than thirty-five.

When all Ss were finished, E collected their booklets and led them through a previously closed door to an octagonal, carpeted room, in the center of which was a rectangular table with the appropriate number of chairs spaced evenly about it, and a new questionnaire booklet placed on the table in front of each chair. E directed the Ss to the chairs, and moved to one end of the table, where he stood to read the following:
The questionnaire in front of you is identical to the one you have just completed. The first session was to familiarize you with the material and the procedure, and to give you some idea of where you stand in each case. Your task now is to discuss together each item, and come up with a unanimous decision for each. Again, there is no time limit, but this time please take each item in turn and discuss it until you all agree on one answer. Do not go back to earlier items. This is not meant to be a memory task, so please reconsider each item in light of what your partners may say. You may proceed in any way you wish, I will not participate in the discussion at all. However, I will be present to answer any procedural questions which may arise. Do you have any questions?

Experimenter then retired to a corner of the room and engaged in unobtrusive tasks, noting the time as he did so. Occasionally a group would reach an impasse and turn to E for help. On those occasions, E said, "Well, most groups are able to come to agreement if they re-read the problem carefully and re-state their own positions as clearly as they can." When the group reached a solution to the final problem, E again noted the time and debriefed the subjects, concluding with a request that they not divulge the nature of the experiment to any potential subjects among their classmates.

There were twelve groups, six male and six female, of two, three, four, or five members each. No subject served in more than one group. The procedure outlined above was followed for all groups.
Scoring

Individual risk taking was scored as the sum of the probabilities selected on the twelve dilemmas. Each sum could vary between twelve and 120. The shift toward risk or toward conservatism was scored as the difference between the group risk taking measure and the mean individual score for the members in that particular group. A positive difference indicated a risky shift, while a negative difference indicated a conservative shift.

Group discussion duration was scored in minutes, accurate to .1 minute. Man-hour totals were computed by multiplying the discussion duration score by the number of members in the group.
RESULTS

Risky Shift

The mean shifts for each condition are shown in Figure 1. Thirty-six groups shifted in the risky direction, eleven shifted in the conservative direction, and one showed no change. A sign test using the normal approximation to the binomial indicated that these figures do indeed represent a risky shift ($N = 47$, $z = 3.49$, $p < .0005$). A two way analysis of variance (Table 1) revealed a significant main effect due to group size, with larger groups evincing a greater shift toward risk ($F = 3.29$, $3/40$ df, $p < .05$). The main effect due to sex composition did not reach conventional significance, but was suggestive ($F = 2.87$, $1/40$ df, $p < .10$). The interaction between group size and sex composition did not approach significance. Thus Hypothesis 1 is confirmed, but Hypothesis 2 is unsupported.

Duration and Man-Hours

The mean discussion duration and man-hour scores for each condition are shown in Figures 2 and 3, respectively. Analysis of the raw time scores (Table 2) indicates no effect due either to sex, group size, or the interaction. The large error term suggests that one might
Figure 1. Mean Shift Toward Risk as Function of Sex and Group Size
Table 1. Summary Analysis of Variance for Risky Shift Data

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (A)</td>
<td>1</td>
<td>32.5</td>
<td>2.88</td>
</tr>
<tr>
<td>Group Size (B)</td>
<td>3</td>
<td>37.3</td>
<td>3.29*</td>
</tr>
<tr>
<td>A x B</td>
<td>3</td>
<td>17.02</td>
<td>1.50</td>
</tr>
<tr>
<td>Error</td>
<td>40</td>
<td>11.33</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05.
Figure 2. Mean Duration as Function of Sex and Group Size
Figure 3. Mean Man-Hours as Function of Sex and Group Size
Table 2. Summary Analysis of Variance for Discussion Duration

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (A)</td>
<td>1</td>
<td>177.95</td>
<td>.55</td>
</tr>
<tr>
<td>Group Size (B)</td>
<td>3</td>
<td>407.29</td>
<td>1.26</td>
</tr>
<tr>
<td>A x B</td>
<td>3</td>
<td>211.96</td>
<td>.65</td>
</tr>
<tr>
<td>Error</td>
<td>40</td>
<td>322.86</td>
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best look elsewhere for the determinants of discussion duration. Hypothesis 4 is thus confirmed, in apparent disagreement with the information-exchange hypothesis.

A further analysis of the time data, in terms of man-hours, is presented in Table 3. The results of this analysis clearly support the contention of Collins and Guetzkow (1964), which they label as Proposition 2.3(b) (Hypothesis 5 in this study), that "a group of individuals working together will usually consume more man-hours when compared . . . to a group with fewer members [p. 31]." Since this conclusion was drawn without reference to the risk taking research, its generality is significantly increased by present findings.

Table 3. Summary Analysis of Variance for Man-Hour Data

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (A)</td>
<td>1</td>
<td>2,345.57</td>
<td>.64</td>
</tr>
<tr>
<td>Group Size (B)</td>
<td>3</td>
<td>19,074.12</td>
<td>5.21*</td>
</tr>
<tr>
<td>A x B</td>
<td>3</td>
<td>2,033.61</td>
<td>.55</td>
</tr>
<tr>
<td>Error</td>
<td>40</td>
<td>3,640.20</td>
<td></td>
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</table>

*p < .0005.
Duration and Risk Taking

To test the strength of association between the extent of the risky shift and discussion duration, which Bateson (1966) proposed, a Spearman rank-order correlation corrected for ties was computed from the data for all groups. The result was a rho of +.08, disconfirming Hypothesis 3, that a relationship exists between these measures. There is substantial reason to doubt that discussion duration is a satisfactory correlate of the amount of information presented, however. The Experimenter, monitoring all group discussions, found that virtually all groups underwent periods of digression, exploration of tangential matters, and iterative coverage of points of contention, none of which materially contributed to the overall amount of relevant information. Furthermore, the amount of time spent in these pursuits varied widely from group to group, and from item to item. The relationship between risk taking and available quantity of information, if it does in fact exist, is thus yet to be determined.
DISCUSSION

The results of this study indicate that the number of members in a group has a discernable effect both on the riskiness of decisions it may make compared to individuals, and on the efficiency, in terms of man-hours, with which the group might be expected to dispose of its task. The data also suggest that, within the limits established for this study, adding members to decision-making bodies will not appreciably protract discussion, although the possible benefits of greater membership are achieved at the cost of a loss in efficiency. The lack of differences due to sex of group members supports previous findings, though a larger sample, with less random error, might have thrown this into doubt. There is no support for the notion that group size would interact with sex of members in determining risk taking.

While it has been independently shown by Hinds (1965) and Brown (1965) that riskiness is a socially desirable propensity, present evidence indicates that it is not a predominantly masculine trait. This is further substantiated by a comparison of mean initial positions taken by males (66.2) and by females (67.1). The difference between groups is clearly trivial.
The mixed results obtained here add little to the vexing question concerning causative factors of the risky shift. The positive effect of group size can be construed as support either for the responsibility-diffusion hypothesis or for the value hypothesis and its modifications. While the information-exchange hypothesis seems less plausible, the results are not incongruent with it. Although the lack of relationship between time of discussion and risk taking presents a disconfirmation of one of Bateson's suggestions, it is not a crippling blow, as duration of discussion seemed to be determined by many factors, only one of which was the presentation of novel information. This lack of relationship also poses a difficulty for the value position, in that as more time elapses, the opportunity for a high-risk model to appear would seem to increase. With respect to the data, then, there appears to be little basis for choice among the various explanatory mechanisms postulated.

The overall picture which emerges is one of complexity. A monovariate model such as those advanced so far may simply be inadequate for the task. A suggestion by Zajonc (Zajonc, Wolosin, Wolosin, and Sherman, 1968) which is congenial to this writer is that a disjunctive approach may be more fruitful in establishing the necessary and sufficient conditions for the risky shift phenomenon. Indeed, it has not been conclusively demonstrated that the
group context itself is necessary for enhanced risk taking to occur. A profitable research approach in the future may be directed at the study of individuals. The complexities of the problem may require a more fine-grained analysis than continued group research can provide.
SUMMARY

An attempt was made to explicate the relationships among group size, sex of members, extent of risk taking, and group discussion duration. The hypothesis that the extent of risk taking is directly related to the size of the group was supported, although there was no effect due to sex of members or to a sex by group size interaction. Duration of group discussion was not related to any of the other variables, but man-hours were found to increase as group size increased, regardless of sex. Although these findings can be interpreted to support, on balance, the risk-as-value hypothesis, it was concluded that the basic question of causation was not materially clarified.
APPENDIX A

DILEMMAS OF CHOICE 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 in the following, you will be asked to indicate the minimum odds of success you would demand before recommending that the more attractive 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.
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 a liberal pension benefit 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 successful.

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

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

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

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

___ The chances are 7 in 10 that the company will prove financially sound.
The chances are 9 in 10 that the company will prove financially sound.

Place a check here if you think Mr. A should not take the new job, no matter what the probabilities.
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 workload, 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 lowest probability that you would consider acceptable for the operation to be performed.

___ Place a check here if you think Mr. B should not 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 lowest 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 not invest in Company X stocks, no matter what the probabilities.
4. Mr. D is 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 succeed, or to try a more complicated and risky play which could bring victory if it succeeded, but defeat if it failed.

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

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

___ Place a check here if you think Mr. D should not 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.

Please check the lowest probability that you would consider acceptable for Mr. E's corporation to build 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 pursue graduate study in chemistry leading to the Doctor of Philosophy degree. He has been accepted by both University X and University Y. University X has a worldwide reputation for excellence in chemistry. While a degree from University X would signify outstanding training in this field, the standards are so rigorous that only a small fraction of the degree candidates actually receive the degree. University Y, on the other hand, has a much less noted reputation in chemistry, but almost everyone admitted is awarded the Doctor of Philosophy degree, though the degree 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 the degree from University X, the one with the greater prestige.

Please check the lowest probability that you would consider acceptable for Mr. F to enroll in University 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 round 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 play with the top-favored man, Mr. G notes the possibility of a deceptive though risky maneuver. It could bring him quick victory but 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 **lowest** 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 work.
___ The chances are 3 in 10 that the play would work.
___ The chances are 5 in 10 that the play would work.
___ The chances are 7 in 10 that the play would work.
___ The chances are 9 in 10 that the play would work.
___ Place a check here if you think Mr. G should not 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 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 completing 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 lowest 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 not 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 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 be 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 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 funds for a campaign. He also would have to endure the attacks of his political opponent 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 **lowest** probability that you would consider acceptable for Mr. K to run for office.

__ Place a check here if you think Mr. K should **not** 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.
Mrs. 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 long-term, difficult 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 might 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 less 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 "lowest" 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 not choose the long-term 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. They decide to seek professional help from a marriage counselor as to whether it would be wise for them to marry. On the basis of these meetings with the 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 be a happy and successful one.

Please check the lowest 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 not 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.
REFERENCES


