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INDIVIDUAL AND GROUP RISK TAKING:
A CROSS-CULTURAL STUDY

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Every question with which we concern ourselves in psychology is ultimately concerned with two issues: reliability and validity. For researchers interested in cross-cultural research, reliability and validity assume an even more central role. The present study grew out of an interest in examining the reliability and validity of the risky-shift phenomenon in other cultures, both Western and non-Western. In other words, across a variety of relatively pan-cultural decision problems, could the tendency for groups to make decisions that are more risky than the average of the group members' individual decisions be demonstrated in non-Western as well as Western cultures? Moreover, we were interested in using the cross-cultural situation to examine the validity of Brown's (1965) risk as a value explanation of the risky-shift phenomenon and risk taking generally in cultures where the value of risk could be expected to differ from the value of risk in the United States of America.

In most cross-cultural research, the contributions (both material and non-material) of many people are vital to the ultimate success of the project. The present study is no exception. I am deeply indebted to Professor J. Misumi, Mr. T. Inoue, Mr. K. Hashiguchi, and all the staff of the Institute of Group Dynamics at Kyushu University, for advice and assistance during all phases of the study in Japan; to Professor Y. Tanaka, Gakushuin University, Tokyo, who generously supplied the Japanese instructions for the Semantic Differential; and to Miss Kyoko Iwata, who ably assisted with translations of the materials.
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Margaret R. Saville,
Honolulu,
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ABSTRACT

The aim of the present investigation was two-fold: (a) to test the generality of the risky-shift phenomenon in non-Western as well as Western cultures; (b) to test the plausibility of Brown's (1965) value of risk hypothesis (that the risky-shift phenomenon is in part determined by the extent to which problems engage cultural values) in two ways: (i) between cultures, deriving predictions concerning the value of risk from sociological and anthropological sources; and (ii) within cultures, by an examination of risk taking in relation to the evaluation of risk related concepts on several semantic differential scales.

Two hundred forty senior high school boys from large city high schools in Japan, the Philippines, and Australia, served as subjects for the experiment. Subjects first responded to semantic differential scales in a large group testing session. On subsequent days, second testing sessions comprised small group testing (5 persons per group) in which subjects first made individual decisions on each problem, followed by group discussion to consensus of each problem. Control groups were also employed in which individual decisions were made on two occasions one week apart. These procedures followed the basic experimental paradigm proposed by Wallach, Kogan, and Bem (1962). Risk scores were derived from 6 of the 12 Choice Dilemmas problems (Kogan & Wallach, 1964) judged to be relevant to the cultures studied.

Results indicated (a) limited generality of the risky-shift phenomenon in both Japan and the Philippines. Australian data indicated significant shifts to risk on some problems, and significant shifts to
conservatism on others. In addition, some problems failed to reveal shifts in either direction; (b) (i) that tests of Brown's hypothesis between cultures provided only partial support for experimental hypotheses tested. Although the country x problem interaction for initial decisions was highly significant ($p < .005$), examination of the basis of the interaction indicated that Australian subjects were significantly more risky ($p < .05$ and $p < .01$) on some problems, and tended ($p < .10$) to be more conservative on some problems, than Japanese and Filipino subjects. (ii) Within culture tests of Brown's hypothesis were performed only for Japanese and Australian subjects. Again, results only partially confirmed experimental hypotheses. Indications were that Australian high value of risk subjects more frequently ($p < .01$) made risky initial decisions than did low value of risk subjects. Similar analyses of Japanese data failed to reveal any significant differences.

Additional analyses of the data revealed that the strength or salience of cultural values was an important determinant of both the direction and magnitude of group shifts during discussion. Other indicators among the Japanese and Filipino data suggested the possible importance of social situational factors, particularly in the Philippines. Results of the investigation were discussed in terms of these additional findings, with special reference to Zajonc's (1966) notion of social facilitation and Brown's value of risk hypothesis. The importance of situational factors was discussed in terms of recent evidence (Gallimore, 1969). Implications of the present findings for future research were indicated throughout the discussion.
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CHAPTER I
INTRODUCTION

Since the beginning of history, man has been faced with the complex task of making decisions. Scientific study of this complex process, however, is of much more recent origin. Even more recent is the study of the complex ways in which groups of people make decisions, and of the sorts of decisions that they make. During the 1920's, Allport investigated the sorts of decisions that individuals made when participating in groups. The bulk of Allport's findings seemed to suggest that group decisions might be more moderate than individual decisions since, in the presence of a group, individuals tended to make less extreme responses on certain judgment tasks. There seemed to be some evidence, therefore, for the popular conception that groups by and large were more conservative than individuals.

The scientific acceptability of Allport's conclusions went virtually unchallenged until a recent study by Stoner (1961) reported that group decisions were riskier than the average of decisions made by individuals in a group. Moreover, the reliability of Stoner's original findings has been well substantiated in many subsequent studies (Kogan and Wallach, 1967). Correlated attempts to explain the determinants of this phenomenon, however, have not met with similar success. On purely logical grounds, an adequate explanation of the phenomenon must be able to account for both the direction and magnitude of risk taking across the diverse range of content of many decision situations. Moreover, both individual and group decisions should be predictable from any adequate theory. At the present time, Brown's (1965) explanation of the phenomenon,
that risk is dependent upon the extent to which cultural values are engaged in each of the decision situations, seems better able to encompass the majority of the findings. The adequacy of Brown's theory, and other competing explanations, are reviewed extensively in the following chapter.

Surprisingly enough, however, Brown's theory has not been subject to a direct experimental test to date. One aim of the present investigation was to fill this void. Further, a test of his theory was conducted in three different cultural settings - Japan, the Philippines, and Australia. The purpose of testing the theory cross-culturally was two-fold:

1. to investigate the scope and applicability of the theory to cultures in which values associated with risk may be quite different from similar values in the United States;

2. to test the generality of the group risk taking phenomenon in other cultural settings.

The major decision instrument employed in the investigation were selected items from Kogan and Wallach's (1964) Choice Dilemmas Task; cross-cultural values were assessed by use of Osgood et al.'s Semantic Differential technique. Subjects for the investigation were senior high school males of similar age from large urban high schools in Japan, the Philippines, and Australia.

Details of specific hypotheses tested and procedures employed are reported in the following two chapters. Results of the investigation, and their implications for present and future research and theory are discussed in the concluding chapters.
Since the aim of the present investigation was to study individual and group risk taking in relation to cultural values, the present review comprises, firstly, a comprehensive review of the group risk taking literature, and secondly, a review of studies purporting to identify important cultural values in each of the cultural settings involved. The major part of this chapter, therefore, falls naturally into two sections. A third section of the chapter will co-ordinate relevant conclusions and generalizations from the first two sections. A final section will present hypotheses derived from these conclusions and tested in the present investigation.

II. 1. Group Risk Taking

As we noted earlier, a phenomenon recently accorded much research interest in social psychology is the tendency for groups to make decisions that are riskier than the average of those decisions made by individual group members. The usual experimental paradigm involved a pretest in which individual decisions were made about a set of problems, group discussion (with or without consensus constraints) of each problem, followed by post-discussion individual assessment of each problem again. The group decisions were found to be almost always somewhat riskier than the average of the individual group members' decisions. Moreover, post-discussion individual decisions tended to be somewhat riskier than pre-discussion individual decisions (Kogan, Wallach, and Bem, 1962).
The generality of this phenomenon has been demonstrated across a variety of populations and types of decision problems. Stoner's original population (1961) employed business students, but psychiatric clinic teams (Siegel and Zajonc, 1967) and college student populations in England (Batsèon, 1966), France (Kogan and Doise, 1969), Israel (Rim, 1964), and the United States (Kogan, Wallach, and Bem, 1962; Teger and Pruitt, 1967) have also been employed, and similar findings have resulted. Kogan and Wallach's original research instrument was a set of hypothetical decision problems (The Choice Dilemmas Task) but other types of problems have also been used: choices among old college board items of varying levels of difficulty (Wallach, Kogan, and Bem, 1964); choices among various probabilities of painful side-effects in a study of the effects of various physiological stimulations (Bem, Wallach, and Kogan, 1965); and recently, Pruitt and Teger (1968) employed choices among various probability and variance preferences in group betting decisions. Finally, Rettig (1966), using predictive statements of unethical behavior as a risk taking measure has demonstrated that group discussion and the impersonal condition of the judgment led to an increase in predictions of unethical behavior. All studies have reported a consistent shift toward risk in the group situation irrespective of whether real or hypothetical decision making problems were employed. The reliability and generality of the risky-shift phenomenon, therefore, has been well substantiated.

In addition, another issue of some empirical importance to the generality of risk taking question has been re-emphasized recently by Slovic, Weinstein, and Lichenstein (1967). These authors pointed out the necessity of distinguishing the extent to which decisions made for oneself
are equivalent to those made on behalf of someone else. It will be recalled that the typical group risk-taking situation rests on the assumption that subjects, when making decisions for a hypothetical other person, will project their own risk preferences. Slovic et al. (1967) presented evidence which attested the validity of this assumption, at least as far as gambling decisions were concerned. A very recent study by Zaleska and Kogan (1969), however, indicated that the conditions under which subjects choose identical risk preferences for themselves as they would for others may be more complex. The results of their study indicated that if subjects initially made decisions for themselves, and subsequently made decisions for others, the decisions made for others tended to be more cautious. Where initially decisions were made for others instead of oneself, the tendency was for "others decisions" not to differ significantly from "self decisions," when comparisons were made across different experimental conditions. The point to be made with regard to this study is that there may be contaminating sequence effects in operation here, which could not be checked out because the opposite sequence of decision making was not included as part of any experimental condition.

Another study, however, which does not suffer from any of the above criticisms, by Wallach, Kogan; and Bem (1964) did indicate that subjects took fewer risks (chose simpler problems for lesser amounts of money) when problem-solving outcomes affected the earnings of others than when decisions were made entirely for oneself. Cautious decisions for others have also been reported by Rabow, Fowler, Bradford, Hofeller, and Shibuya (1966), when the object of the choice dilemmas task was re-cast as
father and brother. This study, however, has been criticized by proponents of the risky-shift school because it is argued that the problem becomes one of morality rather than simply risk-taking. Clearly, further research is needed on the basic question of whether decisions for oneself do differ from the decisions that one would make for another person.

II. 1.1. Determinants of Group Risk Taking

The preceding discussion illustrated that the risky-shift phenomenon, as it is commonly called, has considerable generality and reliability. More important than either of these factors in scientific discovery, however, is a scientifically adequate explanation of the determinants of the phenomenon. Unfortunately, no single explanation of the phenomenon enjoys unqualified acceptance; some theoretical explanations, however, seem to show greater promise than others. The major theoretical explanations will be reviewed shortly.

Before considering these theoretical explanations, however, a brief resume of the main findings to be accounted for would seem to be in order. Greater emphasis will be placed on findings from studies which have employed the hypothetical Choice Dilemmas Task because firstly, the bulk of the research has employed this instrument, and secondly, this research instrument is the focus of the present investigation. It should be noted, however, that findings derived from the use of other instruments are not categorically different from findings derived from use of the Choice Dilemmas Task.
Obviously, by far the most important finding to be able to predict from a knowledge of antecedent conditions is the risky-shift itself. In other words, what are the conditions under which a group will shift the focus of their decision, irrespective of the direction in which the shift might occur? Two other factors of equal importance, and possibly not independent of factors that will ultimately be exposed as crucial determinants of the risky-shift are:

1. the **direction** of both initial individual risk taking and subsequent group risk taking. The findings, to date, have consistently shown that at least two of the hypothetical decision problems elicit more conservative initial individual decisions, and more conservative subsequent shifts, while the remaining ten problems elicit more risky initial individual decisions and more risky subsequent shifts;

2. the **magnitude** of risk taking across initial individual decisions, and differential magnitudes of group induced shifts (see Kogan, Wallach, & Bem, 1962; Teger & Pruitt, 1967).

In summary, then, an adequate explanation of the relevant research findings must be able to account for the fact that a shift occurs at all, and given the conditions under which a group shift can be expected, the theory must then predict both the magnitude and direction of group shifts. It will be noted that, in the above discussion, it has been specified that both individual and group decisions should be predictable from a scientifically adequate theory. Although the logic of the situation does not demand that the magnitude and direction of individuals decisions be specifiable under the same experimental rubric, recent evidence suggests that factors controlling the magnitude of group shifts may also control
the magnitude of individual decisions (Teger & Pruitt, 1967). This evidence is important for Brown's (1965) theory, and will be considered in greater detail later in the discussion of the adequacy of his theory. At this stage, suffice it to say that any theory which ignores factors relevant to the determination of individual risk taking will have difficulty explaining the magnitude of group risk taking.

II. 1.2. The Risky Shift and Familiarization With Item Content

Turning now to the major theoretical explanations that have been proposed to account for the risky shift, Bateson (1966) argued that increased familiarity with issues should make people more willing to take risks on them, that is, the group shift may be attributable to increased familiarization with the items being discussed. In line with this argument, it was suggested that any procedure which will increase familiarity with a risk taking item will determine greater risk taking on this item, including procedures which are experienced by isolated individuals. Bateson's study raised an important issue, because it suggested that the risky-shift may be a pseudo group effect (Secord & Backman, 1964). This means, in effect, that if under appropriate circumstances risky-shifts of equivalent magnitude could be induced in isolated individuals, none of the variance could be attributable to a specific group effect.

In his study, Bateson had some subjects discuss five of the hypothetical decision problems and others write briefs on these items, noting all the points for and against the possible decisions. He found that risky-shifts of equivalent size were exhibited under both procedures, suggesting that the risky-shift may be a simple matter of familiarization with the items. Another study (Flanders & Thistlewaite, 1967), which
replicated Bateson's procedure with only slight modifications, produced essentially the same results. Acknowledging the theoretical importance of Bateson's and Flanders & Thistlewaite's findings, Pruitt & Teger (1967) have conducted a number of replications of both studies, using identical procedures and instructions, without finding any evidence for a risky shift under familiarization conditions. Considerable doubt, therefore, surrounds the explanation that group shifts could be attributable simply to increased familiarization with the item content. Moreover, it is difficult to see, at least without consideration of other factors, how familiarization with item content could determine the direction of group shifts. It is, however, feasible to speculate that, once the direction of the shift has been determined, increased information could help to contribute to the magnitude of the shift. In conclusion, while no ready explanation exists for the divergence of results noted above, it is obvious that additional research is warranted to clarify these discrepant findings.

II. 1.3. The Risky Shift and Diffusion of Responsibility

One of the major explanations which has been offered to account for a group shift, has been proposed by Kogan and Wallach (Kogan, Wallach, and Bem, 1962; Wallach, Kogan, and Bem, 1964; Kogan and Wallach, 1965; 1967). The essence of this explanation is that group experience causes people to become less anxious about the possible negative consequences of choosing a more risky alternative. It is assumed that group experience allays this anxiety because the sense of responsibility for a failure can be shifted from one's own shoulders to those of other group members. Hence, Kogan and Wallach speak of a diffusion or spreading of
responsibility in the group decision situation. In another place, Kogan and Wallach (1965), have further suggested that group interaction concerning risk taking seemed to promote the kind of affective interchange among members that would be expected to facilitate responsibility diffusion. The implication, here, is that under conditions which do not permit an affective interchange among members, responsibility diffusion should be inhibited, and hence, group shifts would also be inhibited.

This conclusion was arrived at by comparing groups that exchanged information as well as being constrained to reach a consensus, against groups that were permitted the usual discussion with consensus decision making methodology. The validity of this conclusion, however, has been seriously questioned by Teger & Pruitt (1967). Using the familiar Choice Dilemmas Task, they found that simple information exchange without consensus was sufficient to produce a shift toward risk. Where consensus constraints were not imposed on the group, a group shift was determined by average pre-exchange - post-exchange individual risk scores. In attempting to account for the differences between Kogan and Wallach's (1965) findings and their findings, Teger & Pruitt noted that an inspection of Kogan & Wallach's procedure in the information exchange condition would lead one to expect a group convergence on the mean for two reasons:

"(a) the groups were required to reach consensus. Under normal (discussion) conditions, such a requirement would cause many members to stand fast and argue for their own viewpoints in an effort to sway others in their direction. But in this case, the subjects were not permitted to communicate. Hence, the only strategy for achieving consensus that may
have seemed available to many subjects was to move toward the other group members; that is, toward the group average.

(b) the subjects were told that their recommendations 'should consist of what you think the group can agree on and what you think the group should agree on.' Given these instructions, it is not surprising that a risky shift failed to materialize, since the initial mean is the most obvious point on which the group can agree" (Teger & Pruitt, 1967, pp. 191-192).

As well as providing evidence that Kogan & Wallach's results may be attributable to the specific procedures employed, Teger & Pruitt's study seriously questions the necessity of "affective interchange" before group shifts can be induced. Diffusion of responsibility, accompanying the development of affective bonds among group members, therefore, appears not to be a crucial determinant of the group shift. It should be noted, however, that while information exchange without discussion did induce group shifts, the shift seemed to be enhanced when both exchange of information and discussion were employed in the one situation (Kogan & Wallach, 1967). As will be noted later, Kogan and Wallach have used this finding to underscore short-comings in Brown's (1965) theory. The point to be emphasized here, however, is that responsibility diffusion is not a necessary condition for the shift phenomenon per se. This is not to deny that it may be a factor which contributes to the obtained magnitude of the shift in group discussion, but this has yet to be proven.

The last point raises another, equally important, question concerning the adequacy of the diffusion of responsibility explanation. At the beginning of this chapter, it was argued that an adequate explanation of
the risky-shift phenomenon must encompass both the magnitude and
direction of the shift, as well as the shift itself. It was also noted
earlier that both conservative and risky group shifts have been found
consistently on some problems (for example, Kogan, Wallach, & Bem, 1962).
On any grounds, logical or otherwise, it is difficult to see how respon­sibility diffusion could, at one and the same time, predict both risky
and conservative shifts. Moreover, there appears to be no a priori
theoretical formulation from which to derive predictions about the mag­
nitude of shift. The diffusion of responsibility explanation, therefore,
falls short of an adequate explanation on at least two grounds.

Even if one were to consider the three criteria for adequacy of
an explanation, discussed earlier, too stringent a standard at this stage
of scientific discovery, the responsibility diffusion explanation gains
little strength from this relaxation. One reason for this is that, at no
stage, has the explanation been subject to direct experimental test. In
all of their studies, and especially in the one study designed specifi­
cally to test the responsibility diffusion hypothesis (Wallach, Kogan, &
Bem, 1964), post hoc inferences concerning responsibility diffusion con­
stitute the major supportive evidence. While the course of scientific
discovery typically follows something like an inference and test path,
post hoc inferences without experimental test at best constitute indirect
evidence. Among supporters of the responsibility diffusion explanation,
no attempt has been made to assess the extent to which felt responsibility
may change from an individual decision situation to a group decision
situation, although operationally it would not seem too difficult a task.
In conclusion, even if some process of responsibility diffusion could be demonstrated empirically, it is doubtful whether this process would be crucial in determining group shifts per se. That it may be a factor in determining the magnitude of group shifts is an empirical question, and one worthy of investigation since responsibility diffusion has, to date, occupied so important a position in the hierarchy of possible explanations.

II. 1.4. The Risky Shift and Cultural Values

After a comprehensive review of factors that could be relevant to the group risk taking question, Brown (1965) came to the conclusion that an adequate explanation of the group shift probably lay in an examination of the values important in each of the decision problems. In American society at least, it was suggested that risk and conservatism are valued, according to the circumstances. In terms of our present criteria for judging the adequacy of any explanation of the phenomenon, Brown's suggestion thus far would be able to cope with the direction of group shifts. Implicit in Brown's thinking also, although it is definitely not spelled out very clearly nor in any detail, is the notion that among subjects for whom a particular value is important, greater risk should be taken in the initial decision situation, given that the situation is one that initially engages risk. Conversely, among subjects for whom a particular value is not so important, less risky decisions should be made initially. The range and magnitude of individual decisions would, therefore, be dependent upon the extent to which a particular value is held in esteem.
To account for the actual shift, and probably to some extent for the magnitude of the group shift, Brown offered two suggestions. Firstly, he suggested that once a particular value was engaged, it would influence the flow of information so that more relevant information would be elicited supporting the value than opposing it. Moreover, since it is unlikely that any single member would possess all the information that objectively bears on the decision, the discussion would give each one some new reasons for moving toward the value engaged. It will be recognized that this suggestion is not far removed from Bateson's (1966) familiarization hypothesis, although Brown's suggestion is that other members of the group would provide the information, and that the information would be predominantly congruent with the engaged value.

As a second reason for the group shift in the direction of the value engaged, Brown noted that, "values are not specified, in advance, in terms of particular probabilities on the story problems" (Brown, 1965, p. 705). Since some evidence suggested (Hinds, 1962, cited by Brown, 1965) that on problems involving the value of risk, individuals typically regard themselves at least as risky as the average person before the discussion, the group discussion obviously serves at least one important purpose: to make known the actual distribution of group members' individual risk preferences. Because group discussion serves to acquaint members with one another's risk preferences, it follows logically that those members below the group average could no longer think of themselves as living up to the value of risk. So, Brown suggested that, under these circumstances, these subjects are more likely to change to riskier positions. Conversely, for problems that initially engage a value of
caution, individuals would initially guess that "others like themselves" would adopt somewhat less cautious risk preferences. In this situation, when subjects find that their position is more risky than, and therefore incongruent with, their particular value, a shift toward caution should be noted. These, therefore, are the essential features of Brown's theory; it should be emphasized at the outset, however, that Brown's suggestions are post hoc. But, Brown's suggestions do offer what appears to be a way of encompassing the present research findings by addressing the group shift, and its magnitude and direction. Whether or not the theory will stand critical and direct empirical test is a matter for future research. Directions for future research are implicit in each of the suggestions.

Studies conducted to test various of Brown's insights have not been numerous, but the relatively small amount of accumulated evidence is mostly consistent with his thinking. Two studies (Wallach & Wing, 1968; Levinger & Schneider, 1969) have replicated Hinds' (1962, cited by Brown) finding that when making individual decisions, subjects do feel that they are making a decision which is riskier (or more conservative depending on the problem) than their fellow students. Wallach & Wing (1968) studied only problems that had consistently produced a shift to risk, but Levinger & Schneider (1969) included all twelve decision problems in their study and obtained evidence that subjects think they are riskier than the average person on nine of the problems, and more conservative than the average person on three of the problems.

A second more important purpose of Levinger & Schneider's study was to provide direct evidence for the assumption that risk taking is positively valued. They argued that wherever risk is a positive value,
the risk preference that subjects report admiring most should be more risky than their own choice. This reasoning was supported by the results. In addition, this study showed that on items 5 and 12 (those that typically elicit a conservative shift), individuals believed that others would be more risky, but admired most a risk position that was not significantly different from their own position. These data represent fairly convincing indirect evidence for Brown's theory. However, as Levinger & Schneider noted, parallel investigation of the risk items did not show that the most admired risk preferences accorded with the magnitude of the group shifts normally obtained, using the national norms calculated by Pruitt & Teger (1967) for comparison purposes. In other words, not all items on which risk was relatively admired have, in previous research, shown strong and consistent risky shifts; nor on those items where previous studies have consistently found such shifts did they necessarily find the greatest admiration for risk. This could mean two things: either, that ratings of the most admired risk preference do not constitute reliable and/or valid measures of value, or, that the risk as a value hypothesis is not sufficient, although probably necessary, to fully explain the phenomenon. The fact that the admiration ratings for the conservative shift items accorded well with previous findings eliminates the first alternative to a large extent. The latter alternative will be dealt with in subsequent discussion because Pruitt & Teger (1967) have arrived at essentially the same conclusion on the basis of different data.

But first, to consider the remainder of the evidence that accords with Brown's theory, Teger & Pruitt (1967) have found that in a decision situation without consensus, groups of subjects which simply exchange
information about their initial decisions produce a shift toward risk. As we noted in a previous place, Teger & Pruitt's study refuted an earlier criticism of Brown's theory made by Kogan & Wallach (1967), and by so doing provided more support for Brown's theory. Another purpose of Teger & Pruitt's study was to examine the relationship between initial level of risk taken on a decision problem and the magnitude of shift on that problem. It will be recalled that Brown suggested that the initial value of risk or caution elicited by a problem would affect the initial decision on that problem as well as the subsequent shift. Positive correlations between these variables, therefore, should be obtained if Brown is correct. Substantial and significant positive correlations were obtained across all twelve decision items in both group discussion and exchange of information conditions. Groups in these conditions contained four and five persons each. Although a fairly substantial positive correlation was obtained with three person discussion groups, it did not reach statistical significance. In another study, Pruitt & Teger (1967) found a similarly large and positive correlation between initial risk and the magnitude of the risky shift, although it should also be noted that in this study the reported correlation for female subjects was considerably lower. This may suggest that factors other than initial risk may be especially important in an explanation of the phenomenon among females. This finding certainly needs replication with another set of data.

Consideration of the above correlations might suggest simply that initial risk determined the magnitude of the group shift. If this were the case, as Teger & Pruitt noted, one would expect to find positive correlations between these two variables across groups within each item
because, if individuals who take greater risk show greater risky shifts, then groups whose members take greater initial risk should show greater risky shifts. The magnitude of these correlations in each condition was practically zero, and not statistically significant. There appeared, therefore, no relationship between the initial risk taken by a person and his risky shift. The most plausible interpretation of these findings therefore would appear to be that both initial risk and the risky shift are determined to a large extent by the implicit risk or caution in each of the items, as Brown implied.

Two other studies with quite a different approach to the value of risk and risk taking question have been conducted by Stoner (1968) and Madaras and Bem (1968). Stoner's study, which provided a more direct test of Brown's ideas, investigated the possibility that widely held values and individuals' perceptions of their own riskiness relative to other people like them were determinants of initial risk and group risk taking. He employed only four of the usual choice dilemmas problems, and wrote six new problems in an attempt to describe situations in which caution might be valued. Two other problems were taken from Nordhoy's early work. Values were assessed by asking subjects to rank 18 phrases in the order in which they were important to the subject. The 18 phrases had been written to describe the alternative outcomes implicit in each of the 12 problems employed. On an initial dichotomization of problems into risk-oriented and caution-oriented problems, he found that mean initial risk scores were significantly higher (that is, more risky) on the risk-oriented items than on the caution-oriented items.
The most important contribution of Stoner's study, however, was his attempt to show that if the life situations actually engaged the values represented by value statements that had been associated with them, then it would be expected that for a given item subjects, who ranked the risk-associated value statement as more important to them than the caution-associated value statement, should prefer more risky courses of action than subjects who ranked the caution-associated value statement as more important. Results showed that, although the overall differences between mean risk scores were significant, mean differences for 3 of the 6 risk-oriented items, and mean differences for 4 of the 6 caution-oriented items, were not significant. Moreover, considering group shift data, 3 of the caution-oriented items failed to produce conservative shifts even though initial decisions tended to be relatively cautious. Stoner's evidence was certainly not overwhelming support for Brown's theory.

The general impression, albeit a speculative one, gained from Stoner's findings, as well as from findings from the whole risky-shift area, was that it appears relatively difficult to induce conservative shifts in American subjects. For example, Stoner failed to replicate conservative shifts that Nordhoy had found some years earlier. In addition, although expecting conservative shifts on six of his problems, he found conservative shifts only on items concerning aspects of physical safety.1

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1 The two problems on which conservative shifts were reported were:
(a) A man about to embark on a vacation trip experiences severe abdominal pains and must choose between disrupting his vacation plans in order to see a doctor or boarding an airplane for an overseas flight.
(b) A couple must choose between allowing a complicated pregnancy to continue with danger to the mother's life, or having the pregnancy terminated.
The accumulated evidence almost compels one to argue for a general value of risk which precludes caution on most items, exceptions being those that clearly lead to extreme discomfort or death. Some evidence consistent with this argument was supplied by Madaras and Bem (1968). Subjects were given completed Choice Dilemmas questionnaires on which the initial risk level of the target person had been indicated. Subsequently, subjects were asked to rate the target person on 10 bipolar semantic differential scales. Results showed that risk-acceptors were rated more favorably than risk rejectors over each problem. These findings supported the notion of risk as a socially desirable characteristic at least among American subjects. In general, risk-acceptors were seen as strong, active, successful, fast, hard, masculine, good, and sociable. Clearly, risk or caution may not depend on the circumstances to any large extent in American society. These findings certainly do not help to clarify the correlations reported by Teger and Pruitt in previous pages of the text.

To return, now, to Levinger & Schneider's (1969) conclusion that the value of risk hypothesis may not be sufficient to fully explain the risky shift phenomenon, it will be recalled that they found little relationship between those risks which are greatly admired and the magnitude of the risky shift. If Brown were completely correct, a positive correlation between the initial risk and the risk others are assumed to be taking difference, and the magnitude of the shift should be obtained. As Pruitt & Teger so aptly put it, "the farther ahead of the pack one initially thinks he is, the more catching up he has to do when he finds out that he is performing in an average fashion" (Pruitt & Teger, 1967, p. 8). Hence, the larger the shift he would be likely to make in the
direction dictated by the value relevant to that item. Pruitt & Teger found only relatively weak and nonsignificant correlations between these variables, although they were in the predicted direction. Partialing out initial risk, the correlations became virtually zero. Two studies, therefore, have failed to find any positive correlation between an indirect measure of the value of risk and the magnitude of the risky shift. The similarity of the findings of these two studies, together with the fact that they present evidence contradictory to Brown's theory, certainly does suggest that risk as a value and information exchange alone may not be sufficient to explain the magnitude of group risk taking. The validity of this conclusion is also supported by experimental, rather than correlational, data. It will be recalled that both Teger & Pruitt (1967) and Kogan & Wallach (1967) found that, while simple exchange of information did induce a shift in the appropriate direction, the magnitude of this shift was significantly less in the exchange of information condition than in the usual group discussion condition. It would appear, then, that information exchange is a necessary condition for the shift to occur, but that it is not sufficient to fully account for the phenomenon.

At the same time, however, it should also be recalled that Brown reasoned that more information, congruent with the direction of the engaged value, would be elicited in the group discussion condition. All subjects would, in effect, gain greater information relevant to, and in the direction of, their particular value from two sources: the distribution of other members' risk preferences and relevant arguments in the group discussion. No experimental test has been made of this second source of information, but it does suggest one possible explanation of the
obtained discrepancy between simple information (risk preference) exchange and group discussion conditions which no one has considered. This argument, however, is relevant only to the information exchange aspect of the theory, that is, to an explanation of the magnitude of the shift. At the present time, a more fundamental criticism of Brown's theory is the possible irrelevance of the value of risk to any prediction of the magnitude of shift. This criticism strikes at the very heart of the theory.

If the theory is to be defended, and by and large, it does seem worthy of defense, it is much more basic to search out possible reasons for the lack of correlation between presumed measures of value and the magnitude of the risky shift, because it was noted earlier that whatever determines initial risk taking also probably determines the magnitude of the shift to a large extent (Teger & Pruitt, 1967, p. 200). It will be recalled that these correlations between initial risk and the risky shift magnitude were large, significant, and positive, accounting for at least 60% of the variance among males; the percentage variance accounted for among females was only about 22 (Pruitt & Teger, 1967, p. 7). And, yet, it will also be recalled that it was not simply initial risk that determined the magnitude of the risky shift. It seems important, therefore, to attempt to discover what this determinant is, if indeed it is not the value of risk.

The absence of a positive correlation between an indirect measure of risk as a value and the magnitude of shift certainly poses a problem for risk as a value theory, but the problem should be clarified if we examine the logic underlying Pruitt & Teger's (1967) correlations. To do
this it is necessary to highlight a point that Brown (1965, p. 701) does make, certainly neither clearly nor emphatically, the implications of which have been overlooked, at least in the calculation of Pruitt & Teger's correlations. Pretty much the same sort of criticism can be levelled at Levinger & Schneider's (1969) findings, so for purposes of explication we shall concentrate entirely on Pruitt & Teger's arguments. The point to be emphasized is that it is moderate risk which is probably highly valued, rather than any form of extreme risk. Put another way, people who value risk most probably select more moderate risk positions than more extreme positions of risk or conservatism. This point is not emphasized by Brown, but the assumption is not without empirical and theoretical precedent in the literature. An extensive literature on the motive to achieve success (Atkinson, 1957; Atkinson & Feather, 1966) has consistently shown that persons with high scores on this motive characteristically choose moderate risk while those with low scores tend to prefer either extremely risky or extremely conservative positions (Atkinson & Litwin, 1960). Simply translating this finding into the present context, persons for whom risk is an important value should, as Brown implied, probably choose positions of moderate risk. What he did not imply, however, was that persons for whom risk did not constitute an important value could probably be expected to choose either very risky or very conservative initial positions. While it may appear irrational to argue that subjects with a low value for risk should choose a highly risky alternative, empirically it has been demonstrated a number of times (Atkinson & Feather, 1966). A recent and comprehensive study by Weinstein (1969), however, found little support for Atkinson & Feather's position.
At the present time, however, Atkinson & Feather conceive of the tendency to choose a highly risky alternative as a defense against failure; when one fails at a very difficult task, one in which the probability of success is very low, there is little embarrassment about the failure because so few persons are able to achieve success on so difficult a task.

Consider now the rationale underlying Pruitt & Teger's correlations. The difference score (value measure), which has been correlated with the magnitude of shift, is based on initial individual risk preferences and the choice fellow students would make. It is assumed by Pruitt & Teger (1967) that the greater this magnitude, the greater the value of risk, and hence, the greater the magnitude of the risky shift should be. This reasoning assumes a positive linear relationship between magnitude of difference scores, hence value, and the magnitude of the risky shift. It was shown just now, however, that results from another, but related area, have found a curvilinear relationship between value and individual risk preferences. The simple magnitude score (value measure), such as has been used by Pruitt & Teger (1967) and Levinger & Schneider (1969), therefore, simply does not provide an adequate test of the relationship. Why? Spelling out the arguments in greater detail, these correlational statistics are not meaningful with relationships that are not linear; the correlations presently obtained, therefore, are meaningless, particularly with regard to Brown's theory. According to Pruitt & Teger's analysis, it is assumed that those subjects possessing the greatest difference scores are those for whom the risk value is highest. This clearly, may not be the case because those subjects for whom the value is highest (risk preference equals 5) can locate their fellow...
students as more conservative at only three positions at a maximum-risk preferences of 7, 9, and 10. On the other hand, those subjects for whom the value of risk is low, but who defensively adopt very risky positions (risk preference equals .1) can locate their fellow students at five other conservative positions at a maximum-risk preferences of 3, 5, 7, 9; and 10. Consider also the remaining subjects who may adopt a very conservative initial position (risk preference equals 9), but for whom value is also low. These subjects can locate their fellow students at only one other position which is more conservative-risk preference of 10. The point to be made, therefore, is that if a measure of value similar to Pruitt & Teger's is employed, the moderate magnitude subjects are likely to be the ones for whom value of risk is important, and consequently these moderate magnitude measures could be expected to correlate positively with the magnitude of shift. Among the low value subjects, the correlation between value magnitude scores and the magnitude of shift may also be expected to be positive but considerably less than the correlation for the high value subjects because both high and low value magnitude scores are being correlated with smaller magnitudes of shift. The greater the number of conservative scores, relative to risky scores, included in the computation of this correlation the greater the enhancement of the correlation; the greater the number of risky scores, relative to conservative scores, included in the computation the lesser the correlation. The point to be emphasized again is that a correlation based directly on magnitude scores would be expected to be zero, or at best
small positive, because the relationship between value and initial risk may be curvilinear. Pruitt & Teger's and Levinger & Schneider's findings confuse, rather than clarify, the issue.

There is also another final point to be made about the use of Pruitt & Teger's value measure. If appropriate adjustments were made, and the correlation between moderate magnitude scores and the magnitude of the risky shift computed, this correlation is likely to be attenuated by the possible inclusion of low value, but high initial risk, subjects because there are no a priori grounds on which to predict that these subjects will always exhibit the highest value magnitude scores. In other words, there is no reason to assume that these subjects will always place their fellow students at much more conservative positions, and assuming that sometimes they do not, they would perforce automatically include themselves in the moderate magnitude group, thus attenuating any computed moderate magnitude - magnitude of shift correlation. It hardly seems necessary to conclude, therefore, that present tests of Brown's (1965) theory have not only been indirect, but incorrect. Brown, however, is clearly open to charges of inexplicit conceptualization. For these reasons, it would seem scientifically parsimonious to subject Brown's theory to a direct experimental test. This then was one aim of the present investigation.

A correlated aim was to test the generality of the risky shift phenomenon in other cultural settings, and to examine the extent to which any observed shift would be determined by cultural and personal values not necessarily coincident with values in the United States. Logically, if caution rather than risk is valued in another culture, it might be
anticipated that conservative initial decisions and subsequent conservative group shifts would follow. If neither risk nor caution are positively valued, could we anticipate no group shifts? A more complete specification of hypotheses applicable in the other cultures studied, however, must await consideration of values reported to be important in these cultures. Focus will be especially on studies relevant to risk conceptions, and in particular relevant to those risks that are inherent in the Kogan and Wallach (1964) Choice Dilemmas Task. These findings are reported in the next section of this chapter.

II. 2. Cross-Cultural Values

At the end of the previous section of this chapter, it was argued that direct tests of Brown's (1965) theory were important to determine the efficacy of this theory in accounting for the obtained risk-taking findings. Further, it was suggested that a consideration of values inherent in each of the decision problems would be necessary in order to understand how persons from other cultures would view each of the situations. It will be recalled that Brown suggested that risk or caution seemed to be engaged "depending on the circumstances," even though recent evidence (Stoner, 1968) queried to some extent the validity of this argument among American subjects. It seemed infinitely more reasonable at this stage of knowledge, however, to consider as Brown argued, that risk may be valued in some situations but not in others. He also suggested in his concluding remarks that the mystery of the risky-shift would probably not be resolved until the factor or factors that determined why risky or conservative stands be taken could be specified. Obviously, the first place to look for such a solution should be to the problems themselves.
It is noteworthy, however, that both investigators concerned more or less directly with the issue of risk versus conservative initial orientations to the problems (Nordhoy, see Brown, 1965; Stoner, 1968) gave no theoretical rationale for the basis of their expectations of risk or conservatism. Moreover, it will be recalled that neither attempt was highly successful.

In the absence of any available evidence, therefore, it was necessary to go back to an inspection of the choice dilemmas problems to attempt to understand why some problems typically engage risk, while others tended to engage caution. This reversion to the original problems seemed especially important in view of the fact that we were interested in how persons from other cultures would view each of the problems.

Inspection and consideration of the total range of content in the Choice Dilemmas problems revealed that physical, academic, financial, prestige, large and small scale, and long and short term risks were involved. Moreover, it seemed that each problem contained a mixture of type of risk (physical, etc.), magnitude of risk (large or small scale outcomes), and temporal nature of risk (short term or long term). Initial attempts to understand and isolate the crucial factor determining differential risk taking across the range of problems, therefore, did not look very promising.

It was, however, logically possible to consider type of risk as the basic dimension, and to argue that magnitude of risk, and the temporal nature of risk were variations within the more general types of risk. This plan reduced the attendant confusion somewhat as problems could then be located along a dimension of human values, running from physical safety
concerns to prestige concerns. The somewhat striking similarity between this dimension and Maslow's (1954) earlier thinking, which also posited a hierarchy of human needs, led not surprisingly to consideration of a similar hierarchy of human values running through the choice dilemmas problems. Moreover, it seemed to follow logically that some aspect of goal value or goal importance might be an important factor determining either initially risky or initially cautious approaches to a problem.

For example, physiological needs were considered by Maslow to be the most important human needs; none of the present problems parallel this basic level. That preservation of life is a basic human value, however, is not a new idea; Freud constantly stressed the superiority of life "instincts" in his writings.

Further, following Maslow's thinking, Maslow also stressed the importance of safety needs; the parallel here would be physical risks. He argued that in the hierarchy of human needs, safety needs occupied a position second only to physiological needs. Further down the hierarchy, love and belongingness (security) needs were posited. Esteem (prestige) needs were postulated next in the hierarchy. The basic assumption in Maslow's postulation of a hierarchy of human needs was that more basic needs had to be satisfied before other needs lower in the hierarchy could be given full expression. In other words, physiological needs were most important and had to be satisfied first before safety, security, and prestige needs could be satisfied. While Maslow's theory was a theory in the grand style attempting to cover the complete range of personality and motivation, it was compelling to consider the parallel between the hierarchical nature of human needs as posited by Maslow and the risk
taking literature, given that virtually all of the presently employed choice dilemmas problems contained a confounding of type of risk with magnitude of risk and the temporal nature of risk. Characteristically, physical risks elicited relatively more conservative decisions and small risky shifts; security (financial, occupational, academic) risks elicited more risky initial decisions and larger risky shifts; and finally, prestige risks elicited even more risky initial decisions and very large risky shifts. The point to be emphasized is that, if Maslow's early thinking is correct, prestige risks, for example, should be less important, and conceivably a person would be willing to take greater risks on these problems than on problems in which physical safety risks were apparent. It should also be stressed, however, that this is probably an oversimplification, and that it is only a post hoc fit of the data to the dimension. By the same token, it does seem feasible to argue the logic of a hierarchy of human values, and to further argue that goal value or goal importance may be an important determinant of risk taking. A recent study of an isolated fishing and cane-cutting village in the West Indies (Aronoff, 1967) did find support for Maslow's conception of a hierarchy of human needs, and for the assumption that if needs higher in the hierarchy were not satisfied they tended to assume predominant importance as manifested in different types of social and occupational behavior.

In addition, on purely intuitive grounds, it also seemed reasonable to argue that large scale risks and long term risks might elicit more conservatism than small scale and short term risks, but it would doubtless depend on the type of risk involved. It should be possible to construct
additional Choice Dilemmas tasks which would shed some light on the
efficacy of these arguments, but this was a task beyond the scope of the
present investigation.

In view of the above arguments, and as a first step to an understanding of differential risk taking across types of risk inherent in the
decision problems, it was important to consider attitudes, values, and
behavior, toward each type of risk and the importance of the goal of
these risk types in each country. Controlled experimental data on these
questions, however, is minimal. Considerable reliance was therefore
placed on sociological and anthropological sources.

Before considering cross-cultural differences in the value of risk
and the value of goals in each country, could cultural similarities in
risk taking may be expected from a consideration of the values of goals
alone? On logical grounds, the most similarity that could be anticipated
would be with regard to physical risks. It does not seem necessary to
further argue about the value of life, whatever the culture. Kitano
(1969, p. 100) points out that a frequent misconception among Westerners
is that the sacrifice of one's life is part of the value system of
Japanese society. This popular misconception derived from the behavior of
the "kamikaze" pilots during World War II. He cited evidence to show
that these pilots were, in the usual army way, "ordered to volunteer,"
then were conditioned to expect death. He argued that, "propaganda to the
contrary, the kamikaze unit was never a popular one to belong to" (Kitano,
1969, p. 100). Whatever the culture, therefore, we would expect life to
be highly valued. In terms of risk taking behavior, we would expect that
more conservative decisions would be made in all three cultures, and the
goal value of life should be high. (Problem 2 [medical operation] was selected to represent this type of risk in the present study. A complete list of problems selected is contained in Chapter III. Problem numbers correspond to Kogan & Wallach, 1964.)

What of security (financial, occupational, academic) risks and prestige risks? How important are financial, occupational, and academic security in Japan, the Philippines, and Australia? How important a part does prestige play in each of these cultures? Before turning to an examination of the importance of these human concerns in each culture, it is important firstly to recall the logic of Maslow's hierarchical arrangement of needs; prestige should be less important relative to security needs, which in turn should be less important relative to physical needs. We should find, then, if Maslow is correct, a similar hierarchical arrangement within each culture, but obviously there may be differences in the importance of security and prestige goals across cultures.

(Problem 1 [occupational], and problem 6 [academic] were selected to represent security goals; problem 4 [football captain] and problem 7 [chessplayer] were selected to represent prestige goals; finally, problem 5 [light metals corporation] was selected to represent a large scale financial goal. Problem numbers again correspond to Kogan & Wallach (1964). It should be emphasized once again that each problem contains elements which tend to confound a clear delineation of a certain problem as purely security or purely prestige. This is particularly true of problem 6 which is a combination of security and prestige goals. The problem was retained, however, because it was expected to highlight cross-cultural differences in the value of academic success.
What then is the evidence concerning cross-cultural differences in the importance of financial, occupational, academic, prestige, and large scale financial goals?

II. 2.1. Australia

At the outset, one of the basic assumptions of this study was that the value of risk and the value of the goals described above in Australia should not be categorically different from results in the United States. A similar pattern of initial risk taking across problems was therefore anticipated. Further, in view of the extensive body of research by Feather (1966) using Australian students in achievement motivation studies, there was no \textit{a priori} reason to assume that group risk taking would be categorically different from results with U.S. college student subjects. It was conceivable that small variations in patterns of risk taking might occur, but it was not anticipated that they would be of major significance. This was not to deny, however, that individual differences in risk taking might occur.

II. 2.2. Japan

It is necessary to point out that, when considering cultural values, that generalizations concerning values are stereotypical to the extent that they may be values for a certain percentage of the population or for a certain group within the population, but not for the remainder of the population nor for other groups within the population. Individual differences must be assumed to exist, and any generalization is inadequate also to the extent that it ignores these differences.
With these reservations clearly in mind, it is possible to present some evidence pertaining to important values in Japan. At a very general level, a diachronical factor analytic study of 1400 Japanese students' values at Kyushu University by Misumi and Ando (1964) showed that in 1964, in contrast to student values in 1949 at the same university, Japanese students' values were oriented toward the United States pattern as well as toward the Chinese pattern. In explaining this seeming contradiction, Misumi & Ando argued that, "in view of the fact that Japan came under heavy influences of foreign countries after the war, particularly the U.S., it is quite understandable that the orientation toward the U.S. has been observed. A simultaneous orientation toward China, they suggested, "may indicate the coming into the open of the immanent and traditional elements of the Japanese culture" (Misumi & Ando, 1964, p. 182). At a more behavioral level, they suggested that this simultaneous orientation may be interpreted as meaning that Japan is internalizing the American value system while maintaining its "self-identity." This probably means that traditional Western values are becoming important, but that a peculiarly Japanese way of achieving Western goals is also important. Misumi & Ando's findings are particularly important in the present context because they seem to be drawing particular attention to differences in means, if not in ends. It is often too easy an assumption to make that if ends are similar, then means will probably be similar also.

This leads directly into a consideration of the importance of academic success, competition, occupational security, and prestige, as goals in Japan. Kitano (1969) has summarized a major difference between
American and Japanese cultures. He argued that, "American and Japanese cultures have different ways of viewing norms and goals. The American system appears more goal-oriented - efficiency, output, and productivity are highly valued, and the primary object is to win or achieve success. The Japanese system appears much more norm-oriented - the how, the style, and the means of interaction are important so that playing the game according to the rules is as important as winning it" (Kitano, 1969, p. 113).

In terms of occupational and financial security, this difference in the way the two cultures operate is crucial. Whereas an American firm will have no hesitation in dismissing an inefficient or unproductive employee, dismissal from a comparable Japanese firm is very unlikely. As Kitano noted, the relationship between employer and employee is akin to the relationship between parent and child in which a sense of obligation is fostered. Vogel (1963) also stressed the same point when he noted that the "... (Japanese) firm commits itself to a young man for life" (Vogel, 1963, p. 41).

This sense of obligation between employer and employee arises, however, only after the applicant actually becomes an employee. Vogel noted, in this connection, that because business is highly competitive, firms must be careful to select men of unusual promise and ability. This means that great stress is placed on academic success. Stress on success is not only evident at high school or university, as Vogel noted that, grade schools and even kindergartens use entrance examinations to select only a small proportion of the applicants; and because the examinations are open, the competition is fierce (p. 40). It can be seen, therefore,
that success is particularly important in the Japanese culture, but the means of achieving success are equally as important. It was noted that, "The average child studies so hard that Japanese educators speak of the tragedy of their school system which requires students to sacrifice their pleasures, spontaneity, and sparkle for examination success" (Vogel, 1963, p. 40).

Hard work and particularly high level success, moreover, ensures that students will go to a better university. And, Vogel argues, there is such widespread agreement in Japanese society as to which universities are most desirable that firms consider the university attended as very important in selecting new recruits. Another interesting point, and one which is directly relevant to the present investigation, is that companies ordinarily hire older workers only when absolutely necessary, because they feel that people who change companies are opportunistic (Vogel, 1963, p. 42). Moreover, new small companies in fields like electronics, advertising, and foreign trade, can offer higher salaries than larger organizations, but most young men "are unwilling to take this risk of less security" (Vogel, 1963, p. 43).

In summary, then, success is highly valued in Japanese society, competition is widespread and fierce, and occupational security is most prized once it is achieved. Monetary gains are only secondary to occupational security. In terms of risk taking on the Choice Dilemmas problems, therefore, we would anticipate that very risky decisions would be made on the academic success problem, but very conservative decisions would be made on the occupational, financial problem. We might also expect a risky decision on the overseas capital investment problem
because of the highly competitive nature of Japanese business, but it could also be argued that a conservative decision might be made because of the large scale financial risk involved. Moreover, if Japanese students are highly concerned about their own security, it is possible to argue that they might also be highly concerned about the security of their company, thus favoring conservative to risky decisions.

As far as prestige considerations are concerned, Kitano (1969) has stressed the importance of subordination and respect as characteristic modes of behaving among the Japanese. In a recent factor analytic study of interpersonal attitudes among American, Indian, and Japanese students, Triandis, Shanmugan, & Tanaka (1966) have isolated an interpersonal relations factor which loads highly on subordination and respect among the Japanese. Moreover, in modern Japanese society, age is still an important determinant of respect, and a high status person is obeyed and respected because of his status, not because of his "good ideas or character," as Triandis et al. noted (1966, p. 202). It is unlikely therefore that in Japanese society prestige or status would accrue to either the footballer or the chessplayer in these two Choice Dilemmas problems. In other words, if prestige is achieved through age and status, it is unlikely that the relatively short term prestige maneuvers would be very important. Related evidence from a different line of argument is presented by Kitano, who noted that, "American baseball players who have played in Japan feel that the Japanese will never become major leaguers until they develop a greater will to win. By this the Americans mean that pitchers should throw at batters more often; Japanese players should slide with their spikes high, . . . " (Kitano, 1969, p. 113). Implicit in
Kitano's argument is that Japanese players are more intent on playing "according to the rules" than they are on playing to win. It would be anticipated, therefore, that risk taking on these two prestige problems might be less than the degree of risk taken on these problems in Australia, where the will to win, especially at sports, is particularly strong.

In conclusion, therefore, very risky decisions in Japan should be obtained on problem 5 (academic success), somewhat risky decisions on problems 4 and 7 (football and chess playing), and conservative decisions on problems 1 (occupational and financial security), 2 (physical risk), and 5 (large scale financial risk).

II. 2.3. The Philippines

In contrast to predominantly urban industrialized Japan, the Philippines represents a striking contrast to a large extent. The Philippine economy is still basically agricultural, and as such, "values which are antithetical to those associated with the industrialized countries predominate" (Aldaba-Lim & Javillonar, 1968, p. 403). In a later comment, these same authors argued that, "Filipino child rearing practices induce dependence and conformity, the stifling of initiative and a personal sense of responsibility and individualism. In the traditional Filipino family, decision making is most often a parental function and parents expect and demand complete, unquestionning obedience not only to themselves but also to siblings and relatives who have no claim to such authority except age seniority. Such a strict demand for obedience results in passivity among Filipinos, reliance on the authority figure to solve their problems for them, and hesitation, if not fear, of changing
status quo" (Aldaba-Lim & Javillonar, 1968, p. 403). In similar vein, Lynch (1964) has stressed the importance of "smooth interpersonal relations" among Filipinos. Hare and Hare (1968) have also reported relatively low "autonomy" scores among upper-class subjects from Atenco de Manila University.

Other earlier investigations of the Filipino value system have arrived at essentially similar conclusions. Bulatao (1962), in a study designed to delineate the most important values in Filipino society from a modified culturally relevant TAT procedure, found that the most widespread value could be termed, "emotional closeness and security in a family" (Bulatao, 1962, p. 11). Bulatao argued that the family is seen as an end in itself, without need of subordinating it to other values. One of the ways in which this value is manifested is that, for both parents and children alike, the interest of the individual must be sacrificed for the good of the family. On the parental level, "parents must strive, even at great cost to themselves, to give their children an education"; on the children's level, "older children must make sacrifices for younger children, . . . , even marriage must at times be put off to help the family" (Bulatao, 1962, p. 11).

Mixed with the emotional closeness and security value of the family, there is a strong authority value. It is felt that in order for the family to remain close and secure, someone must exert authority. Bulatao noted that, "a daughter is strictly disciplined so that she can finish a career, so that she can earn money, so that she can help to bring up her children" (Bulatao, 1962, p. 15). Bulatao stressed the hierarchical importance of these ends; the ultimate goal of strict
discipline is important not so much for the individual's success as an end in itself, but rather that the successful accomplishment of each goal serves as a means of ultimately strengthening and increasing the reputation of the family. It is well to note, then, that the function of academic, financial, and occupational success in Filipino society are somewhat secondary to long range family goals. This is in marked contrast to the function of success in Western societies where the emphasis is much more one of individual responsibility and prestige. It is interesting to note, also, in this connection that the Filipino family provides, "understanding, acceptance, a place where, no matter how far or how wrongly one has wandered, he can always return" (Bulatao, 1962, p. 11). This feature is, of course, important in the extended family system of many cultures, but it does serve to illustrate that in the event of failure, the family still offers a place of consolation and security. Moreover, the failure may be rationalized away by what Aldaba-Lim & Javillonar (1968) term the "philosophy of passivity," which is reflected in popular Filipino proverbs like, "That will not come which is not due to one" (Aldaba-Lim & Javillonar, 1968, p. 403). Aldaba-Lim and Javillonar also remark that this acceptance of one's station in life is in direct contrast to the achievement-oriented man's belief in his capacity to master his environment.

Bulatao also stressed another aspect of the authority value which is of importance to understanding Filipino society and its values. He noted that, in essence, the authority value, "is a concern for what the important person is thinking about oneself and a tendency to shape one's behavior accordingly. There is a fear of stirring up conflict with
'people who count,' this fear in turn giving rise to a need for 'smooth interpersonal relations'" (Bulatao, 1962, p. 14). The attitudes toward persons in authority, therefore, does not seem basically different from attitudes toward parental or family authority. And, given that the individual is subservient to demands and wishes of the parents and family, it is not surprising that dominant themes in some of the TAT stories Bulatao presented stress that "one looks to authority figures for help in obtaining a job and other benefits," and "benefits come by way of patronage and gift" (Bulatao, 1962, p. 17). These behaviors, too, are obviously correlated with Aldaba-Lim & Javillonar's "philosophy of passivity."

However, some of Bulatao's evidence would seem to indicate that a "philosophy of passivity" is not enough to explain the themes in some of the stories. His evidence also sheds some light on the reported fear of changing the status quo. On this issue, Bulatao noted that, "the form of authority, especially that of age, so dominates the individual that he refuses to let go of the group's accepted norms. The individual must not rise above the group. If he does, social pressure will try to pull him down to the level of everyone else" (Bulatao, 1962, p. 18). The point to be made is that obviously passivity and group pressure are both important in maintaining the status quo. It is doubtful, however, if these two factors are independent; group pressure may cause passivity or passivity may lead to few attempts to rise above the group.

While passivity is argued to be a dominant behavior among the Filipinos, economic and social betterment are also of considerable importance. Bulatao qualified the importance of this value, however, by
noting that usually it is "mere sufficiency or else economic security that one is after. More rarely, the value is expressed as a desire for individual success" (Bulatao, 1962, p. 20). In another place, moreover, he does suggest that the improvement of one's economic situation "is a product of cultural change and something peculiar to the Manila area" (Bulatao, 1962, p. 21). The sample employed in his study were Manila factory workers and clerical workers.

Irrespective of the individual or family basis in the search for economic security, it is important to note how success is viewed, at least by the factory workers and clerical workers in Bulatao's study. It was noted that, "a diploma is a means to prestige," and that, "this prestige is associated with recognition by important people." While this is probably one basis for prestige aspirations whatever the culture, the fact that it is given the status of an important value by its frequency of expression in the TAT themes does suggest that success is sought for a mixture of security and prestige reasons, and that both are very important in Filipino society. One could, of course, argue that prestige is highlighted in Bulatao's study because of the sample used. This is probably reasonable to some extent because a study of occupational evaluation among high school subjects in Manila by Castillo (1962) showed that clerical worker and factory worker were ranked as 13 and 18 respectively on prestige. Twenty-five occupations were ranked by the subjects. There is still the point, however, that prestige is highly valued irrespective of whether prestige accrues to the individuals employed in the study. This would seem to tally with the observation that economic and social betterment for the family is an immediate concern, and that one way of
achieving social betterment for the family is obviously through prestigious occupations, where recognition by socially significant others is almost guaranteed. Similar points are also made by Bulatao (1964).

It is interesting to note in passing, also, that Castillo's study of occupational evaluation showed that "white collar" workers were given rankings superior to "blue collar" workers. Moreover, Castillo noted the similarity of occupational rankings among Filipino, Japanese, and American students. Of particular interest to the present study was the finding that corporation executive was given similar rankings in all three countries, and that all the rankings were in the top five rankings in each country. We can at least be assured that a corporation executive is viewed with considerable esteem, and equivalent esteem, in the countries employed in this study.

Turning now to a consideration of how this very brief discussion Filipino values can perhaps help in making predictions concerning risk taking in general, and in making predictions concerning risk taking in relation to specific choice dilemmas problems in particular, there is some evidence to indicate that the Filipinos are more "externally-oriented" - toward the family, authority, significant others. Given this orientation, together with the evidence that in general stress is reported to be on maintaining the status quo, it would be anticipated that the value of individual risk should be considerably less in Filipino society than in Japanese society and Australian society. The tendency to make risky individual decisions may, as a consequence, be low. Over all of the problems combined, we would predict that Filipinos should be more conservative than either Japanese or Australians.
Consideration of particular problems, in view of the above conclusions, would suggest that large scale financial, academic and financial decisions in the Philippines should be more conservative than in Australia. Problem 2 (financial, occupational problem) should probably yield a conservative decision similar to that anticipated in Japan; Japanese students, on the other hand, should make more risky decisions on Problem 6 (academic). Finally, it has been stressed that prestige may be an important consideration in the Philippines, particularly with regard to occupational and family reputation. In the absence of evidence to the contrary, it would be anticipated that both prestige problems may yield considerably riskier decisions. It should be noted, however, that if the goal values of these particular problems are high, this may depress the tendency to make very risky decisions.

In summary, then, it would be anticipated that the value of risk would be comparatively low in the Philippines, determining more conservative initial decisions, or defensively risky decisions. Finally, one qualification should be made with reference to these predictions. It will be recalled that Bulatao noted a more individualistic orientation among some subjects in his Manila sample. He attributed this difference to a "cultural change" implying that urban dwellers in Manila may be more Western value oriented in comparison to rural dwellers. It is conceivable that country dwellers are more conservative than city dwellers whatever the country, so that in the absence of any experimental evidence to the contrary, it would still be anticipated that the Manila sample, used in this study, would value risk less than comparable Japanese and Australian samples.
Specific hypotheses tested in this study are presented in the following parts of this chapter.

II. 3. Integration of Risk Taking and Cultural Values Literature

In the introduction to this research, it was stressed that one of the major aims of the present investigation was to test the generality of the risky-shift phenomenon in other cultural settings, as well as providing direct tests of Brown's (1965) risk as a value theory both cross-culturally and within each culture. It was argued that, if risk is valued in a particular culture, as it seemed to be in the United States, then similar individual and group risk taking behavior should be evidenced. In contrast, if risk is not highly valued in a particular culture lesser degrees of individual and group risk taking should be evidenced because, it was argued, the group discussion promotes group shifts in a direction consistent with the prevailing value. In other words, if risk is not highly valued, group discussion should simply contain less arguments of a risk-promoting nature.

At the same time, it will be recalled that Brown suggested that if risk was valued, moderate rather than extreme risk taking should be manifested. The parallel between Brown's argument and basic predictions derived from the theory of achievement motivation (Atkinson and Feather, 1966) were noted, and Brown's argument extended to incorporate the achievement motivation predictions. That is, it was argued that among subjects for whom the value of risk was low, extreme risks and extreme conservatism should be manifested rather than moderate risk.

Further, although the theory of achievement motivation is concerned only with individual behavior, given the fact that individual
risk taking and the magnitude of group shifts are highly correlated (Teger and Pruitt, 1967; Stoner, 1968), it was argued that group shifts should be greater in cultures where risk is highly valued than in cultures where risk is of lower value. It was predicted, therefore, that group shifts should be of greater magnitude in Japan and Australia than in the Philippines.

**Individual Risk Taking**

Since it has been argued that risk is more highly valued in Japan and Australia than in the Philippines, it would be predicted that individual decisions should be more risky in both Japan and Australia than in the Philippines. However, in view of Brown's suggestion and results from the theory of achievement motivation, this high value of risk should manifest itself as a preference for moderate risk in Australia and Japan, whereas a low value should manifest itself as a preference for extreme risk or extreme conservatism in the Philippines. It was predicted, therefore, that the frequency of moderate initial risk taking should be greater in Australia and Japan than in the Philippines. The above prediction should provide a cross-cultural test of Brown's theory.

Within each culture studied, subjects who evaluate risk more positively on the semantic differential scales should manifest a preference for moderate risk, while subjects who evaluate risk less positively on the semantic differential scales should manifest more extreme risks - either extremely risky or extremely conservative. This prediction should provide a direct test of Brown's theory within each culture. The second prediction should also provide a more satisfactory
test of the theory because high, moderate, or low risk taking is judged relative to other similar members of the same culture.

Cross-Cultural Patterns of Individual Risk Taking

In the previous section of this chapter, we noted that consistent differences in the pattern of risk taking had been noted in a number of risk taking studies. Logically, there seemed to be some sense in looking back to the problems themselves in order to examine why such differential patterns existed, and why some problems engaged the value of risk and some others engaged the value of caution. It was suggested that a hierarchy of human values seemed to be represented in the choice dilemmas problems, and the correspondence between this hierarchy and Maslow's hierarchy of human needs was noted. It was argued that within each culture physical risks would have the highest goal value (that is, be considered as more important), thus determining the least initial risk irrespective of the value of risk. Prestige risks would, on the other hand, be least important in the hierarchy, thus determining more risky initial decisions irrespective of the value of risk. Academic and financial security risks were argued to be mid-way on this hierarchy of goal value, thus determining risks intermediate between physical risks and prestige risks. What was suggested was that goal value and risk taking should be negatively linearly related. Thus, it was predicted that subjects' rank ordering of the attractiveness of success across problems used in the present study would give some indication of the goal value of each of the outcomes implicit in the decision problems. If goal value is an important determinant of the pattern of risk taking across problems, it would be anticipated that attractiveness of success rankings
across problems and initial individual risk taking across problems should be highly negatively correlated.

Further, it was pointed out that between cultures we might anticipate different patterns of initial individual risk taking depending upon the extent to which security and prestige possessed high or low goal value or importance in each of the cultures studied. Brief reviews of relevant values and goals in Japan and the Philippines suggested that occupational security should possess very high goal value, thus determining relatively conservative initial decisions. Academic security, prestige, and success are also of considerable importance in Japan, but perhaps of less importance than occupational security. Studies of Filipino values also seemed to suggest that prestige was an important goal, as well as security goals. It was stressed throughout the previous discussion, however, that generalizations about cultural values and cultural goals are not necessarily accurate in describing any particular group. And, in view of the fact that most generalizations presented in the previous sections were tentative generalizations, but albeit generalizations which did suggest the possibility of cultural differences in the pattern of initial individual risk taking across problems, the most conservative prediction that can be made is that cross-cultural similarities and differences in the pattern of risk taking would be expected. A formal statement of the hypotheses tested are presented in the following section.
Antecedents of Risk Taking Behavior

Before proceeding to a formal statement of the experimental hypotheses, however, several comments should be made concerning the antecedents of risk taking behavior in non-Western cultures. Research directed to an examination of the antecedents of achievement-oriented behavior has strongly queried the generality of the theory of achievement motivation beyond Western cultures (De Vos, 1968; Gallimore, 1969; Kubany, Gallimore, and Buell, 1969). Although the present research is not framed directly within the theory of achievement motivation framework, parallels drawn between Brown's (1965) position and predictions derived from the theory of achievement motivation have been consistently noted throughout. Because of this similarity, evidence concerning the generality of the theory of achievement motivation could, almost predictably, be relevant to Brown's arguments. For this reason, research which has underscored the antecedents of achievement-oriented behavior especially among Japanese and Filipinos is considered in some detail.

The basic notion of the theory of achievement motivation is that subjects possessing high \( n_{Ach} \) (fantasy achievement imagery scores) will take moderate risks on achievement tasks where performance is dependent upon skill. Low \( n_{Ach} \) subjects are predicted to prefer extreme risks. Until recently, cross-cultural studies of achievement (cf. McClelland, 1961) had focussed on the measurement of fantasy need achievement by various means and achievement behavior correlated with such measures. Taking the reverse approach, several recent writers (De Vos, 1968; Gallimore, 1969; Kubany, Gallimore, and Buell, 1969) have shown that achievement-oriented behavior (moderate risk taking) among Japanese,
Hawaiians, and Filipinos may be determined not by the motive to achieve success, as it is exemplified by high n Ach scores reflecting a strong individual orientation to competition with an internalized standard of excellence in Western societies, but by a variety of situational and/or dispositional factors independent of, and sometimes contradictory to, the very nature of the motive to achieve success as presently conceived.

Examining the potency of situational variables in determining achievement-oriented behavior among Filipino high school boys in Hawaii, Kubany et al. showed that moderate risk taking was largely determined by social evaluative factors independent of the task itself, but inherent in the social situation. In this study, subjects selected easy, medium, or hard difficulty levels for an airplane tracking task. Two different experimental conditions were employed. In the private condition, a condition in which subjects were led to believe that the experimenter would have no knowledge of their choices, difficulty levels chosen were evenly distributed over the three available levels. In contrast, in the public condition, a condition in which subjects knew that the experimenter would have knowledge of their responses, subjects selected moderate difficulty level choices more frequently than either easy or hard choices. The implication of this finding was that Filipino subjects may behave like Western achievement-oriented persons not because they possessed high n Ach since indications are that they do not (see Gallimore, 1969), but because of social evaluative factors inherent in the testing situation.

De Vos's (1968) position concerning the antecedents of achievement striving among the Japanese also focussed on factors other than strong n Ach as important determinants of achievement-oriented behavior. He argued
that, "one can understand a great deal of achievement motivation (in Japan) as couched in terms of a continuing need to belong to and to participate cooperatively with others . . . . Internalized sanctions make it difficult to conceive of letting down one's family, one's social group, or one's occupational superiors" (De Vos, 1968, p. 362). Achievement-oriented behavior is determined, according to De Vos, not by individually oriented competition with a standard of excellence, but by social expectations imposed by the group. In another place, De Vos (1960) has examined the relationship between guilt and achievement among the Japanese, and found that failure to achieve socially prescribed expectations produced strong guilt feelings. Both De Vos's and Kubany et al.'s studies clearly indicate antecedents of achievement-oriented behavior different from those commonly reported among Western societies (Winterbottom, 1958; Feld, 1967). The implications of these findings for conclusions derived from the present study are clear, and will be discussed more fully in the final chapter.

II. 4. Hypotheses

Individual and Group Risk Taking

Hypothesis 1(a): The pattern of initial individual risk taking across problems within one culture should be different from the patterns of initial individual risk taking across problems within other cultures.

Hypothesis 1(b): The pattern of group risk taking across problems within one culture should be different from the patterns of group risk taking across problems within other cultures.
Group Shifts

Hypothesis 2(a): The magnitude of group shifts should be greater in Japan and Australia than in the Philippines.

Hypothesis 2(b): The pattern of group shifts across problems in one culture should be different from the pattern of group shifts across problems within other cultures.

Moderate Risk Taking

Hypothesis 3(a): The frequency of moderate risk taking on initial individual decisions should be greater in Australia and Japan than in the Philippines.

Hypothesis 3(b): The frequency of moderate risk taking on group decisions should be greater in Australia and Japan than in the Philippines.

Value of Risk and Risk Taking

Hypothesis 4: Within each culture, subjects who evaluated risk concepts more positively on the semantic differential scales should manifest a greater preference for moderate risk than subjects who evaluated risk concepts less positively.

Attractiveness of Success and Risk Taking

Hypothesis 5: Attractiveness of success across problems should be inversely related to initial individual risk taking across problems.
CHAPTER III

METHOD

III. 1. Subjects and Experimenters

Subjects for the study were approximately 240 senior high school boys from large city high schools in Fukuoka, Japan, Quezon City, Philippines, and Sydney, Australia. Testing was conducted during the period June to August, 1969. All subjects had lived in a city for at least 3 years at the time of testing, and the majority of subjects in each country (60% - Japan; 70% - Australia; 85% - Philippines) had lived in a city all of their lives. Ages of subjects ranged from 16 - 18 in each country, although 4 subjects from the Philippines were 15 years of age. The Filipino sample also contained a higher proportion of 16 year olds than either Japan or Australia. Age differences primarily reflected differences in educational system. There is no junior high school in the Philippines and this results in Filipinos being generally younger than Japanese or Australian subjects.

Although the Filipino sample contained an upper class bias, Japanese and Australian samples were more nearly equivalent in terms of fathers' occupations. In other words, in contrast to the Philippines, fathers' occupations in Japan and Australia included professional, business, skilled and unskilled trade occupations. Among the Filipino sample fathers' occupations were primarily professional and business and/or landowners.

1 Although attempts were made to select high schools to avoid either an upper or lower class bias, an upper class high school had to be sampled in Quezon City in order to conduct the study in English. Earlier attempts to use English with a less biased sample had proved unsuccessful.
Inspection of the subjects' own proposed occupations indicated a distinct preference for university and tertiary training in all three countries. Checks on the realism of these aspirations were gained from school and independent sources who vouched that a majority of each graduating class would obtain further training in some field of his choosing.

Finally, it should be noted that several experimenters were employed in each country. Because of the tight testing schedule requested by the high school in Japan four male experimenters and one female experimenter (all Japanese) were employed. In order to preserve similar degrees of variability especially as far as sex of experimenter was concerned, 3 male experimenters, in addition to the writer, were employed in the Philippines and Australia.  

III. 2. Measurement of Risk Taking

Six decision problems were selected from the Kogan & Wallach (1964) Choice Dilemmas task. The criteria for selection of these problems were four-fold:

1. To attempt to represent the broad range of content covered in, and the broad range of risky shifts obtained with, the entire questionnaire;

2. To select problems which, from our analysis of cultural values, would lead to an expectation of cultural differences;

3. To select problems which, from our analysis of cultural values would not lead to an expectation of cultural differences;

2 Inspection of the raw data prior to analysis did not indicate any systematic sex of experimenter effects.
4. To reduce the number of problems so that any experimental session would not last longer than one hour.

On the basis of the above criteria, the following six problems were selected, using numbers assigned by Kogan & Wallach (1964). The magnitude of shifts summarized for each problem are based on Pruitt & Teger's (1967) calculation of national norms for the United States. A complete description of each problem, together with the accompanying printed instructions are contained in Appendix A.

Problems
1: long term financial risk; large risky shift.
2: long term physical risk; small risky shift.
4: short term prestige risk; very large risky shift.
5: long term and large scale financial risk; small conservative shift.
6: long term academic risk; large risky shift.
7: short term prestige risk; very large risky shift.

From this brief summary, it can be seen that the following risks are represented: long term and short term risks; personal, financial, physical, and academic risks; very large through large to small risky shifts, and small conservative shifts.

In each problem the essential feature is that the subject must decide whether to advise the person to take a risky or a non-risky alternative. If a risky alternative is chosen, he must also decide the minimum odds of success which should be demanded before choosing that alternative. In all items, the risky alternative involves a better outcome than the non-risky alternative. In all items, if the risky alternative is not successful, then the non-risky alternative would be
preferable. A preference for high risk is indicated by choice of the risky alternative with lower odds of success. The lowest risk would be indicated by a choice of the non-risky alternative. In addition, all of the items are sufficiently ambiguous so that the subject is forced to make some assumptions. This prevents an obvious solution for optimal gain.

Each subject was required to make recommendations for all problems; similarly each group employed was required to make unanimous group recommendations for all problems. After the group discussion, individual group members were required to review each of the problems again privately, indicating whether or not they presently favored the group decision for each problem. Finally, a group of subjects (controls) were required to make individual recommendations again for each problem approximately one week after they had taken the Opinion Questionnaire initially. Depending on the experimental condition, therefore, three risk taking measures were available for each subject across three countries.

An overall individual risk taking score is derived by adding the scores on the separate items. The larger the score the greater the conservatism. Risky shift scores are derived from the difference between the mean of the pre-discussion individual decisions made by the members of each group and that group's consensual decisions. A total shift score is obtained simply by adding the individual item shift scores.

Risk taking problems were presented to subjects in a standard order according to the usual procedure (Kogan & Wallach, 1964). In addition, response categories were arrayed from chances of 1 in 10
upward for the odd numbered items, and in the reverse order for the even numbered items, thus counterbalancing for any possible order-preference effect in choice of probability levels.

Translation of Opinion Questionnaire

The Opinion Questionnaire was presented to subjects in English in both the Philippines and Australia. See previous footnote regarding the use of English in the Philippines.

For the Japanese sample, the materials were translated into Japanese. Many investigators (for example, Sears, 1961; Fridja & Jahoda, 1967; Holtzman, 1968) have stressed the importance of conceptual equivalence in the translation of materials to be used in another culture. The procedure followed here was according to Fridja & Jahoda's recommendations: two bi-lingual Japanese students first translated the Opinion Questionnaire into Japanese; another two bi-lingual Japanese students each translated both copies of the Japanese translations back into English. The final instrument selected was the best of the four final English translations, that is, the final translation selected for use was the one that most closely approximated the original English version. 3

III. 3. Measurement of the Value of Risk

In our preceding discussion of the measurement of risk taking, it was pointed out that the Choice Dilemmas problems used in the study were

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3 One Japanese graduate student at Kyushu University had already translated the majority of Kogan & Wallach's problems for use in a pilot study. This version served as one translation into Japanese. A final back translation was performed by an independent translator in Tokyo, who had no knowledge of the study.
selected to cover the range of risk-taking situations covered by Kogan & Wallach (1964). In that section, and in an earlier chapter, attention was drawn to the fact that the situations contained long-term and short-term risks, as well as physical, financial, academic, prestige, and large scale financial risks. It seemed important at the outset to try to measure the value of the risk inherent in each of the situations as well as some more global measure of the value of words connoting risk.

Initial selection of available procedures for measuring values focussed on the semantic differential procedure primarily for two reasons:

1. this procedure had been used with success in cross-cultural settings (Tanaka & Osgood, 1965; Triandis, Shamugan, & Tanaka, 1966), and was considerably easier to translate conceptually and literally than other more elaborate verbal scales.

2. extensive factor analytic studies by Osgood and his associates (Osgood, Suci, & Tannenbaum, 1957; Osgood, 1964; 1965; Tanaka & Osgood, 1965) have all consistently demonstrated the presence of three judgmental factors - an evaluative factor, a potency factor, and an activity factor. The report by Osgood (1964) is particularly important in connection with the present study because it reported data showing that the three judgmental factors were pan-cultural. That is, irrespective of the country and language tested (16 countries in all), subjects seemed to employ evaluative, potency, and activity factors in judging concepts. Moreover, some descriptive scales were shown to load highly on these factors across different cultures. For example, Tanaka & Osgood (1965) showed that strong-weak and fast-slow both loaded highly on a "dynamism" factor among American, Japanese, and Finnish college student subjects.
Moreover, the evaluative factor was characterized by high factor loadings on familiar-unfamiliar, beautiful-ugly, and pleasant-unpleasant, in all three groups of subjects. Tanaka & Osgood's study is instructive for yet another reason, and this helps to explain the high loadings on a "dynamism" factor; perceptual signs consisting of colors, line forms, and their combinations were employed as the stimulus materials instead of the usual verbal concepts. Their study emphasizes quite strikingly the generality of the judgmental factors; although it should be stressed in connection with the present study, that the evaluative factor has typically been found to load most highly on verbal concepts (Osgood, Suci, & Tannenbaum, 1957; Osgood, 1962).

There seemed to be good grounds therefore to use a tried and tested procedure to attempt to measure the value of risk and related concepts cross-culturally. Moreover, Osgood, Suci, and Tannenbaum argued that when members of a society share a common representational process to a common set of signs, it seems legitimate to speak of a "cultural trait" (p. 218). More specifically, when members of a culture agree in seeing mothers as warm, and fathers as strong-minded, we are dealing with similar phenomena. Further, when subjects differ in their meanings of concepts like myself, athletics, punctuality, etc., we assume that individual differences of some sort are being tapped (Osgood, Suci, & Tannenbaum, 1957, p. 219).

It seemed plausible to argue from this that, if the same scales and the same concepts were rated across three cultures in this study, given that the rating scales employed are ones that typically load highly on the three judgmental factors, we should be able to get some relatively
sound data on the meaning of, and attitudes towards, risk and related concepts in each culture. Moreover, we should, if the meaning and value of risk are not the same for all members of a culture, be able to obtain individual differences in the extent to which risk is valued in each of the cultures studied.

Accordingly, 7 scales were chosen (3 evaluative; 2 potency; 2 activity) which loaded highly with both Japanese and American subjects. Unfortunately, Osgood's extensive cross-cultural study of the meaning of concepts did not include study either Australia or the Philippines. It was, however, not unreasonable to assume that scales which have particularly high factor loadings in two cultures may load to some extent in other cultures even if they do not exhibit exactly equivalent factor loadings. In the absence of any firmer conclusions on which to base selection of rating scales, the following scales were selected:

**Evaluable:** good - bad; beautiful - ugly; pleasant - unpleasant

**Potency:** weak - strong; light - heavy

**Activity:** fast - slow; noisy - quiet

Selection of concepts relevant to risk was made on the basis of probability risks, physical risks, risks and outcomes inherent in each of the problems selected, and control concepts. Seventeen concepts selected according to these criteria were:

**Probability risk concepts:** risk, stockmarket, gambling, and pin-ball (Japan); lottery (Australia).

**Physical risk concepts:** jet-pilot, mountain-climbing, medical operation.

**Risks and outcomes inherent in problems:** life, security, money, prestige, success, failure.

**Control concepts:** heat, table, lake, stone.
Five additional concepts were included mainly for purposes of curiosity. These concepts were: science, punctuality, future, past, space age.

Booklets of 6 pages were assembled, each page containing four concepts and four copies of the seven scales. The seven bi-polar scales were so arranged to mix type of scale and direction of positive and negative poles. Concepts were randomly ordered as to which concepts would appear together on a single page. Each booklet was prefaced by the Word Meaning Questionnaire instructions employed by Osgood, Suci, and Tannenbaum (1957).

III. 4. Procedure

First Experimental Session

At the beginning of the first experimental session, test booklets containing the Word Meaning Questionnaire were distributed to all members of the class. At least two classes were tested in each high school in each country.

The front page of the test booklet contained biographical questions concerning subject's name, age, class, proposed career, and mother's and father's occupation. Subjects were requested to fill in the relevant information by the research assistant in Japan, and by the experimenter in the Philippines and Australia. 4

After this had been completed by all subjects, instructions for the Word Meaning Questionnaire were presented orally. After presentation of the oral instructions, subjects were told that the next page of their

4 Although semantic differential questionnaires were administered in the Philippines, time did not permit administration to the sample that was finally employed in this study.
test booklet contained an exact copy of these instructions which they were to use for reference purposes and to clarify anything which they did not understand from the first presentation of the instructions. Subjects were then asked if there were any questions. If no questions were asked, subjects were instructed to begin working on the Word Meaning Questionnaire.

Specific instructions to subjects for the Word Meaning Questionnaire were as follows (Osgood, Suci, & Tannenbaum, 1957):^5

The purpose of this study is to measure the meanings of certain things to various people by having them judge them against a series of descriptive scales. In taking this test, please make your judgments on the basis of what these things mean to you. On each page of the booklet you will find two different concepts to be judged and beneath each of them a set of scales. You are to rate each concept on each of these scales in order.

Here is how you are to use these scales:

If you feel that the concept is very closely related to one end of the scale, you should place the check mark as follows:

fair\(x::__::__::__::__::\) unfair

or

fair\(::__::__::__::x\) unfair

If you feel that the concept is quite closely related to one or the other end of the scale (but not extremely), you should place your check-mark as follows:

strong\(x::__::__::__::\) weak

or

strong\(::__::__::__::x::\) weak

^5 The Japanese version of the instructions were made available by Professor Y. Tanaka, Gakushuin University, Tokyo. These instructions had been previously employed in another study. See Tanaka & Osgood, 1965.
In the concept seems only slightly related to one side as opposed to the other side (but is not really neutral), then you should check as follows:

active: x: passive

or

active: x: passive

The direction toward which you check, of course, depends upon which of the two ends of the scale seem most characteristic of the thing you're judging.

If you consider the concept to be neutral on the scale, both sides of the scale equally associated with the concept, or if the scale is completely irrelevant, unrelated to the concept, then you should place a check mark in the middle space:

safe: x: dangerous

Important: 1. Place your check marks in the middle of spaces, not on the boundaries:

This Not this

2. Be sure you check every scale for every concept—do not omit any.

3. Never put more than one check mark on a single scale.

Sometimes you may feel as though you've had the same item before on the test. This will not be the case, so do not look back and forth through the items. Do not try to remember how you checked similar items earlier in the test.

Make each item a separate and independent judgment. Do not worry or puzzle over individual items. It is your first impressions, the "immediate feelings" about the items, that we want. On the other hand, please do not be careless, because we want your true impressions.

After subjects had completed the Word Meaning Questionnaire, booklets were collected, and subjects dispersed to their regular classes.
Second Experimental Session

On the days following the completed administration of the Word Meaning Questionnaire, 5 person groups were randomly drawn from each of the classes tested. Where possible, group members were drawn from different classes; otherwise selection from within the same class was random by alphabetical listing.6

Upon entering the testing room, subjects were instructed to take seats apart from one another for the first part of the experiment.

Individual decisions: Experimental and control subjects

When subjects were seated, Opinion Questionnaires were distributed to them and they were asked to fill out the cover sheet. Instructions for the Opinion Questionnaire were then presented orally. Subjects were then told that the next page of the questionnaire contained a copy of these instructions for their reference purposes. They were asked if they understood what they had to do, and what each of the separate answers meant. When any queries had been dealt with, subjects began working on the Opinion Questionnaire.

Specific instructions for initial decisions were:

"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. For each person, alternative X is more desirable."

6 The degree to which subjects knew one another was checked in the post-performance questionnaire. Not surprisingly, all subjects knew one another to some extent. Indications were, however, that the proportion of friends included in experimental groups did not vary systematically across countries.
or attractive than alternative Y, but the probability of attaining or achieving X is less than that of attaining or achieving Y.

For each of the situations on the following pages, you will be asked to indicate the minimum odds of success you would demand before recommending that the more desirable or attractive alternative, X, be chosen. In making your recommendations for each situation, you have to consider two things:

1. You have to first decide whether the central person should try to attain the more attractive, but less certain, alternative, or whether he should take the less attractive, but more certain, alternative. If you decide that the less attractive, but more certain alternative should be chosen, please check the answer which reads:

__________________________
Place a check here if you think Mr ___ should not take the more attractive but less certain alternative no matter what the probabilities.

2. If you decide that the central person should try to attain the more attractive but less certain alternative, you must then decide how much of a chance should be taken in trying to achieve it.

If you think that the central person should be very certain of attaining the more attractive alternative before he tries to achieve it, check the answer which reads:

__________________________
The chances are 9 in 10 that ...

If you think that the central person should be quite certain of attaining the more attractive alternative before he tries to achieve it, check the answer which reads:

__________________________
The chances are 7 in 10 that ...

If you think that the central person should be moderately certain of attaining the more attractive alternative before he tries to achieve it, check the answer which reads:

__________________________
The chances are 5 in 10 that ...

If you think that the central person should be slightly certain of attaining the more attractive alternative before he tries to achieve it, check the answer which reads:

__________________________
The chances are 3 in 10 that ...
Finally, if you think that the central person should be just barely certain of attaining the more attractive alternative before he tries to achieve it, check the answer which reads:

___ The chances are 1 in 10 that . . .

Remember that the less certain alternative is, in all cases, the more desirable or attractive alternative for the central person. In all cases, the potential outcomes are greater, but the chances of attaining them are less.

Read each situation carefully before giving your judgment. There are no right or wrong answers to any of the problems - just try to place yourself in the situation of the central person in each of the situations. There are six situations in all. Please do not omit any of them.

Are there any questions about what you have to do? If not, please turn over the page and begin working on the problems. Work entirely on your own. There is no time limit, but work rapidly; do not spend too much time on any one problem.

Important: Please check only ONE answer for each problem.

**Group Decisions: Experimental subjects only**

After subjects had completed making individual recommendations for the six problems, questionnaires were collected, and subjects were drawn together into a discussion group around a table. Another copy of the Opinion Questionnaire was distributed to subjects. They were told that this questionnaire was the same as the one they had just completed. It was further explained that the purpose of completing the Opinion Questionnaire individually first was to familiarize them with all of the situations, and to give them some idea where they might stand on each issue. The experimenter then told subjects that he wanted the group to discuss each question in turn and to arrive at a unanimous decision on each problem. Subjects were told that they were to discuss each question until a unanimous recommendation had been reached before going on to the next
problem. These are the basic instructions which have been used by Kogan, Wallach, & Bem (1962). In order to ensure that the group would not spend a great deal of time on any one problem, and in order to standardize time for discussion to some extent, subjects were told that they would have approximately five minutes in which to discuss each problem and arrive at a unanimous recommendation. These time constraints have been employed by Kogan & Wallach (1967). This instruction served to inform subjects of how long they would be expected to discuss each problem. After five minutes of discussion time had elapsed, the experimenter interrupted at a natural break in the conversation, and told subjects that their time was rapidly running out, and urged them to come to a group decision fairly quickly. If, at this time, or at any other time, the question was asked about a group deadlock, subjects were told, "Most groups are able to come to some decision if those who disagree will restate their reasons briefly, and if the problem is re-read carefully."

Subjects were told to record each group decision on their new questionnaires in order to have a complete record of the group's recommendations. When the group had completed discussion of all six decision problems, subjects were spread apart again on the pretext of further individual work. Subjects were then told, in standard instructions:

"The group has now made a number of recommendations. As an individual you may agree with the group's recommendations or you may disagree with one, two, or any number of them. Please go back over each of the problems, and indicate your own present personal decision by putting a check mark (**) on the same line as the group decision if you agree with it, or on a different line if you disagree with it."
As Kogan, Wallach, & Bem (1962, p. 434) noted, while the consensual decisions made by the group would indicate the public effect of the discussion process, the private post-discussion decisions made once again on an individual basis would indicate whether the discussion process had influenced covert acceptance as well as public compliance.

**Second Individual Decisions: Control Subjects Only**

As indicated earlier, the first individual decisions for all control subjects were elicited using a procedure identical to that employed with the experimental subjects. Two control groups, however, were employed: one control group made only individual decisions; a second control group made individual decisions in addition to ratings of most admired choices and ratings of decisions that they believed the majority of their fellow students would make. As we noted earlier, these measures have typically been employed in the assessment of the value of risk (cf. Wallach and Wing, 1968; Levinger and Schneider, 1969). The purpose of these data was to provide some evidence of the generality of these ratings in other cultures.

After subjects had completed their individual decisions for the six problems, they were requested to go back over each of the problems, indicating what decision they believed the majority of their fellow students would choose for each situation. Specific instructions, following Levinger and Schneider (1969) were:

"You have just finished describing the odds for success that you would consider acceptable. Now re-read each situation and indicate the choices which you believe a majority of your fellow students here would mark for each item. For each situation, indicate the lowest odds which the majority of your fellow students would want before advising that the central person choose the more attractive alternative. Mark this choice with a 2."
Finally, during the first testing session, subjects in the second control group were asked to go through the problems a third time, and to mark the choice that they would admire most. Specific instructions for this rating, following Levinger & Schneider (1969) were:

"Finally, please re-read each situation for a third time. This time, indicate the choice you would admire most, regardless of what you or most others might prefer. For each situation, what choice of odds would you consider most admirable? Mark this choice with a 3."

Subjects completed each rating sequentially, and each of the items sequentially. After they had completed this first testing session, subjects were told that they would be taking a similar questionnaire the following week, and that it was extremely important for the purposes of our research that they not discuss it with one another or with other classmates, since such discussion might affect the way they filled out next week's questionnaire. They were further told that all students would be told about the study when we had completed it.

Approximately one week after the first individual decision session, the control subjects were recalled. After checking orally, at this stage, that no discussion had taken place in the intervening week, subjects were seated separately and new copies of the Opinion Questionnaire were distributed. It was explained that this questionnaire was identical to the one that they had taken last week. It was further explained that the previous week's questionnaire had been for practice. Each subject was then instructed to go back over the problems and reconsider them, the experimenter emphasizing that he was not interested in the subject's memory but rather wanted the subject to seriously consider each problem again. The purpose of these instructions, as Kogan, Wallach,
& Bem (1962, p. 434) noted were designed to dissuade the subject from assuming that the most socially acceptable thing to do would be to try to make the same decisions that he had made earlier. Change was encouraged rather than discouraged. In the present context, using high school students, these instructions were especially important, as intuitively it was felt that high school students might be more prone to behave in a socially acceptable way than their college student equivalents.

During this second session, subjects in the second control group also re-rated their beliefs about the choices the majority of their fellow students would make, and their most admired choices. No evidence in the literature pertains to the stability of these measures over time, so these re-ratings were obtained to provide some information bearing on this question, as well as providing some continuity between the first and second testing sessions for these subjects. Instructions and procedures employed during the second testing session were identical to those employed in the first testing session, except for the initial instructions at the beginning of the second testing session.

When subjects had completed all of the second testing session ratings, they were administered the post-performance questionnaire (details below) as a final check on whether they had participated in discussion of the questionnaire with other members of the group or other class members. After this had been completed, subjects were thanked for their cooperation throughout the two sessions, urged not to talk to others yet about the study (unless they were the last subjects tested), and returned to their respective classes.
Post-Performance Procedure: All Subjects

After all subjects had completed the experimental phase of the second testing session, post-performance questionnaires were completed by all subjects. The purpose of this questionnaire was three-fold:

a) to determine how well subjects knew one another;

b) to determine whether subjects had been informed about the nature of the task from their fellow students;

c) to determine the rank ordering of attractiveness of success at each of the experimental situations for each subject.

Finally, all subjects were specifically requested not to talk to their fellow students about the study. They were told that it was particularly important that subjects not know anything about the task because it was pointed out that any prior discussion of the topics would affect their ratings in the experimental situation. It was also reported that all subjects would be told about the nature of the experiment after we had completed testing.

After the testing of all experimental and control subjects had been completed, the nature of the study and what we hoped to discover was explained to all classes employed, by a written statement in Japan, and orally in both Philippines and Australia.
CHAPTER IV

RESULTS

Results of the investigation are presented in two major sections. In the first section, several preliminary control group analyses are presented in order to determine the stability of risk taking scores over time in each country, and to ensure that experimental and control subjects within each country do not differ on initial individual risk taking. All analyses in the first section indicated that these necessary preliminary conditions were upheld.

In the second section, analyses pertaining to the major experimental hypotheses are presented. Presentation of the major results, which correspond with the order of the experimental hypotheses, is in the following order: (a) Individual and Group Risk Taking; (b) Group Shifts after Discussion; (c) Moderate Risk Taking; (d) The Value of Risk and Risk Taking; and (e) Attractiveness of Success and Risk Taking.

In summary form, the major results indicated limited generality of the risky-shift phenomenon in both Japan and the Philippines. The Australian results more closely paralleled previous findings. Significant shifts to risk were found on some problems which had previously elicited risky shifts (Pruitt & Teger, 1967). Significant shifts to conservatism were found on other problems in the Australian data. These problems had previously elicited small shifts to risk or small but non-significant shifts to conservatism in U. S. samples (Pruitt & Teger, 1967).

Between culture tests of Brown's value of risk hypothesis received some, but not total, support in terms of the experimental hypotheses tested. Indications were that Australian subjects were significantly
more prone to take risks on some problems than either Japanese or Filipino subjects. Initial assessment of the available literature had suggested that we might expect Japanese subjects to take greater risks than Filipino subjects, but this expectation was not upheld by the data.

Within culture tests of Brown's value of risk hypothesis also indicated only partial support for experimental hypotheses. Australian subjects assumed to value risk most highly did make more risky initial decisions than Australian subjects for whom the value of risk was assumed to be somewhat lower. Similar partitioning of Japanese subjects according to the same criterion failed to reveal any differences in risk taking. Data for Filipino subjects were not available for this analysis.

A further overview of the major results may be obtained by reference to the final chapter.

IV. 1. Preliminary Results

IV. 1.1. Stability of Risk Taking Over Time

The data relevant to test the stability of initial individual risk taking scores from one testing session to the second testing session were the control subjects risk taking scores across the six problems for the first and second session for each country. The means and standard deviations for these data are presented in Table I. [Hartley's test (Myers, 1966) of the homogeneity of variance assumption was performed on the variances of each problem for both first and second testing sessions. For 11 out of 12 of these tests the homogeneity of variance assumption was confirmed. On only one problem (Problem 5 - second testing session) was heterogeneity of the variance obtained at the 5% level of significance.
TABLE I. MEANS AND STANDARD DEVIATIONS OF RISK TAKING
SCORES FOR CONTROL SUBJECTS IN RELATION
TO COUNTRY AND PROBLEMS (N = 12)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Japan</th>
<th>Philippines</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>1</td>
<td>6.92</td>
<td>2.56</td>
<td>5.92</td>
</tr>
<tr>
<td>2</td>
<td>5.33</td>
<td>2.93</td>
<td>6.08</td>
</tr>
<tr>
<td>3</td>
<td>6.92</td>
<td>3.01</td>
<td>6.75</td>
</tr>
<tr>
<td>4</td>
<td>6.83</td>
<td>2.73</td>
<td>6.83</td>
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<tr>
<td>5</td>
<td>5.42</td>
<td>2.43</td>
<td>5.83</td>
</tr>
<tr>
<td>6</td>
<td>6.50</td>
<td>2.14</td>
<td>5.58</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem</th>
<th>Japan</th>
<th>Philippines</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>1</td>
<td>7.67</td>
<td>2.43</td>
<td>5.92</td>
</tr>
<tr>
<td>2</td>
<td>6.00</td>
<td>2.08</td>
<td>5.83</td>
</tr>
<tr>
<td>3</td>
<td>7.67</td>
<td>2.13</td>
<td>6.08</td>
</tr>
<tr>
<td>4</td>
<td>6.58</td>
<td>2.66</td>
<td>6.92</td>
</tr>
<tr>
<td>5</td>
<td>5.83</td>
<td>2.61</td>
<td>7.25</td>
</tr>
<tr>
<td>6</td>
<td>6.58</td>
<td>2.14</td>
<td>5.42</td>
</tr>
</tbody>
</table>

Note: Lower scores represent higher risk levels.
<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Ss</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country (A)</td>
<td>2</td>
<td>83.76</td>
<td>5.34**</td>
</tr>
<tr>
<td>Error 1</td>
<td>33</td>
<td>15.69</td>
<td></td>
</tr>
<tr>
<td><strong>Within Ss</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing (B)</td>
<td>1</td>
<td>6.26</td>
<td>1.91</td>
</tr>
<tr>
<td>A x B</td>
<td>2</td>
<td>1.00</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Error 2</td>
<td>33</td>
<td>3.28</td>
<td></td>
</tr>
<tr>
<td>Problems (C)</td>
<td>5</td>
<td>15.29</td>
<td>1.70</td>
</tr>
<tr>
<td>A x C</td>
<td>10</td>
<td>19.87</td>
<td>2.21*</td>
</tr>
<tr>
<td>Error 3</td>
<td>165</td>
<td>9.00</td>
<td></td>
</tr>
<tr>
<td>B x C</td>
<td>5</td>
<td>1.76</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>A x B x C</td>
<td>10</td>
<td>3.42</td>
<td>1.27</td>
</tr>
<tr>
<td>Error 4</td>
<td>165</td>
<td>2.68</td>
<td></td>
</tr>
</tbody>
</table>

*p < .025

**p < .01
Due to the rather minor nature of this heterogeneity and the robustness of the analysis of variance procedure transformations of the data were not considered warranted (see Lindquist, 1953). A mixed design (one between/two within) analysis of variance (Winer, 1962) was performed on the data in Table I. The results of this analysis are presented in Table II.

Inspection of the analysis of variance summary in Table II indicated that the main effect of Testing (B) was not significant \( F = 1.91, \text{df} = 1.33, \text{NS} \). The \( B \times C \) and the \( A \times B \times C \) interactions also were not significant \( (B \times C: F < 1, \text{df} = 5.165, \text{NS}; A \times B \times C: F = 1.27, \text{df} = 10.165, \text{NS}) \). Taken together, these results indicated that risk taking remained stable from one testing session to another testing session one week later. Moreover, risk taking for particular problems did not change significantly over time for subjects in any of the three countries studied. The basic requirement for testing the effects of group discussion on risk taking therefore was satisfied; any shifts that occurred in a group situation could not be attributed to taking the test a second time. These findings also attested to the reliability of the Kogan and Wallach Choice Dilemmas instrument for use with the particular samples employed in the present study. Product moment correlations between total risk taking scores for the first and second testing sessions were: Japan: Control 1 = +.90; Control 11 = +.81; Philippines: Control 1 = +.60; Australia: Control 1 = +.55; Control 11 = +.70. \( N \) was 12 in each group.

---

\( ^1 \) For Filipino subjects, the time between testing sessions was four days instead of seven.
It was also evident from Table II that the main effect of
Country (A) was significant ($F = 5.34, \text{df} = 2,33, p < .01$). The inter-
action between Country (A) and Problems (B) was also significant
($F = 2.21, \text{df} = 10,165, p < .025$). Tests of the simple effects of
problems among the three countries were performed in order to determine
the basis of the interaction. These tests indicated that countries did
not differ on problem 2 (medical operation), problem 4 (overseas capital
investment), and problem 5 (academic risk). On problem 1 (occupational
risk) Australia was significantly more risky than Japan, using the
Newman-Keuls procedure to test differences between ordered means. The
Philippines was not significantly different from either Japan or Australia
on this problem. On problem 3 (football or prestige risk) Australia was
significantly more risky ($p < .01$) than both Japan and the Philippines.
On problem 6 (chess or prestige risk) Australia was also significantly
more risky than Japan ($p < .01$) and the Philippines ($p < .05$) when tested
by the Newman-Keuls procedure. Tests of the simple effects of problems
within each country indicated that there was a significant difference
between problems for Japan ($F = 2.94, \text{df} = 5, 165, p < .025$) and Australia
($F = 7.96, \text{df} = 5, 165, p < .001$). In contrast, the test for the simple
effect of problems for the Philippines was not significant ($F = 1.46,
\text{df} = 5, 165, p = .20$). This finding among Filipino subjects was consist-
ent for the majority of subsequent analyses and is dealt with in greater
detail when major results are presented.

In summary, among control 1 subjects, Australia was significantly
more risky than Japan and the Philippines on 3 of the 6 Choice Dilemmas.
problems. On the remaining 3 problems Australia did not differ significantly from Japan and the Philippines.

It will be recalled that a second control group was employed (in Japan and Australia only) in order to gain some indication of how subjects in other cultures would rate the risk levels of "the majority of others" and the risk levels they would admire most. Only results of initial individual risk levels over time for this control group are presented below in order to provide a double check on the stability of risk taking, and for comparison with later results on which tests of the experimental hypotheses are based.\(^2\) Means and standard deviations for the second control group in relation to problems and testing sessions are presented in Table III. [Hartley's test of the homogeneity of variance assumption was again performed. Again, there was heterogeneity of variance for only one of the twelve tests. No transformations of the data were made in view of this slight degree of heterogeneity.] A mixed design (one between/two within) analysis of variance (Winer, 1962) was performed on the data. The results of this analysis are presented in Table IV.

Inspection of the summary of the analysis of variance in Table IV clearly indicated that the main effect of testing session again was not significant \((F < 1, \text{df} = 1,22, \text{NS})\). In addition, the B x C and the A x B x C interactions were not significant \((B \times C: F = 1.35, \text{df} = 5,110, \text{NS}; A \times B \times C: F = 2.19, \text{df} = 5,110, \text{NS})\). The stability of risk taking

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\(^2\) Complete analysis of "majority of others" ratings and ratings of most admired choices, however, indicated that these ratings also remained stable from the first to the second testing session.
TABLE III. MEANS AND STANDARD DEVIATIONS OF RISK TAKING SCORES FOR SECOND CONTROL GROUPS (JAPAN AND AUSTRALIA ONLY) IN RELATION TO PROBLEMS AND TESTING SESSION

<table>
<thead>
<tr>
<th>Problem</th>
<th>Japan Mean (M)</th>
<th>Japan SD</th>
<th>Australia Mean (M)</th>
<th>Australia SD</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>5.67</td>
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<tr>
<td>2</td>
<td>6.25</td>
<td>2.74</td>
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</tr>
<tr>
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</tr>
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<td>2.18</td>
<td>3.83</td>
<td>2.64</td>
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</table>

**First Testing Session**

<table>
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<th>Japan SD</th>
<th>Australia Mean (M)</th>
<th>Australia SD</th>
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<td>5.25</td>
<td>2.52</td>
</tr>
<tr>
<td>2</td>
<td>6.17</td>
<td>2.37</td>
<td>5.25</td>
<td>3.00</td>
</tr>
<tr>
<td>3</td>
<td>7.42</td>
<td>2.84</td>
<td>3.67</td>
<td>2.36</td>
</tr>
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<td>6.75</td>
<td>2.86</td>
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<td>5</td>
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<td>2.60</td>
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<td>7.00</td>
<td>1.96</td>
<td>4.33</td>
<td>2.21</td>
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**Second Testing Session**

Note: Lower scores represent higher risk levels.
### TABLE IV. ANALYSIS OF VARIANCE FOR TABLE III

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<td><strong>Between Ss</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Country (A)</td>
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<td>48.35</td>
<td>2.28</td>
</tr>
<tr>
<td>Error 1</td>
<td>22</td>
<td>21.20</td>
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<tr>
<td><strong>Within Ss</strong></td>
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</tr>
<tr>
<td>Testing (B)</td>
<td>1</td>
<td>0.68</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>A x B</td>
<td>1</td>
<td>9.39</td>
<td>3.25</td>
</tr>
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<td>Error 2</td>
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</tr>
<tr>
<td>Problems (C)</td>
<td>5</td>
<td>9.10</td>
<td>1.37</td>
</tr>
<tr>
<td>A x C</td>
<td>5</td>
<td>29.75</td>
<td>4.48***</td>
</tr>
<tr>
<td>Error 3</td>
<td>110</td>
<td>6.64</td>
<td></td>
</tr>
<tr>
<td>B x C</td>
<td>5</td>
<td>4.38</td>
<td>1.35</td>
</tr>
<tr>
<td>A x B x C</td>
<td>5</td>
<td>7.09</td>
<td>2.19</td>
</tr>
<tr>
<td>Error 4</td>
<td>110</td>
<td>3.25</td>
<td></td>
</tr>
</tbody>
</table>

***p < .001
over time was therefore clearly demonstrated using two independent control groups.

In contrast to the previous control group analysis, the main effect of country (A) was not significant (F = 2.28, df = 1,22, NS). This second control group of Australian subjects did not differ significantly from their Japanese counterparts. This difference between Australian control was most curious because initial risk decisions were elicited from both Australian control groups using exactly identical procedures. The similarity of initial decisions among the second control group and experimental subjects from Australia (presented in the following sections) suggested that, although sampling for all groups was random, a significantly greater proportion of high risk takers was included in the first Australian control group by chance.

Also, in contrast to the first control group, the main effect of problems (C) was not significant (F = 1.37, df = 5,110, NS). The highly significant A x C interaction, however, was similar to the first control group analysis (F = 4.48, df = 5,110, p < .001). Tests of the simple effects of country (A) and problems (C) were performed to determine the basis of the A x C interaction. The simple effect of problems (C) among the Japanese was not significant (F = 1.61, df = 5,110, NS) whereas the simple effect of problems among the Australians was again highly significant (F = 9.56, df = 5,110, p < .001). Newman-Keuls analysis of the difference between ordered means indicated that among Australian subjects mean risk taking was significantly greater on problems 3 (football) and 6 (chess) than it was on problem 2 (medical operation) (p < .01).
Tests of the simple effects of country (A) at each problem showed that on only two of the six problems did the two countries differ. The Australians were significantly more risky at problem 3 (football) \((F = 9.55, \text{df} = 1,22, p < .01)\) and at problem 6 (chess) \((F = 11.01, \text{df} = 1,22, p < .005)\). These differences between Japan and Australia accorded with the results obtained with the Newman-Keuls analysis of mean differences among problems for the Australian subjects presented above. In summary, Australian subjects were more risky than Japanese subjects on problems 3 (football) and 6 (chess). On the remaining four problems, there was no difference between Japanese and Australian subjects on initial risk taking. This pattern of differences was quite consistent for both control groups and for experimental subjects, to be presented later.

IV. 1.2. Equivalence of Experimental and Control Groups on Initial Risk Taking

It has already been established that individual risk scores remained stable from the first to the second testing session. Before proceeding to presentation of the major results, it was necessary to ascertain that control subjects' initial risk scores did not differ from experimental subjects' initial risk scores. The mean total risk scores and standard deviations in relation to country and treatment (control 1, control 11, and experimental) are presented in Table V.

A series of simple analyses of variance was performed on the data in Table V. None of these analyses revealed any significant differences between initial risk taking of control and experimental subjects. These results are summarized in Table VI.
### TABLE V. MEANS AND STANDARD DEVIATIONS OF TOTAL RISK TAKING SCORES IN RELATION TO COUNTRY AND TREATMENT

| Treatment   | Japan | | Philippines | | Australia | |
|-------------|------|---|-------------|---|-----------|
|             | M    | SD| M           | SD| M         | SD  |
| Control 1   | 37.92| 7.25|37.00        | 8.37|29.67      | 7.69 |
| Control 11  | 35.08| 9.76|---          | ---|32.33      | 7.00 |
| Experimentals| 36.06| 8.22|36.49        | 7.28|34.41      | 7.87 |

**Note.** For control groups, N = 12; for experimentals, N = 49

### TABLE VI. SUMMARY OF ANALYSES OF VARIANCE FOR TABLE V

**Japan**

Control 1 - Experimentals: $F < 1$, df = 1,59, NS.

Control 11 - Experimentals: $F < 1$, df = 1,59, NS.

**Philippines**

Controls - Experimentals: $F < 1$, df = 1,59, NS.

**Australia**

Control 1 - Experimentals: $F = 3.41$, df = 1,59, $p = .07$.

Control 11 - Experimentals: $F < 1$, df = 1,59, NS.
On the basis of results presented in Table VI, it was reasonable to conclude that initial risk taking among control subjects did not differ significantly from initial risk taking among experimental subjects in each country. The marginal significance of the Control 1–Experimental analysis for Australia was consistent with earlier observations that a higher proportion of high risk takers had been included in the first control group by chance as testing procedures were identical. Comparisons between control and experimental subjects in Japan and the Philippines were consistently non-significant. Results derived from analysis of data from experimental subjects, therefore, cannot be attributed to differential initial risk taking among experimental subjects.

IV. 2. Major Results
IV. 2.1. Individual and Group Risk Taking

Hypothesis 1(a) stated that the pattern of initial individual risk taking across problems within one culture should be different from the patterns of initial individual risk taking across problems within other cultures. Data to test this hypothesis were initial individual risk taking scores across six problems for all experimental subjects from Japan, Philippines, and Australia. Means and standard deviations of initial individual risk taking scores in relation to country and problems are presented in Table VII. It should be noted that lower scores represent higher risk levels. [Hartley's test of homogeneity of variance (Myers, 1966) was performed on the individual country variances for each problem. For all problems, the value of the $F_{max}$ statistic failed to reach the 5% level of significance, hence attesting the tenability of the homogeneity of variance assumption.] The results of a
TABLE VII. MEAN INITIAL RISK TAKING SCORES AND STANDARD DEVIATIONS FOR JAPAN, PHILIPPINES, AND AUSTRALIA ACROSS SIX PROBLEMS (N = 49)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Japan</th>
<th>Philippines</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>1</td>
<td>5.71</td>
<td>2.64</td>
<td>6.25</td>
</tr>
<tr>
<td>2</td>
<td>6.06</td>
<td>2.87</td>
<td>6.12</td>
</tr>
<tr>
<td>3</td>
<td>6.41</td>
<td>2.51</td>
<td>5.84</td>
</tr>
<tr>
<td>4</td>
<td>6.53</td>
<td>2.37</td>
<td>6.14</td>
</tr>
<tr>
<td>5</td>
<td>5.67</td>
<td>2.93</td>
<td>6.18</td>
</tr>
<tr>
<td>6</td>
<td>5.27</td>
<td>2.56</td>
<td>5.96</td>
</tr>
</tbody>
</table>

Note: Lower scores represent higher risk levels.

TABLE VIII. ANALYSIS OF VARIANCE FOR TABLE VII

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Ss</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country (A)</td>
<td>2</td>
<td>8.96</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Error 1</td>
<td>144</td>
<td>10.25</td>
<td></td>
</tr>
<tr>
<td>Within Ss</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problems (B)</td>
<td>5</td>
<td>39.24</td>
<td>6.35***</td>
</tr>
<tr>
<td>A x B</td>
<td>10</td>
<td>19.28</td>
<td>3.12**</td>
</tr>
<tr>
<td>Error 2</td>
<td>720</td>
<td>6.18</td>
<td></td>
</tr>
</tbody>
</table>

**p ≤ .005 (two-tailed)

***p ≤ .001 (two-tailed)
mixed design (one between/one within) analysis of variance (Winer, 1962) performed on the data are presented in Table VIII.

Inspection of the results in Table VIII indicated two highly significant sources of variation. The main effect of problems (B) was highly significant \( (F = 6.35, \text{df} = 5,720, p < .001) \). The other significant source of variation was the country (A) \times\ problems (B) interaction \( (F = 3.12, \text{df} = 10,720, p < .005) \) which clearly provided support for hypothesis 1(a), that the pattern of initial individual risk taking within one culture should be different from the pattern of initial individual risk taking across problems in other cultures. Inspection of the means in Table VII shows that mean initial risk taking among Australian subjects accounts for this difference more than either Japanese or Filipino mean initial risk taking. Mean initial risk taking scores for Australian subjects ranged from 4.74 to 7.49, whereas the range of scores for Japanese and Filipino subjects was much narrower (Japan: 5.27 - 6.53; Philippines: 5.84 - 6.25).

In order to understand the basis of the highly significant interaction between country (A) and problems (B) more fully, tests of the simple effects of A and B, rather than direct tests of main effects, were performed. Analysis of the simple effects of country (A) at each of the problems (B) indicated, on the one hand, that Japanese, Filipino, and Australian subjects did not differ significantly on initial individual risk taking on problem 1 (occupational risk), problem 2 (medical operation), and problem 5 (academic risk). It may be noted, however, that the difference between countries approached significance on problem 5 (academic risk) \( (F = 2.84, \text{df} = 2,144, p = .07) \). On the other hand, tests
of the simple effects of country at problems 3 (football), 4 (overseas capital investment), and 6 (chess) indicated significant differences between countries. Newman-Keuls procedure was employed to determine the differences between means at each of these problems.

These analyses indicated that at problem 3 (football) Australian subjects were significantly more risky than Filipino (p \(<\) .05) and Japanese (p \(<\) .01) subjects. Japanese and Filipino subjects did not differ from one another. The results for problem 6 (chess) are fairly similar. Australian subjects were again more risky than Filipinos (p \(<\) .05), but not significantly more risky than Japanese subjects. In contrast, at problem 4 (overseas capital investment) Australian subjects tended (p \(<\) .10) to be more conservative than Filipino subjects but not significantly different from Japanese subjects.

Tests of the simple effects of problems (B) within each country supported the above interpretation of the country by problems interaction. For Japanese subjects, the amount of initial individual risk taken at each of the problems tended to be different (F = 1.88, df = 5,720, p \(<\) .10) although these differences were not significant. For Filipino subjects, equivalent analyses indicated that the amount of initial individual risk taken at each of the problems did not differ significantly (F \(<\) 1, df = 5,720, NS). It will be recalled that this result was also obtained with Filipino control subjects. Finally, and also consistent with Australian control subjects, the amount of initial risk taken at each of the six problems for Australian subjects was highly significant (F = 10.56, df = 5,720, p \(<\) .001). Newman-Keuls analysis of the differences between means for the Australian subjects again indicated that
greater amounts of risk were taken on problems 3 (football), 6 (chess) and 5 (academic risk) than on problems 2 (medical operation) and 4 (overseas capital investment). These differences were significant at the 1% level of significance.

In summary, the interaction effect was mainly attributable to the tendency for Australian subjects to make more risky decisions than the Filipinos and the Japanese on some problems while making more conservative decisions than the Filipinos and the Japanese on at least one problem. By and large, there was little difference between the pattern of risk taking among Filipinos and Japanese, although the Japanese did tend to take greater or lesser risk according to the content of the problems. On the other hand, the Filipinos tended to treat each problem alike irrespective of content.

Although different patterns of initial individual risk taking were found in the three cultures studied, the findings suggest that these differences are attributable to the greater variability among mean initial risk taking scores across problems in Australia (range: 4.74 - 7.49) in contrast to the rather limited variability in mean initial risk taking scores across problems in Japan (range: 5.27 - 6.53) and in the Philippines (range: 5.84 - 6.25).

Hypothesis 1(b) stated that the pattern of group risk taking across problems within one culture should be different from the pattern of group risk taking across problems within other cultures. Data to test this hypothesis were group decisions for all experimental groups from Japan, Philippines and Australia. Means and standard deviations of group risk taking scores in relation to country and problems are presented in Table IX.
TABLE IX. MEANS AND STANDARD DEVIATIONS OF GROUP RISK TAKING SCORES IN RELATION TO COUNTRY AND PROBLEMS (N = 10 IN EACH COUNTRY)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Japan M</th>
<th>Japan SD</th>
<th>Philippines M</th>
<th>Philippines SD</th>
<th>Australia M</th>
<th>Australia SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.70</td>
<td>3.06</td>
<td>7.10</td>
<td>2.58</td>
<td>6.40</td>
<td>1.96</td>
</tr>
<tr>
<td>2</td>
<td>6.90</td>
<td>2.55</td>
<td>6.10</td>
<td>2.02</td>
<td>7.90</td>
<td>1.45</td>
</tr>
<tr>
<td>3</td>
<td>6.60</td>
<td>2.11</td>
<td>6.00</td>
<td>2.68</td>
<td>3.80</td>
<td>2.04</td>
</tr>
<tr>
<td>4</td>
<td>8.20</td>
<td>2.13</td>
<td>7.00</td>
<td>3.41</td>
<td>8.20</td>
<td>1.25</td>
</tr>
<tr>
<td>5</td>
<td>4.90</td>
<td>2.30</td>
<td>7.40</td>
<td>2.11</td>
<td>5.00</td>
<td>2.37</td>
</tr>
<tr>
<td>6</td>
<td>5.00</td>
<td>2.00</td>
<td>5.60</td>
<td>3.44</td>
<td>2.60</td>
<td>1.50</td>
</tr>
</tbody>
</table>

Note: Lower scores represent higher risk levels.

[Homogeneity of variance assumptions were again tested using Hartley's test (Myers, 1966). Results of these analyses indicated that only for problem 4 (overseas capital investment) was there any degree of heterogeneity (p < .05). The within country homogeneity of variances was also checked; none of these results were significant. Since the degree of heterogeneity of variances was considered to be minor (see Lindquist, 1953) transformations of the data were not considered warranted.] A mixed design (one between/one within) analysis of variance (Winer, 1962) was performed on the data in Table IX. The results of this analysis are presented in Table X.

Inspection of the analysis of variance results in Table X indicated two highly significant sources of variation. It may be noted
that the pattern of results for group risk taking were similar to the pattern of results for initial individual risk taking presented previously.

Once again, the main effect of problems (B) was highly significant (F = 7.66, df = 5,135, p < .001). The country (A) by problems (B) interaction was also highly significant again (F = 2.61, df = 10,135, p < .01).

Clear support, therefore, was provided for hypothesis 1(b), that the pattern of group risk across problems within one culture should be different from the pattern of group risk taking across problems within other cultures.

Tests of the simple effects of country (A) and problems (B) were performed in order to determine the basis for the A x B interaction.

Analysis of the simple effects of country (A) at each of the six problems indicated firstly that Japanese, Filipino, and Australian groups did not
differ in risk taking on problems 1 (occupational risk), 2 (medical operation), and 4 (overseas capital investment). Secondly, significant differences were found among countries on problem 3 (football), problem 5 (academic risk) and problem 6 (chess). This pattern of group risk taking differences was strikingly similar to the pattern of initial individual risk taking reported earlier. The similarity indicated by the individual and group risk taking results reflects a tendency for Australian groups to become more risky on problems where individually they were initially more risky and to become more conservative on problems where they were individually initially more conservative than Japanese and Filipino groups. The major difference in pattern concerned problem 4 (overseas capital investment). Whereas initial individual risk taking on problem 4 was significantly different among countries, group decisions tended to converge after group discussion.

Detailed analyses of the differences between countries on problems 3, 5, and 6 by Newman-Keuls procedure again indicated that Australian groups were significantly more risky (p < .05) than both Japanese and Filipino groups on problem 3 (football). Similarly, on problem 6 (chess) Australian groups were significantly more risky than both Japanese and Filipino groups (p < .01). On problem 5 (academic risk) both Japanese and Australian groups were significantly more risky than Filipinos (p < .05). It may be noted that in the earlier analysis of individual risk taking, differences between countries on problem 5 were only marginally significant; after group discussion there was a clear difference - the Japanese and Australian groups moved to a riskier position, while Filipino groups moved to a more conservative position.
Tests of the simple effects of problems within each country shed additional light on the A x B interaction. Again, the effect of problems for the Filipinos was not significant \( (F < 1, df = 5,135, \text{NS}). \) Even in a group situation, Filipinos did not significantly differentiate among the problems as to the level of risk required. In other words, no one problem seemed to require greater risk or greater conservatism as a result of group discussion. It is perhaps more likely, however, that the decision process rather than the actual problem content may be the basis for this lack of differentiation. This point will be considered further in the following chapter where results of all analyses are drawn together.

Tests of simple effects of problems among the Japanese groups was significant \( (F = 2.88, df = 5,135, p < .025). \) This finding was also interesting. It will be recalled that the simple effects of problems among initial individual risk taking scores among the Japanese was only of marginal significance \( (p < .10). \) In the group situation, problems were obviously more clearly differentiated in terms of the levels of group risk required. In a group situation, Japanese subjects made riskier decisions than they were prepared to make individually. In addition, in a group situation, they made more conservative decisions on at least one problem than they were prepared to make individually. Newman-Keuls analyses of the differences between ordered means indicated that among Japanese groups, greater risk was taken on problems 5 (academic risk) and 6 (chess) than on problem 4 (overseas capital investment).

For Australian groups, the simple effect of problems was again highly significant \( (F = 9.06, df = 5,135, p < .001). \) Newman-Keuls analysis revealed a similar pattern of results among group mean
differences as among individual mean differences. Significantly greater 
\( p < .01 \) group risk was taken on problems 3 (football), 5 (academic risk) 
and 6 (chess) than on problems 1 (occupational risk), 2 (medical opera-
tion), and 4 (overseas capital investment).

In summary, the interaction effect was mainly attributable to the 
tendency for Australian groups to make more risky decisions on some 
problems and more conservative decisions on other problems relative to 
Filipino groups particularly. After group discussion, Japanese groups 
also tended to be more risky on problems 5 (academic risk) and 6 (chess) 
than the Filipino groups. The Filipino groups, like the Filipino individ-
ual risk scores, showed no differentiation among the six problems as to the 
level of risk required. It was suggested, and will be elaborated further 
in the following chapter, that the discussion process rather than the 
problem content may be a significant factor contributing to this result.

IV. 2.2. Group Shifts

In hypothesis 2(a) it was argued that the magnitude of group 
shifts should be greater in Japan and Australia than in the Philippines. 
A subsidiary hypothesis, hypothesis 2(b), stated that the pattern of 
group shifts across problems within one culture should be different from 
the pattern of group shifts across problems within other cultures. Data 
relevant to these hypotheses were the differences between the mean of the 
group members' initial individual decisions for each problem and their 
respective group decisions for each problem. Means and standard devia-
tions of group shifts in relation to country and problems are presented in 
Table XI. In this table, a positive difference score indicates a shift 
toward risk; a negative difference indicates a shift toward conservatism.
TABLE XI. MEANS AND STANDARD DEVIATIONS OF GROUP SHIFTS IN RELATION TO COUNTRY AND PROBLEMS (N = 10 IN EACH COUNTRY)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Japan M</th>
<th>SD</th>
<th>Philippines M</th>
<th>SD</th>
<th>Australia M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+0.02</td>
<td>2.02</td>
<td>-0.96</td>
<td>3.27</td>
<td>-0.56</td>
<td>2.34</td>
</tr>
<tr>
<td>2</td>
<td>-0.85</td>
<td>2.48</td>
<td>0.0</td>
<td>1.99</td>
<td>-1.27</td>
<td>1.15</td>
</tr>
<tr>
<td>3</td>
<td>-0.21</td>
<td>1.42</td>
<td>-0.22</td>
<td>1.94</td>
<td>+1.00</td>
<td>1.16</td>
</tr>
<tr>
<td>4</td>
<td>-1.66</td>
<td>2.29</td>
<td>-0.78</td>
<td>3.09</td>
<td>-0.72</td>
<td>1.29</td>
</tr>
<tr>
<td>5</td>
<td>+0.84</td>
<td>2.13</td>
<td>-1.16</td>
<td>1.87</td>
<td>+0.08</td>
<td>2.01</td>
</tr>
<tr>
<td>6</td>
<td>+0.27</td>
<td>1.64</td>
<td>+0.44</td>
<td>2.43</td>
<td>+2.00</td>
<td>0.93</td>
</tr>
</tbody>
</table>

Note: A + shift represents a shift to risk; a - shift represents a shift to conservatism.

Tests of the homogeneity of variances assumption were performed on the data in Table XI. These analyses showed that on problems 4 (overseas capital investment) and 6 (chess) the homogeneity of variance assumption was rejected at the 5% level of significance. It was clear from inspection of the data in Table XI that on both problems there was considerably less variability among the Australian groups than among the Filipino groups particularly. It was also fairly clear from the above table that there tended to be less variability generally among the Australian groups relative to both Japanese and Filipino groups. Within country tests of the homogeneity of variances assumption were also made but none were significant at the 5% level of significance. In Lindquist's terms, even this degree of heterogeneity would still be considered minor. And, in view of the lack of significant differences in Table XII, no transformations
TABLE XII. ANALYSIS OF VARIANCE FOR TABLE XI

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Ss</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country (A)</td>
<td>2</td>
<td>4.42</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Error 1</td>
<td>27</td>
<td>5.61</td>
<td></td>
</tr>
<tr>
<td><strong>Within Ss</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problems (B)</td>
<td>5</td>
<td>14.72</td>
<td>3.22**</td>
</tr>
<tr>
<td>A x B</td>
<td>10</td>
<td>5.83</td>
<td>1.27</td>
</tr>
<tr>
<td>Error 2</td>
<td>135</td>
<td>4.57</td>
<td></td>
</tr>
</tbody>
</table>

**p < .01**

were made on the data. The results of a mixed design (one between/one within) analysis of variance (Winer, 1962) applied to the data are presented in Table XII.

Inspection of the results in Table XII clearly indicated no support for either hypothesis 2(a) or hypothesis 2(b). The main effect of country (A) was not significant ($F < 1$, df = 2, 27, NS). Australia and Japan did not shift more than the Philippines did in the group situation. Moreover, the country (A) by problems (B) interaction was not significant ($F = 1.27$, df = 10, 135, NS). There was no significant tendency for the pattern of group shifts in one culture to differ from the pattern of group shifts in other cultures. The only significant effect in Table XII was a highly significant main effect of problems ($F = 3.22$, df = 5, 135, $p < .01$). This significant effect implied that the magnitude of shifts across problems was significantly different. Tests of the mean differences by Newman-Keuls procedure indicated that the mean group shift over
all countries for problem 6 (chess) was significantly different from the mean group shifts on problems 4 (overseas capital investment) and 2 (medical operation). These differences were significant at the 1% and 5% levels of significance respectively.

The lack of significant interaction between country and problems implied, at least to some extent, that group shifts tended to be in a consistent direction on each problem. Inspection of the table of means (Table XI) indicated that this was true for at least four of the six problems - 1 (occupational risk), 2 (medical operation), 4 (overseas capital investment) and 6 (chess). The differential directions of shift among countries for the other two problems [3 (football) and 5 (academic risk)] were obviously neither discrepant nor powerful enough to produce a significant interaction. These results are interesting because they did imply a certain unanimity of approach between countries for two-thirds of the problems. In other words, all groups, irrespective of country, tended to perceive the need for more conservative decisions on problem 1 (occupational risk), problem 2 (medical operation) and problem 4 (overseas capital investment) and to perceive the need for riskier decisions on problem 6 (chess).

It was equally obvious, however, from inspection of the data in Table XI that the shifts among countries, even though in a relatively consistent direction for two-thirds of the problems, were markedly different in magnitude. It will be recalled that, from a group dynamics point of view as elaborated in Kogan and Wallach's work, the fundamental question was whether the group risk level was significantly different from the average of the individual group members' risk levels. Moreover, since
TABLE XIII. SIGNIFICANCE OF DIFFERENCE BETWEEN MEANS OF INITIAL INDIVIDUAL GROUP MEMBERS' DECISIONS AND GROUP DECISIONS FOR JAPAN, PHILIPPINES AND AUSTRALIA

<table>
<thead>
<tr>
<th>Problem</th>
<th>Mean Difference</th>
<th>No. of Groups</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>+ 0.02</td>
<td>10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>2</td>
<td>- 0.85</td>
<td>10</td>
<td>1.09</td>
</tr>
<tr>
<td>3</td>
<td>- 0.21</td>
<td>10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>4</td>
<td>- 1.66</td>
<td>10</td>
<td>2.31*</td>
</tr>
<tr>
<td>5</td>
<td>+ 0.84</td>
<td>10</td>
<td>1.25</td>
</tr>
<tr>
<td>6</td>
<td>+ 0.27</td>
<td>10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Philippines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>- 0.96</td>
<td>10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>2</td>
<td>0.00</td>
<td>10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>3</td>
<td>- 0.22</td>
<td>10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>4</td>
<td>- 0.78</td>
<td>10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>5</td>
<td>- 1.16</td>
<td>10</td>
<td>1.97</td>
</tr>
<tr>
<td>6</td>
<td>+ 0.44</td>
<td>10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Australia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>- 0.56</td>
<td>10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>2</td>
<td>- 1.27</td>
<td>10</td>
<td>3.53**</td>
</tr>
<tr>
<td>3</td>
<td>+ 1.00</td>
<td>10</td>
<td>2.70*</td>
</tr>
<tr>
<td>4</td>
<td>- 0.72</td>
<td>10</td>
<td>1.75</td>
</tr>
<tr>
<td>5</td>
<td>+ 0.08</td>
<td>10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>6</td>
<td>+ 2.00</td>
<td>10</td>
<td>6.90***</td>
</tr>
</tbody>
</table>

*p < .05
**p < .01
***p < .001
one fundamental aim of the present study was to test the generality of
the risky-shift phenomenon; further analysis of the data in Table XI
was warranted to examine whether group shifts within each country across
each problem were significant. t tests of the differences between
correlated means (McNemar, 1962) for each problem within each country
were performed. Detailed results of these analyses are presented in
Table XIII.

It was immediately apparent from the results in Table XIII that in
very few cases was the unanimous group decision significantly different
from the average of the individual members' decisions. The extent of the
generality of the risky-shift phenomenon previously reported (Kogan and
Wallach, 1967) was not upheld by the present data. Looking at the results
in detail, for Japan, there was a significant shift to conservatism on
problem 4 (overseas capital investment) \( t = 2.31, df = 9, p < .05 \). On
all other problems the group decisions were not significantly different
from the average of the individual group members' decisions. For the
Philippines, none of the differences between the average of individual
group members' decisions and the group decisions were significant. This
finding was not inconsistent with results previously reported for the
Filipinos, and lent additional credence to the suggestion that the group
decision situation may be a factor of greater significance for the
Filipinos than the actual content of the decision problems. For
Australia, three of the six mean differences were significant. Moreover,
shifts in both risky and conservative directions were significant: shift
to conservatism: problem 2 (medical operation) \( t = 3.53, df = 9,\)
\( p < .01 \); shifts to risk: problem 3 (football) \( t = 2.70, df = 9,\)
It may be noted that these results for the Australian groups are different from the usual American findings in that shifts to conservatism among American groups have rarely been found significant (see Pruitt & Teger, 1967 for a complete listing of American shifts).

Taking the results from the three countries together, these results might suggest two things:

1. That in Japan and the Philippines the modus operandi of group decision making, at least among senior high school boys, was a compromise of the individual group members' initial approaches to a problem.

2. That in Australia the group decision may be a compromise of the group members' initial decisions, or it may be more risky or more conservative than the average of the individual members' initial decisions depending on the circumstances. Some additional light was shed on the conditions under which a group compromise decision was attained in Australia. As part of the post-performance questionnaire, subjects were asked to rank the decision problems in the order in which success at each of them would be most attractive (a rank of 1 for a particular problem indicated that the subject would most like to succeed at that particular problem; a rank of 6 for a particular problem indicated that a subject would least like to succeed at that problem). The mean rankings (N = 49) for problems on which a group compromise decision was preferred [that is, on problems 1 (occupational risk, 4 (overseas capital investment) and 5 (academic risk)] were 2.60 (1st rank), 3.64 (3rd rank) and 2.94 (2nd rank) respectively. The mean rankings for problems on which group shifts occurred were: problem 3 (football) 3.70 (4th rank), problem 2 (medical
operation) 3.85 (5th rank) and problem 6 (chess) 4.28 (6th rank). In other words, on problems at which success was **relatively unattractive**, group decisions were more or less risky than the group average; on problems at which success was **relatively attractive**, no significant group shifts occurred.

Comparable arguments, of course, do not hold for the Philippines and Japan, but this is due in large measure to the procedure used to elicit attractiveness ratings. It may be noted, however, that the one problem on which Japanese groups did show a significant shift (problem 4 - overseas capital investment) had a mean attractiveness of success ranking of 3.02 (2.5th rank). In other words, for the Japanese, a group shift was obtained on a problem on which success was relatively attractive. This possible difference between the Japanese and the Australian groups is suggestive, but much more detailed research is obviously necessary before any firm conclusions could be drawn. The question of attractiveness of success and risk taking is more fully discussed in a later section.

Summarizing the group shift results: (1) there was no evidence to suggest that the magnitude of group shifts was greater in Japan and Australia than in the Philippines. (2) There was no evidence to suggest that the pattern of group shifts within one culture was different from the pattern of group shifts in the other cultures studied. In contrast, the data did indicate a tendency for groups, irrespective of culture, to make relatively conservative group decisions (relative, that is, to prior individual decisions) on problems involving physical risk, occupational risk, and large scale overseas capital investment risks. A tendency for groups to make relatively more risky group decisions on the chess problem
was also apparent in the data. It will be recalled that we argued earlier that the chess problem reflected a rather less important prestige type risk. Group shifts on the other two problems did not indicate any consistent direction of shift across cultures. (3) The extent of the generality of the risky-shift phenomenon previously reported (Kogan and Wallach, 1967) was not upheld by the present data. Indications were that the Australian results more closely paralleled previous findings, although significant conservative shifts as well as significant risky shifts were obtained. The Japanese and Filipino data considered together revealed only one significant shift in the group situation, and that shift was to greater conservatism.

IV. 2.3. Moderate Risk Taking

In hypothesis 3(a) it was argued that the frequency of moderate risk taking on initial individual decisions should be greater in Australia and Japan than in the Philippines. Data relevant to test this hypothesis were the frequencies of moderate risk (3/10; 5/10; 7/10 chances) in comparison to the frequencies of extreme risk (1/10 chances) and extreme conservatism (9/10; 10/10 = rejection of risky alternative altogether). The criterion for designation of 3/10, 5/10, and 7/10 chances as moderate risk was based on the mean range of initial individual risk taking which characteristically produced a shift to risk among American subjects (Pruitt & Teger, 1967, Table 2). It was assumed that this range would accord with Brown's (1965) conception of moderate risk taking.

Subjects were classified as extremely risky or extremely conservative if at least two of their individual decisions fell into the above
categories. That is, if a subject made two decisions at the 1/10 level of risk he was classified as extremely risky. If a subject made two at the 9/10 or 10/10 levels of risk he was classified as extremely conservative. All other subjects were classified as moderate risk takers. The numbers of subjects taking extreme risk, moderate risk, and extreme conservatism according to this classification are presented in Table XIV.

TABLE XIV. FREQUENCY OF EXTREME RISK, MODERATE RISK, AND EXTREME CONSERVATISM AMONG JAPANESE, FILIPINO, AND AUSTRALIAN SUBJECTS (N = 49 IN EACH COUNTRY)

<table>
<thead>
<tr>
<th>Country</th>
<th>Extreme Risk (1/10)</th>
<th>Moderate Risk (3/10,5/10,7/10)</th>
<th>Extreme Conservatism (9/10,10/10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>4</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>Philippines</td>
<td>2</td>
<td>21</td>
<td>26</td>
</tr>
<tr>
<td>Australia</td>
<td>10</td>
<td>21</td>
<td>18</td>
</tr>
</tbody>
</table>

Chi-square = 8.03, df = 4, p < .10

A chi-square test applied to the data in Table XIV was not significant (Chi-square = 8.03, df = 4, p < .10). Moreover, it was immediately apparent from inspection of the data in Table XIV that Japan and Australia did not prefer moderate risk more frequently than the Philippines. In fact, there was no differential preference at all for moderate risk taking among the three countries. Hypothesis 3(a) - that the frequency of moderate risk taking on initial individual decisions should be greater in Australia and Japan than in the Philippines - was not supported.

From inspection of the data in Table XIV, and from inspection of the complete range of risk taking data, there did seem to be a greater
frequency of extreme risk taking among the Australian subjects than among both Japanese and Filipino subjects. These data also seemed to suggest that Australian subjects less frequently made extremely conservative decisions (10/10) than either Japanese or Filipino subjects. These frequency data are presented in Table XV.

<table>
<thead>
<tr>
<th>Country</th>
<th>Extreme Risk (1/10)</th>
<th>Extreme Conservatism (10/10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Philippines</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Australia</td>
<td>10</td>
<td>8</td>
</tr>
</tbody>
</table>

Note: Ss are classified as extremely risky only if at least two of their six decisions are at the 1/10 level of risk; Ss are classified as extremely conservative only if at least two of their six decisions are at the 10/10 level of risk.

Chi-square = 7.74, df = 2, p < .05

A chi-square test applied to the frequency data in Table XV supported the impression of greater frequency of extreme risk and lesser frequency of extreme conservatism among Australian subjects than among Japanese and Filipino subjects (Chi-square = 7.74, df = 2, p < .05). Instead of finding that Japanese and Australian subjects prefer moderate risk as anticipated, it was found that Australian subjects more frequently prefer extreme risk and less frequently prefer extreme conservatism than either Japanese or Filipino subjects.

Hypothesis 3(b) stated that the frequency of moderate risk taking on group decisions should be greater in Japan and Australia than in the
Philippines. Data relevant to test this hypothesis were the frequencies of moderate risk (3/10, 5/10, 7/10), extreme risk (1/10) and extreme conservatism (9/10, 10/10) among Japanese, Filipino, and Australian groups. Groups were classified as extremely risky or extremely conservative if at least two of their group decisions fell into the above categories. The numbers of groups taking extreme risk, moderate risk, and extreme conservatism according to this classification are presented in Table XVI.

### TABLE XVI. FREQUENCY OF MODERATE RISK, EXTREME RISK, AND EXTREME CONSERVATISM AMONG JAPANESE, FILIPINO, AND AUSTRALIAN GROUPS (N = 10 IN EACH COUNTRY)

<table>
<thead>
<tr>
<th>Country</th>
<th>Extreme Risk (1/10)</th>
<th>Moderate Risk (3/10, 5/10, 7/10)</th>
<th>Extreme Conservatism (9/10, 10/10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>1</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Philippines</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Australia</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

It was immediately obvious from the frequency data in Table XVI that hypothesis 3(b) was not confirmed. There was no tendency for Japanese and Australian groups to prefer moderate risks relative to Filipino groups. The pattern of group risk taking in each country was remarkably similar when group decisions are considered according to the present criterion of classifying groups as extremely risky or extremely conservative only if two of their decisions fell into these categories. This pattern of results is quite different from the pattern of individual risk taking frequencies. Earlier it was shown that Australian subjects more frequently preferred extreme risk and less frequently preferred
extreme conservatism than both Japanese and Filipino subjects. These preferences were not sustained in the group situation; one may conclude that the discussion in the group situation may be inhibiting greater frequency of extremely risky decisions.

In summary, considering the frequencies of both individual and group risk taking, there was no support for the notion that Japanese and Australian subjects should exhibit greater frequency of moderate risk taking than Filipino subjects. Among individuals, and contrary to prediction, Australian subjects more frequently preferred extreme risk and less frequently preferred extreme conservatism than either Japanese or Filipino subjects. In the group situation, however, this tendency was not sustained and it was suggested that group discussion may have inhibited the tendency to make extremely risky decisions and somehow promoted "safer" courses of action.

IV. 2.4. The Value of Risk and Risk Taking

Hypothesis 4 stated that, within each culture, subjects who evaluated risk concepts more positively on the semantic differential scales should manifest a greater preference for moderate risk than subjects who evaluated risk less positively. Only data from Japan and Australia were available to test this hypothesis (see note, Chapter 3). Tests of the hypothesis were made using only experimental subjects because of the rather curious results obtained with one Australian control group. Australian data are presented first because these data allowed a more adequate test of the hypothesis in terms of positive and negative evaluation of risk concepts.
The Value of Risk and Risk Taking in Australia

Each experimental subject was assigned a value of risk score based on his total score for the four probability risk concepts (stock-market, risk, gambling, lottery). The score for each concept was based on three evaluative scales: pleasant - unpleasant, bad - good, beautiful - ugly. Each evaluative scale was scored from 1 - 7 in the direction of increasing positive evaluation. Total scores for each concept, therefore, ranged from 3 - 21. A total value of risk score was obtained simply by summing the four concept scores, giving a range of possible scores from 12 - 84.

Four experimental subjects did not complete the semantic differential ratings due to absence from class on the day of testing. Two subjects were excluded because of incomplete records, leaving 43 subjects. Subjects were divided at the median into high and low value of risk groups. One additional subject was randomly excluded to give equal numbers of high and low value subjects (N = 21 in each group). The mean value of risk scores for these groups were:

1. High value of risk: M = 54.00; SD = 6.36
2. Low value of risk: M = 39.76; SD = 4.32

The data relevant to test hypothesis 4 were the frequencies of moderate risk (3/10, 5/10, 7/10), extreme risk (1/10) and extreme conservatism (9/10, 10/10) among high and low value of risk subjects. These data are presented in Table XVII.
TABLE XVII. FREQUENCY OF MODERATE RISK, EXTREME RISK, AND EXTREME CONSERVATISM AMONG HIGH AND LOW VALUE OF RISK SUBJECTS' INITIAL INDIVIDUAL DECISIONS (N = 21 IN EACH GROUP)

<table>
<thead>
<tr>
<th>Value</th>
<th>Extreme Risk (1/10)</th>
<th>Moderate Risk (3/10, 5/10, 7/10)</th>
<th>Extreme Conservatism (9/10, 10/10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Value</td>
<td>5</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>Low Value</td>
<td>5</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

Chi-square = 2.66, df = 2, NS.

It was immediately obvious from the data in Table XVII, and from a chi-square test applied to the data, that hypothesis 4 was not supported. There was no significant tendency for high value of risk subjects to prefer moderate risks more frequently than low value of risk subjects. Further, there was no significant difference in frequency of extreme risks (1/10) or extreme conservatism (9/10, 10/10). This result was curious because, on purely logical grounds, it might be anticipated that low value of risk subjects would show a marked preference for conservative decisions even if they did not (irrationally) choose extreme risks. It seemed, therefore, that the dichotomization of subjects on the four probability risk concepts warranted further inspection.

Correlations among the four probability risk concepts on which the value of risk score was based, therefore, were computed. These correlations are presented in Table XVIII.
TABLE XVIII. INTERCORRELATIONS AMONG PROBABILITY RISK CONCEPTS FOR AUSTRALIAN EXPERIMENTAL SUBJECTS (N = 42)

<table>
<thead>
<tr>
<th></th>
<th>Risk</th>
<th>Gambling</th>
<th>Lottery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stockmarket</td>
<td>-.17</td>
<td>+.10</td>
<td>+.13</td>
</tr>
<tr>
<td>Risk</td>
<td>+.17</td>
<td></td>
<td>-.13</td>
</tr>
<tr>
<td>Gambling</td>
<td></td>
<td></td>
<td>+.44**</td>
</tr>
</tbody>
</table>

**p < .01

It was anticipated, on the basis of Kogan & Wallach's (1960) early finding, that correlations among probability risk concepts would be positive and substantial. Table XVIII clearly indicated that this was not the case. The correlation between gambling and lottery (r = +.44) was the only significant correlation. Moreover, two of the three correlations with the risk concept were negative, but not significant.

In view of these negligible correlations, it was decided to reclassify subjects simply on their evaluation of one concept - risk. Value of risk scores therefore ranged from 3 - 21. The mean scores for high and low value subjects based on this classification were:

1. High value of risk: M = 15.29; SD = 2.62
2. Low value of risk: M = 9.38; SD = 2.61
Hypothesis 4 was tested again using this classification of subjects.

The frequency of extreme risk (1/10), moderate risk (3/10, 5/10, 7/10), and extreme conservatism (9/10, 10/10) for high and low value subjects are presented in Table XIX.

**TABLE XIX. FREQUENCY OF EXTREME RISK, MODERATE RISK, AND EXTREME CONSERVATISM AMONG HIGH AND LOW VALUE OF RISK SUBJECTS CLASSIFIED ONLY ON EVALUATION OF CONCEPT "RISK" (N = 21 IN EACH GROUP)**

<table>
<thead>
<tr>
<th>Value</th>
<th>Extreme Risk (1/10)</th>
<th>Moderate Risk (3/10, 5/10, 7/10)</th>
<th>Extreme Conservatism (9/10, 10/10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Value</td>
<td>9</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Low Value</td>
<td>3</td>
<td>11</td>
<td>7</td>
</tr>
</tbody>
</table>

Chi-square = 7.50, df = 2, p < .05

Inspection of the data in Table XIX indicated that quite a different pattern of results was obtained when subjects were classified on the "risk" concept alone. A chi-square test applied to the data in Table XIX was highly significant (chi-square = 7.50, df = 2, p < .05).

It was equally apparent, however, that high value subjects were not more frequently disposed to moderate risk taking than low value subjects were. There was still no support for hypothesis 4. What the results did indicate, however, was a strong tendency for high value of risk subjects
to take extreme risks (1/10) more frequently and conservative risks (9/10, 10/10) less frequently than low value risk subjects. This pattern of results was what would be predicted from a linear relationship between value and risk-taking rather than a curvilinear relationship. Analyses of the difference between means was also performed using both methods of classification of high and low value subjects. These results are presented in Tables XXXI and XXXII (Appendix B). The results of both of these analyses accorded with the presently reported results. When the classification of high and low value of risk was based on all four probability risk concepts, the mean difference between high and low value subjects was not significant ($F < 1$, df = 1,40, NS). In contrast, when the classification of high and low value of risk was made solely on evaluation of the concept "risk," the mean difference between high and low value subjects was significant ($F = 6.51$, df = 1,40, $p < .025$). The theoretical implications of these findings will be discussed in the following chapter.

At this point, however, it was necessary to examine one aspect of these results further to allow greater confidence in the revised value of risk measure. Simply on the basis of the results presented above it was possible to argue that the value of risk score may reflect nothing more than a tendency among high value subjects to check semantic differential scales more positively, independently of the meaning of the concept. In other words, the results might be due to differential response styles among subjects. If this were the case, it was argued that this same response style should be manifested on control concepts of fairly neutral content. If, however, high and low value subjects did
not differ on their mean evaluation of control concepts, greater reliance could be placed on the value of risk measure.

Control concepts (table, lake, stone, heat) were scored as previously indicated for probability risk concepts. The means and standard deviations of control concept scores for high and low value subjects are presented in Table XX.

**TABLE XX. MEANS AND STANDARD DEVIATIONS FOR CONTROL CONCEPTS IN RELATION TO VALUE - AUSTRALIA (N = 21)**

<table>
<thead>
<tr>
<th>Concept</th>
<th>High Value M</th>
<th>SD</th>
<th>Low Value M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table</td>
<td>13.81</td>
<td>2.38</td>
<td>13.86</td>
<td>1.88</td>
</tr>
<tr>
<td>Lake</td>
<td>18.56</td>
<td>1.73</td>
<td>18.76</td>
<td>1.69</td>
</tr>
<tr>
<td>Heat</td>
<td>15.52</td>
<td>3.29</td>
<td>13.81</td>
<td>2.68</td>
</tr>
<tr>
<td>Stone</td>
<td>14.67</td>
<td>3.58</td>
<td>13.00</td>
<td>1.87</td>
</tr>
</tbody>
</table>

A mixed design (one between/one within) analysis of variance (Winer, 1966) was applied to the data in Table XX. The results of this analysis are presented in Table XXI.
**TABLE XXI. ANALYSIS OF VARIANCE FOR TABLE XX**

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Ss</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of Risk (A)</td>
<td>1</td>
<td>30.86</td>
<td>3.31</td>
</tr>
<tr>
<td>Error 1</td>
<td>40</td>
<td>9.31</td>
<td></td>
</tr>
<tr>
<td><strong>Within Ss</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control concepts (B)</td>
<td>3</td>
<td>238.27</td>
<td>43.00***</td>
</tr>
<tr>
<td>A x B</td>
<td>3</td>
<td>9.76</td>
<td>1.76</td>
</tr>
<tr>
<td>Error 2</td>
<td>120</td>
<td>5.54</td>
<td></td>
</tr>
</tbody>
</table>

***p < .001

Although inspection of the data in Table XXI seemed to suggest that high value subjects rated control concepts more positively, at least for two of the four concepts, the main effect of value was not significant \( F = 3.31, \ df = 1,40, \ NS \). While high value subjects did not rate control concepts more positively than low value subjects, they did rate the concept "risk" significantly more positively than did low value subjects.

Considerable reliance therefore could be placed on the finding that high value of risk subjects tended to be riskier than low value subjects.

The highly significant main effect of concepts in Table XXI \( (F = 43.00, \ df = 3,120, \ p < .001) \) simply indicated that the concept "lake" was more positively evaluated than any of the other concepts (see Table XX).
In conclusion, it seemed that while no support was obtained for hypothesis 4, it had been demonstrated for the first time that subjects who evaluated risk positively on the semantic differential scales did take significantly greater risk than subjects who evaluated risk less positively. The affective evaluation of risk was assumed to give some indication of the value of risk. Control analyses indicated that high and low value subjects did not differ on their evaluation of control concepts thus ruling out the possibility of differential response style being responsible for the obtained results.

The Value of Risk and Risk Taking In Japan

For Japanese subjects, semantic differential records were scored as previously reported for the Australian subjects. Instead of classifying subjects on the four probability risk concepts initially to derive a measure of the value of risk, correlations among probability risk concepts were computed to check on the assumption that these correlations were positive and substantial. The intercorrelations among control concepts for Japanese experimental subjects are presented in Table XXII.
Inspection of the correlations among probability risk concepts for Japanese experimental subjects in Table XXII indicated again that the correlations were negligible. Only two of the six correlations were significant, and only one of these involved the concept "risk." On the basis of these results, and in order to preserve comparability with the previously reported results for Australian subjects, Japanese subjects were classified as high or low on the value of risk on the basis of their "risk" concept scores. Median splits were again employed. One subject was randomly excluded to give equal numbers of high and low value subjects. The mean value scores for the groups so partitioned were:

1. High value of risk: $M = 9.96; SD = 2.73$
2. Low value of risk: $M = 3.79; SD = 1.04$

It may be noted that the means for both high and low value Japanese subjects were considerably lower than comparable means for high and low value Australian subjects. In fact, the low value Australian subjects' mean was approximately equal to the high value Japanese subjects' mean.
The data to test hypothesis 4 for Japanese subjects were the frequencies of extreme risk (1/10), moderate risk (3/10, 5/10, 7/10), and extreme conservatism (9/10, 10/10) over all problems combined for high and low value of risk subjects. These data are presented in Table XXIII. A chi-square test applied to the data in Table XXIII indicated that the frequencies of extreme risk, moderate risk, and extreme conservatism among high and low value subjects were not significantly different (Chi-square = 1.36, df = 2, NS). It may be noted from inspection of the data in Table XXIII, however, that the pattern of frequencies, although not significantly different for high and low value subjects, was consistent with the rationale underlying hypothesis 4. In other words, high value of risk subjects tended to prefer moderate risks more than their low value counterparts. In contrast, low value subjects tended to prefer extreme risk or extreme conservatism relative to high value of risk subjects. An analysis of the mean difference in risk taking between high

<table>
<thead>
<tr>
<th>Value</th>
<th>Extreme Risk (1/10)</th>
<th>Moderate Risk (3/10, 5/10, 7/10)</th>
<th>Extreme Conservatism (9/10, 10/10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Value</td>
<td>4</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Low Value</td>
<td>6</td>
<td>10</td>
<td>8</td>
</tr>
</tbody>
</table>

Chi-square = 1.36, df = 2, NS.
and low value Japanese subjects also failed to show any significant differences \((F < 1, \text{df} = 1.46, \text{NS})\). See Table XXXIII (Appendix B) for full details. Moreover, high and low value of risk subjects did not differ on their evaluation of control concepts \((F < 1, \text{df} = 1.46, \text{NS})\).

See Table XXXIV (Appendix B) for full details.

It may be noted that the results presented in Table XXIII, although not significant at an acceptable level of significance, were quite different from the pattern of results for Australian high and low value of risk subjects. It will be recalled that Australian high value subjects did not differ from low value subjects in frequency of moderate risk taking. There were, however, differences between high and low value subjects at levels of extreme risk and extreme conservatism. Perhaps a clue to the discrepant pattern of results for Japan and Australia can be seen in the absolute ratings of the concept "risk." The mean rating for all Australian experimental subjects was 12.34; the mean ratings for all Japanese experimental subjects was 6.88. The range of possible scores was 3 - 21. The difference between these two means was highly significant \((F = 44.74, \text{df} = 1.88, p < .005)\). Moreover, comparable analyses of mean differences between Japan and Australia on the four control concepts failed to reveal any mean difference for two of them (lake: \(F < 1, \text{df} = 1.88, \text{NS}\); stone: \(F = 1.45, \text{df} = 1.88, \text{NS}\)). On the other concepts, the Australian subjects rated "heat" more positively than the Japanese (Australia: Mean = 14.67; Japan: Mean = 10.54; \(F = 29.18, \text{df} = 1.88, p < .005\)). In contrast, Australian subjects rated "table" less positively than the Japanese (Australia: Mean = 13.84; Japan: Mean = 15.34; \(F = 8.46, \text{df} = 1.88, p < .005\)). The implication of
these additional analyses was that the differential tendency for
Australian subjects to evaluate the concept "risk" more positively than
the Japanese could not simply be attributed to a tendency among
Australian subjects to rate concepts more positively independent of
concept content.

Taking the above argument further, if the way a person evaluates
risk does reflect the value of risk, and there is some behavioral
evidence to indicate logical correlates of differential values of risk,
then it could be argued that the value of risk in Australia must be
higher than it is in Japan, at least as far as these particular samples
of senior high school boys are concerned. Given the above argument, it
seemed reasonable to argue that the high and low value of risk classifi-
cations among Japanese and Australian subjects represented two entirely
different ranges on a value of risk continuum. It was not surprising,
therefore, that Japanese and Australian high and low value subjects
produced different results. It would have been all the more surprising
had similar results been obtained for Australia and Japan given the
above arguments.

In summary, it was demonstrated that subjects who evaluated risk
more positively among the Australian experimental subjects were signifi-
cantly more risky than subjects who evaluated risk less positively.
Comparable classification of Japanese experimental subjects into high
and low value of risk groups failed to produce a pattern of results
similar to those obtained with the Australian subjects. Inspection of
the absolute value of risk in Australia and Japan, however, indicated
that the value of risk was higher in Australia than in Japan. It was
argued that two different ranges of the value of risk continuum were, therefore, being sampled; and Japanese and Australian differences were explained on the basis of this argument.

IV. 2.5. Attractiveness of Success and Risk Taking

Hypothesis 5 stated that attractiveness of success across problems should be inversely related to initial individual risk taking across problems. Data relevant to test this hypothesis were the average rank order correlations for experimental subjects from Japan, the Philippines, and Australia. Initially, rank order correlations between attractiveness of success across problems and initial risk taking across problems were computed for each subject. These data are presented in Table XXXV, Appendix B. Subsequently, the mean rank order correlations were computed for each country. These mean correlations are presented in Table XXIV.

<table>
<thead>
<tr>
<th></th>
<th>Japan</th>
<th>Philippines</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Rank Order Correlation</td>
<td>-.06</td>
<td>+.02</td>
<td>+.06</td>
</tr>
</tbody>
</table>

The correlations in Table XXIV clearly indicated no support for hypothesis 5. In fact, the mean rank correlations between attractiveness across problems and initial individual risk taking across problems...
indicated no relationship at all between these variables. Inspection of
the individual correlations in Table XXXV, Appendix B, however,
indicated that the mean rank correlation could have been attenuating
some relationship because there appeared to be quite wide ranging
individual differences in both the magnitude and direction of the
individual correlations (Japan: range of $r = -.83$ to +.84; Philippines:
range of $r = -.74$ to +.84; Australia: range of $r = -.81$ to +.97).
Mean rank order correlations for high and low value of risk subjects
from Japan and Australia were computed, but these mean correlations were
also negligible. The present study offered no additional means by which
to elaborate on the relationship between individual differences and
attractiveness of success and risk taking. Clearly, this is a problem
for future research.
CHAPTER V
DISCUSSION

For purposes of clarity, discussion of the results in this chapter is divided into three sections: the first section concerns the generality of the risky-shift phenomenon; the second section addresses the adequacy of Brown's (1965) risk as a value theory as an explanation of the phenomenon; a final section deals with cross-cultural values and situational factors in relation to risk taking behavior. The three sections are not intended to be mutually exclusive; arguments and evidence presented in one section are referred to in other sections where they help to clarify a point of argument. Implications of the present results for future research are discussed within each section where appropriate.

V. 1. The Generality of the Risky-Shift Phenomenon in Western and Non-Western Societies

One of the major overall aims of the present investigation was to test the generality of the risky-shift phenomenon in both Western and non-Western societies. Previous research (Chapter II) had indicated that the phenomenon exhibited considerable generality across a variety of populations mainly in Western societies. The results of the present investigation (Table XIII), however, did not support the extent of generality of the phenomenon that had been reported previously. It will be recalled that on only 4 of the 18 problems within countries was either a shift to risk or a shift to conservatism significant. Moreover, it should be noted that 3 of the 4 group shifts which reached significance were made by Australian groups. In terms of group dynamics
factors, these results implied that the group discussion was not especially significant in bringing the group to a decision that was significantly different from the average of the group members' decisions.

There are a number of possible explanations to consider for this surprising lack of correspondence with previously reported results. Firstly, it could be argued that senior high school subjects being younger than subjects generally employed in previous research, may be less prone to take risks, and secondly, that the problems may not have had especial relevance for senior high school boys. That age may be a factor which determines differential risk taking has been shown in an early study by Wallach and Kogan (1961). It should be noted, however, that the age difference studied in that investigation spanned 30 - 40 years, not simply one or two years which is the difference between high school subjects employed here, and college freshmen employed in most other studies. There is no other evidence specifically concerned with younger age groups and risk taking on the Choice Dilemmas problems. Studies conducted within the theory of achievement motivation framework, however, have employed both high school and college age boys from Western societies with fairly consistent results (see Weinstein, 1969, for exceptions). Differential age, therefore, especially in terms of the difference between this study and previously published research, did not seem a very compelling explanation of the lack of group shifts in this study. It may be instructive, however, to test the generality of the risky-shift phenomenon using American high school populations.

Turning to the second alternative, that the problems may have less relevance for high school than college populations, one could argue
that problem 4 (overseas capital investment) would be too far outside the realm of high school boys' experience and/or interests. Yet, this was just the problem on which Japanese groups showed a significant group shift; the Australian group shift was also tending toward significance (p < .20). Moreover, on problems which, on intuitive grounds [for example, problem 3 (football)], might be considered more relevant did not induce group shifts among either Filipino or Japanese subjects, although the Australian shift was highly significant. There was little support, therefore, for arguments of problem irrelevance among high school boys. Further, discussion with researchers in Japan and the Philippines also discounted the possibility of problem irrelevance in those countries. Indeed, a pilot study had already been conducted in Japan (Hashiguchi, 1968) using the Kogan & Wallach problems. ¹

Another explanation of the lack of generality of the risky-shift phenomenon in the present study can be offered which seems more plausible than either age or problem irrelevance. This explanation also has direct bearing on the specification of conditions necessary for group shifts to be manifested.

The background of this explanation derives from an observation by Zajonc, Wolosin, Wolosin, & Sherman (1968). These investigators noted that if subjects were choosing among the available alternative risk levels for each problem in a random fashion, the mean risk score for a sample of subjects would be 5.83. They further noted that mean American risk scores

¹ Hashiguchi, K. Personal communication, 1969. Present findings were similar to those found by Hashiguchi.
tended to be on the risky side of this chance mean. In other words, American subjects are not responding to the stimulus problems in a random fashion. Rather, they are locating themselves at a more extreme risk position, presumably because risk is positively valued in American society (see Madaras & Bem, 1968, for further support for this notion). In addition, American results suggest (Teger & Pruitt, 1967) that the more extreme the initial position taken by the sample, the greater the shift to risk.

What bearing do these suggestions have for the presently obtained results? It could be argued that if a cultural value were engaged on a particular problem, one would expect the mean individual risk score for the entire sample would fall at a position significantly more extreme (in either direction) than the chance mean of 5.83. If, on the other hand, the mean risk score for a particular problem was not significantly different from the chance mean, it could be argued that this particular problem did not engage a salient cultural value. The implication of these arguments is that if the sample as a whole does not respond to a particular problem in a manner suggesting that they are behaving in accordance with some prescribed cultural value (that is, if the sample mean is not significantly different from chance) then group shifts may not be expected with any assurance because the cultural value is not sufficiently salient to prescribe a direction for a group decision. If, on the other hand, a cultural value is salient for a particular problem (denoted by a mean sample decision significantly different from chance) group shifts may be expected because the group has a primary or dominant direction in which to focus its attention. These arguments suggest necessary but not
but not sufficient conditions for the explanation of group shifts to risk or to conservatism. We suggest that these conditions are not sufficient because it has been found that group exchange of information and/or risk preferences tends to enhance the magnitude of the group shift (Teger & Pruitt, 1967).

In the light of these arguments which suggest more clearly a separation of necessary and sufficient conditions for group shifts to risk or conservatism to be manifested, appropriate t tests (McNemar, 1962) were performed on the present data to determine whether mean initial individual decisions for each problem for Japanese, Filipino, and Australian samples were significantly different from chance. The results of these analyses are presented in Table XXV.
<table>
<thead>
<tr>
<th>Problem</th>
<th>Mean Initial Risk Taking</th>
<th>SD</th>
<th>Mean Difference from Chance</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>5.71</td>
<td>2.64</td>
<td>+0.12</td>
<td>&lt;1</td>
</tr>
<tr>
<td>2</td>
<td>6.06</td>
<td>2.87</td>
<td>-0.23</td>
<td>&lt;1</td>
</tr>
<tr>
<td>3</td>
<td>6.41</td>
<td>2.51</td>
<td>-0.58</td>
<td>1.61</td>
</tr>
<tr>
<td>4</td>
<td>6.53</td>
<td>2.37</td>
<td>-0.70</td>
<td>2.06*</td>
</tr>
<tr>
<td>5</td>
<td>5.67</td>
<td>2.93</td>
<td>+0.16</td>
<td>&lt;1</td>
</tr>
<tr>
<td>6</td>
<td>5.27</td>
<td>2.56</td>
<td>+0.56</td>
<td>1.51</td>
</tr>
<tr>
<td>Philippines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6.25</td>
<td>2.56</td>
<td>-0.42</td>
<td>1.11</td>
</tr>
<tr>
<td>2</td>
<td>6.12</td>
<td>2.05</td>
<td>-0.29</td>
<td>&lt;1</td>
</tr>
<tr>
<td>3</td>
<td>5.84</td>
<td>2.71</td>
<td>-0.01</td>
<td>&lt;1</td>
</tr>
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<td>6.14</td>
<td>3.09</td>
<td>-0.31</td>
<td>&lt;1</td>
</tr>
<tr>
<td>5</td>
<td>6.18</td>
<td>2.38</td>
<td>-0.35</td>
<td>1.03</td>
</tr>
<tr>
<td>6</td>
<td>5.96</td>
<td>2.40</td>
<td>-0.13</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Australia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>5.84</td>
<td>2.30</td>
<td>-0.01</td>
<td>&lt;1</td>
</tr>
<tr>
<td>2</td>
<td>6.65</td>
<td>2.54</td>
<td>-0.82</td>
<td>2.28*</td>
</tr>
<tr>
<td>3</td>
<td>4.74</td>
<td>2.96</td>
<td>+1.09</td>
<td>2.59**</td>
</tr>
<tr>
<td>4</td>
<td>7.49</td>
<td>2.49</td>
<td>-1.66</td>
<td>4.61***</td>
</tr>
<tr>
<td>5</td>
<td>5.12</td>
<td>2.62</td>
<td>+0.71</td>
<td>1.92</td>
</tr>
<tr>
<td>6</td>
<td>4.57</td>
<td>2.44</td>
<td>+1.26</td>
<td>3.60***</td>
</tr>
</tbody>
</table>

*p < .05  
**p < .02  
***p < .001
A number of things are immediately obvious from the results in Table XXV. Inspection of the Japanese results indicated that only on problem 4 (overseas capital investment) did the initial individual risk taking mean differ significantly from chance. According to the criterion suggested above for determining the salience of a cultural value, it could be argued that problem 4 was the only problem on which Japanese subjects were sufficiently extreme for it to be assumed that a value was being engaged. It will be recalled, also, that this was the only problem on which a significant group shift was noted; a shift, moreover, consistent in direction with the prevailing value. Comment should also be made concerning the lack of significant mean differences from chance among the other 5 problems, but these comments are reserved for the final section of this chapter where cultural values and situational influences are discussed.

The lack of significant mean differences from chance among the Filipino results is similarly reserved for the final section of this chapter. Suffice it to say, at this stage, that the lack of significant mean initial risk taking differences from chance for the Filipinos is also entirely consistent with their group shift results.

Examination of the Australian results in Table XXV indicated significant differences from chance on 4 of the 6 problems. These problems are the same ones (see Table XIII) on which significant group shifts were noted, with one exception (problem 4 - overseas capital investment). On that problem no significant shift was found although the shift was in a direction consistent with the initial stand taken. That failure to obtain a significant shift on problem 4 (overseas capital
investment) could be attributable to a ceiling effect can be seen from Table XXV. Results in this table indicated that a more extreme initial stand was taken on this problem than on any other. Groups therefore had less freedom to move in the direction of the prevailing value. On the other two problems (1 - occupational risk; 5 - academic risk) the mean initial risk taking scores did not differ from chance; moreover, no significant group shifts were found on these problems among the Australian groups.

The theoretical implications of these results are clear. Group shifts may only be expected where a value is sufficiently salient to induce extreme responses on the initial decisions among the sample as a whole. These results are also consistent with the high positive correlations between initial risk and group shifts noted by Teger & Pruitt (1967). Also consistent with Teger & Pruitt's results, the correlation between the magnitudes of deviations from chance of mean initial decisions and group shifts (ignoring signs of deviations and group shifts) in the present data was +0.58, significant at the 1% level of significance.²

Taken together, all of these results suggest that we may not anticipate group shifts to risk or to conservatism in Western or non-Western societies unless values are especially salient in a given society for particular problems. Unless many (but not all) persons in

² Problem 4 of the Australian data was omitted from this analysis because of possible ceiling effects attenuating the magnitude of group shift. The correlation between magnitudes of deviations from chance of mean initial decisions and group shifts including problem 4 was +0.45 (p = .05).
that society clearly perceive and respond with quite extreme responses to the stimulus stories on the initial individual administration of the Choice Dilemmas task, no significant group shifts should be anticipated whatever the culture, provided of course that the decision problems posed in the stimulus stories are relevant to a particular culture. These arguments and present results focus rather forcefully on the future necessity of being able to elaborate the determinants of initial individual risk taking before a complete explanation of the risky-shift phenomenon can be offered.

V. 2. The Value of Risk and Risk Taking

In the previous section it was shown how and why the generality of the risky-shift phenomenon was limited to problems on which values were sufficiently salient, as indicated by the extent to which such problems elicited extreme responses dictating the direction of the initial stand that should be taken. It was also argued that this specification of value salience seemed to indicate the necessary, but not sufficient, conditions for a group shift to risk or to conservatism to be manifested. In other words, once the necessary conditions have been met, other factors seem to come into play which increase the magnitude of the shift, moving the group further in a direction consistent with the prevailing value.

It will be recalled that Brown (1965) suggested the operation of two factors which may influence the magnitude of the obtained group shifts. He argued (1) that the knowledge of the distribution of other group members' risk preferences would serve to indicate that other group
members were taking greater risks, suggesting to a group member who may have opted for a relatively conservative stand that he had much catching up to do if he valued risk; and (2) that greater risk relevant information from other group members would facilitate the group shift in a direction consistent with the salient value. Teger & Pruitt's results (1967) suggested that both of these factors seemed to be relevant by showing that groups who were permitted both exchange of information and discussion of the decision problems exhibited larger risky shifts than groups who simply exchanged information.

While present results are consistent with Brown's suggestions and Teger & Pruitt's findings, it is possible to postulate the operation of other factors in the group situation that may also serve to facilitate groups shifts in a direction consistent with salient values. In other words, it is the writer's contention that Brown's consideration of factors relevant to the specification of influences in the group situation may be insufficient to fully account for group shifts to risk or to conservatism. Specifically, Zajonc (1965) in a lengthy discussion of the effects of audiences and coacting group members on individual performance suggested that performance in the presence of others is enhanced provided that the response is dominant in the hierarchy of available responses - provided that the response has been well learned. Zajonc further postulated that the increased performance could be attributable to increased drive or arousal elicited by such spectators or other coacting group members. This phenomenon was referred to as social facilitation.
While Zajonc did not consider interacting as such in his review, it seems feasible to suggest that other interacting group members could also serve to increase drive or arousal of group members. What we are suggesting in fact is that group members tend to increase each others' drive or arousal in the group situation. Given some increase of drive or arousal, group performance (hers, decision making) may begin to shift in a direction consistent with the salient value, independently of other information elicited in the group situation. The implication here is that this arousal may be necessary before exchange of risk preferences and discussion effects come into operation fully. Whether any increase in arousal could be attributable simply to the presence of others or to some combination of presence of others and expectation of evaluation by other group members is an empirical question.

Although present results do not bear on this notion of arousal as a necessary condition for group shifts, future research might profitably be addressed to the question. It might be suggested, for example, that because we feel more comfortable in the presence of friends than in the presence of strangers, groups of friends drawn together into a discussion situation might be less aroused and possibly less prone to make very risky or very conservative decisions than groups of strangers. It is assumed that risk is positively valued by all groups and that distribution of risk preferences is equivalent for all groups. Another line of investigation might consider changes in individuals' risk preferences in a situation where some subjects are led to expect participation in a group decision and other subjects are not led to the same expectation.
In summary, what is suggested is that Brown's (1965) specification of necessary and sufficient conditions for group shifts to be manifested may be inadequate. It seemed plausible to suggest that initial interaction in a group situation may serve to increase drive or arousal, and that this increased arousal together with dominant risk or cautious values may be necessary to begin the process of a shift to risk or to conservatism. Only future research can provide answers to these questions.

A second major aim of the present investigation was to further test the adequacy of Brown's thinking within each culture by examining the notion that people for whom the value of risk was high would take more moderate risks than subjects for whom the value of risk was low. Present results indicated no support for this specific relationship, although the overall relationship between risk as a value and risk taking certainly supports Brown's argument. Contrary to Brown's argument, what was indicated by the results of the present investigation was a tendency for high value of risk subjects to prefer greater risk than low value of risk subjects. It should also be noted that value of risk was related to risk taking only among Australian subjects. Results for the Japanese subjects suggested, however, that the value of risk was negative for practically all subjects. Division of subjects into high and low value of risk therefore seemed something of a meaningless classification among the Japanese.

The Japanese results, and given the obtained relationship between value of risk and risk taking, it could be argued that even more
light may be shed on the value-risk taking relationship were these results subjected to analyses similar to those described in the previous section. One of the explanations of the risky-shift phenomenon that has been examined in several studies (Kogan, Wallach, and Bem, 1962; Zajonc et al., 1968; Hoyt and Stoner, 1968) is that group shifts may be partially attributable to disproportionate influence by high risk takers. In other words, high risk takers are presumed to assume leadership of the group, and group shifts are seen as deriving from this leadership function. What perhaps seems more plausible is that disproportionate influence may also depend on the circumstances. In other words, high risk takers may exert most influence on culturally-risky problems; on the other hand, low risk takers might exert most influence on culturally-cautious problems. The implication is that any study that looks for a unidimensional influence factor may be overlooking the possibility of an interaction between influence and circumstances (cf. Fiedler, 1964).

Some indirect evidence for the plausibility of this argument would be obtained if it could be shown, given that a value should be sufficiently salient within a population, that high value of risk subjects have mean initial risk taking scores which are significantly different from chance on the problems that have been shown to shift to risk, whereas low value subjects have mean initial risk taking scores which are significantly different from chance on the problems that have been shown to shift to caution. If these arguments were supported they would also provide evidence consistent with the spirit of Brown's arguments.
Only Australian data were analysed to test the plausibility of the above arguments, excluding the Japanese results for reasons previously indicated. A procedure identical to that employed in the previous section was used (McNemar, 1962). The means and standard deviations of initial risk taking scores, and the differences between initial risk taking means and chance means for each problem among Australian high and low value of risk subjects are presented in Table XXVI. Results of t tests applied to the data are also presented.

The results presented in Table XXVI do in fact support the above argument in the majority of cases. On the problems which showed a risky-shift high value of risk subjects take an initial approach to the problems that is indeed significantly different from chance in a risky direction; on these same problems, the low value subjects do not differ significantly from chance. On the other hand, on problems which showed a conservative shift low value subjects are those who take the significantly more extreme position initially (in a conservative direction); high value subjects, by contrast, do not differ significantly from chance on one of the problems. Although the results are not completely consistent, they do suggest the possibility of differential influence processes depending on the circumstances. They also question the usefulness of searching for some unidimensional influence process. However, here again, direct support for the above arguments can only be obtained from future research which attempts to assess differential influence processes among high and low value of risk subjects. Finally, it may be noted that the above results are also consistent with the spirit of Brown's thinking in terms of group influence processes, but
TABLE XXVI. MEANS AND STANDARD DEVIATIONS OF INITIAL RISK TAKING SCORES, AND DIFFERENCES BETWEEN INITIAL RISK TAKING MEANS AND CHANCE MEANS FOR EACH PROBLEM AMONG AUSTRALIAN HIGH AND LOW VALUE SUBJECTS

<table>
<thead>
<tr>
<th>Problem</th>
<th>Mean Initial Risk Taking</th>
<th>SD</th>
<th>Mean Difference from Chance</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Value of Risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>5.86</td>
<td>2.42</td>
<td>-0.03</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>5.71</td>
<td>2.07</td>
<td>+0.12</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>4.10</td>
<td>2.89</td>
<td>+1.73</td>
<td>2.75**</td>
</tr>
<tr>
<td>4</td>
<td>7.19</td>
<td>2.42</td>
<td>-1.36</td>
<td>2.57**</td>
</tr>
<tr>
<td>5</td>
<td>4.57</td>
<td>2.48</td>
<td>+1.26</td>
<td>2.33*</td>
</tr>
<tr>
<td>6</td>
<td>4.19</td>
<td>3.02</td>
<td>+1.64</td>
<td>2.48*</td>
</tr>
<tr>
<td></td>
<td>Low Value of Risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6.10</td>
<td>2.33</td>
<td>-0.27</td>
<td>1</td>
</tr>
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<td>2</td>
<td>7.29</td>
<td>2.45</td>
<td>-1.46</td>
<td>2.75**</td>
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<td>5.95</td>
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<td>-0.12</td>
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<td>2.53</td>
<td>-2.03</td>
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<td>5.52</td>
<td>2.87</td>
<td>+0.31</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>5.10</td>
<td>1.69</td>
<td>+0.73</td>
<td>1.97</td>
</tr>
</tbody>
</table>

*p < .05

**p < .02

***p < .01
they go beyond his arguments to attempt to specify more exactly what might be happening in the group situation when a salient value is engaged. By so doing, they begin to indicate the complexity of the problem; a complexity not acknowledged in Brown's original statements, but a complexity that to date is not inconsistent with the spirit of his arguments. Finally, the fact that value of risk could be demonstrated to be differentially related to risk taking in a direct test is fairly strong support for Brown's theoretical arguments.

V. 3. Cross-cultural differences in Risk Taking and the Influence of Situational Factors on Risk Taking

Another major aim of the present investigation, as indicated in previous chapters, was to examine differences in risk taking behavior between countries in order, not only to examine the generality of the risky-shift phenomenon, but also to test Brown's arguments cross-culturally where predictions concerning the value of risk were based on sociological and anthropological indications of cultural values.

Although quite significant differences between countries were found both on initial and group risk taking, complete analysis of the data indicated, firstly, that the obtained differences were due almost entirely to differential risk taking among the Australian sample employed. Inspection of the Japanese data and the Filipino data particularly indicated some quite unusual findings which were consistent throughout analysis of each set of data. Indications were that Filipino subjects and groups did not recommend significantly different mean risks on any of the problems. The Japanese results were similar in
some respects although this tendency was less pronounced among Japanese subjects. On initial individual risk taking, for example, Japanese subjects differentiated among the problems to some extent, although the mean differences were only marginally significant. In the group situation, however, differentiation among the problems was quite significant.

Although, on first inspection, one could argue that the problems did not engage salient values among the Filipinos and among the Japanese on 5 of the 6 problems, and that, therefore, groups shifts might not be expected, this argument seems too simplistic for a number of reasons. Firstly, on purely logical grounds, one would expect differentiation among the problems. Earlier it was argued, and it still is argued, that problem 2 (medical operation) exemplified basic concerns with preservation of life that were relevant for all people irrespective of culture. Therefore, we would expect the mean risk level recommended for this problem to be significantly different from chance in a conservative direction, as indeed it was for Australian data.

Secondly, the bulk of sociological and anthropological evidence does identify and describe values in both Japan and the Philippines which indicated a close correspondence to more important values in Western society. The importance of educational success is but one value which is stressed in both Japan (e.g. Kitano, 1969) and the Philippines (e.g. Bulatao, 1962). To attempt to discredit the importance of such values in other societies seems too easy a solution.

Taken together, these arguments raise the question that if cultural values were being engaged, and it is believed that they were,
what factors could be attenuating differential risk taking across the range of content of the presently employed Choice Dilemmas problems? In other words, what factors are inhibiting the expression of different values, both at an individual and at a group level in Japan and the Philippines?

Several recent investigations (DeVos, 1968; Gallimore, 1969; Lynch, 1964) have all stressed the notion that achievement-oriented behavior might equally well be elicited by the opportunity to gain social rewards as by a strong achievement motive in Japanese and Filipinos. DeVos has argued that parent's expectations tend to shape achievement behavior among Japanese subjects. Assuming that people are all highly sensitized to sources of social rewards (praise for achievement, etc.), it is possible to argue that Japanese perceive their rewards as emanating from other persons, rather than from the intrinsic value of success which is assumed to be typical of high achievement-oriented people in Western societies. Given this rather different focus of the Japanese, it could be argued that (in an individual situation particularly) Japanese subjects are unwilling to risk social censure by taking extreme risk or extreme conservatism. Behaviorally, then, it may be perceived as "safer" to opt for a 50/50 position, thus avoiding both extreme risk and extreme conservatism.

In discussing the nature of personal relationships in the Philippines, Lynch (1964) has also emphasised the significant role other people play in shaping behavior. His notion is that the maintenance of smooth interpersonal relations is a dominant mode of responding among Filipinos. The essence of his argument is that it is
extraordinarily anxiety provoking to be seen in a "bad light" by one's fellows. It seems that this argument also stresses the importance of others as sources of social rewards. It might be anticipated that, on the basis of this similarity between Japanese and Filipinos, Filipino subjects would also tend to opt for the relatively "safer" region on the risk taking scale, thereby avoiding social censure and possible conflict with others over the most appropriate action to be adopted. One might also speculate that this tendency to avoid extremes might be more important among younger subjects, whatever the culture, because they have had less experience with the sorts of life problems exemplified in the Choice Dilemmas task.

Do any indications in the present data suggest that Filipino and Japanese subjects avoid extreme responses more frequently than Australian subjects. The lack of differentiation of risk preferences across the entire range of content of the problems of course gives some indication of this. Inspection of the frequency data in Appendix B also suggests that Filipinos particularly avoid extreme risk, and favor the 50/50 option. The same avoidance tendency among Japanese subjects is not so striking, but there is some indication that Japanese subjects tend to avoid the 1/10 risk preference more frequently than do Australian subjects. While this examination of the data and explanation is post hoc, there does seem to be some basis for the notion that Filipino and Japanese subjects tend to avoid extreme risk. That this tendency to avoid extremes might be determined
by learning experiences that emphasise the especial importance of others in the dispensing of social rewards also seems highly plausible in the light of recent evidence.

V. 4. Summary

Throughout the previous discussion, attention has been drawn to three rather important arguments that help to explain present results as well as providing some insights which may help to clarify ultimate explanations of the risky-shift phenomenon.

Firstly, the rather limited generality of the risky-shift phenomenon in the present study forced attention on to a consideration of conditions necessary for group shifts to be manifested. It was shown that group shifts could be anticipated only where the problem engaged a salient cultural value. Internal analyses of the data indicated that a value could be termed salient if the mean individual risk score for the entire sample differed significantly from chance. It was argued that value salience seemed to be a necessary, but not sufficient, condition for group shifts to be manifested.

Secondly, it was argued that Brown's (1965) specification of conditions sufficient to induce risky shifts in discussion may not be adequate. Zajonc's (1965) notion of social facilitation was invoked to suggest that group members may increase one another's drive or arousal level in the group situation, and that this increased arousal may be a necessary forerunner of exchange of information and group discussion.
Finally, the failure to find significant differentiation among risk levels across the range of content exemplified in the Choice Dilemmas problems among Japanese and Filipino subjects, suggested that factors other than value salience might be influencing the results for these subjects. It was suggested that because social rewards in Japan and the Philippines appeared contingent upon other people, rather than upon the intrinsic value of success, subjects tend to avoid social censure by avoiding extreme risks. By such avoidance behavior, the expression of salient values tends to be attenuated both at an individual and a group level in the Philippines particularly. Similar attenuating influences seemed to be operating in Japan but in a less pronounced fashion.
The aim of the present investigation was two-fold: (a) to test the generality of the risky-shift phenomenon in non-Western as well as Western cultures; (b) to test the plausibility of Brown's (1965) value of risk hypothesis (that the risky-shift phenomenon is in part determined by the extent to which problems engage cultural values) in two ways: (i) between cultures, deriving predictions concerning the value of risk from sociological and anthropological sources; and (ii) within cultures, by an examination of risk taking in relation to the evaluation of risk related concepts on several semantic differential scales.

Two hundred forty senior high school boys from large city high schools in Japan, the Philippines, and Australia, served as subjects for the experiment. Subjects first responded to semantic differential scales in a large group testing session. On subsequent days, second testing sessions comprised small group testing (5 persons per group) in which subjects first made individual decisions on each problem, followed by group discussion to consensus of each problem. Control groups were also employed in which individual decisions were made on two occasions one week apart. These procedures followed the basic experimental paradigm.
proposed by Wallach, Kogan, & Bem (1962). Risk scores were derived from 6 of the 12 Choice Dilemmas problems (Kogan & Wallach, 1964) judged to be relevant to the cultures studied.

Results indicated (a) limited generality of the risky-shift phenomenon in both Japan and the Philippines. Australian data indicated significant shifts to risk on some problems, and significant shifts to conservatism on others. In addition, some problems failed to reveal shifts in either direction; (b) (i) that tests of Brown's hypothesis between cultures provided only partial support for experimental hypotheses tested. Although the culture x problems interaction for initial decisions was highly significant (p < .005), examination of the basis of the interaction indicated that Australian results were the prime determiners of this effect. Australian subjects were significantly more risky (p < .05 and p < .01) on some problems, and tended to be more conservative (p < .10) on some problems, than Japanese and Filipino subjects. (ii) Within culture tests of Brown's hypothesis were performed only for Japanese and Australian subjects. Again, results only partially confirmed experimental hypotheses. Indications were that Australian high value of risk subjects more frequently (p < .05) made risky initial decisions than did low value of risk subjects. Similar analyses of Japanese data failed to reveal any significant differences.

Additional analyses of the data revealed that the strength or salience of cultural values was an important determinant of both the direction and magnitude of group shifts during discussion. Other indicators among the Japanese and Filipino data suggested the possible
importance of social situational factors, particularly in the Philippines. Results of the investigation were discussed in terms of these additional findings, with special reference to Zajonc's (1966) notion of social facilitation and Brown's (1965) risk as a value hypothesis. The importance of situational factors was discussed in terms of recent evidence (DeVos, 1968; Lynch, 1962). Implications of the present findings for future research were indicated throughout the discussion.
A. 1. Word Meaning Questionnaire

The purpose of this study is to measure the meanings of certain things to various people by having them judge them against a series of descriptive scales. In taking this test, please make your judgments on the basis of what these things mean to you. On each page of the booklet you will find four different concepts to be judged and beneath each of them a set of scales. You are to rate each concept on each of these scales in order.

Here is how you are to use these scales: If you feel that the concept is very closely related to one end of the scale, you should place the check mark as follows:

fair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ unfair

or

fair\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ x unfair

If you feel that the concept is quite closely related to one or the other end of the scale (but not extremely), you should place the check mark as follows:

strong \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ weak

or

strong\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ x weak

If the concept seems only slightly related to one side as opposed to the other side (but is not really neutral), then you should check the scale as follows:
The direction towards which you check, of course, depends upon which of the two ends of the scale seems most characteristic of the thing you're judging.

If you consider the concept to be neutral on the scale, both sides of the scale equally associated with the concept, or if the scale is completely irrelevant, unrelated to the concept, then you should place a check mark in the middle space, as follows:

\[
\begin{align*}
\text{safe} & : : : : x : : : : \text{dangerous} \\
\text{This} & \quad \text{Not this}
\end{align*}
\]

Important: 1. Place your check marks in the middle of spaces, not on the boundaries:

\[
\begin{align*}
\text{This} & \quad \text{Not this} \\
\_ : : : : x : : : : \_ & \_ \_ \_ \_ \_ x \_ \_ \_ \_ \_ \_ \\
\_ : : : : x : : : : \_ & \_ \_ \_ \_ \_ x \_ \_ \_ \_ \_ \_ \\
\end{align*}
\]

2. Be sure you check every scale for every concept - do not omit any.

3. Never put more than one check mark on a single scale.

Sometimes, you may feel as though you've had the same item before on the test. This will not be the case, so do not look back and forth through the items. Do not try to remember how you checked similar items earlier in the test. Make each item a separate and independent judgment. Do not worry or puzzle over individual items. It is your first impressions, the "immediate feelings" about the items, that we want. On the other hand, please do not be careless, because we want your true impressions.
STOCK-MARKET

beautiful: _____________________: ugly
strong: _________________________: weak
noisy: _________________________: quiet
bad: _________________________: good
fast: _________________________: slow
unpleasant: _____________________: pleasant
light: _________________________: heavy

FAILURE

beautiful: _____________________: ugly
strong: _________________________: weak
noisy: _________________________: quiet
bad: _________________________: good
fast: _________________________: slow
unpleasant: _____________________: pleasant
light: _________________________: heavy

LIFE

beautiful: _____________________: ugly
strong: _________________________: weak
noisy: _________________________: quiet
bad: _________________________: good
fast: _________________________: slow
unpleasant: _____________________: pleasant
light: _________________________: heavy

TABLE

beautiful: _____________________: ugly
strong: _________________________: weak
noisy: _________________________: quiet
bad: _________________________: good
fast: _________________________: slow
unpleasant: _____________________: pleasant
light: _________________________: heavy
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- **LAKE**
- **JET-PILOT**
- **SECURITY**
- **MEDICAL OPERATION**
MOUNTAIN CLIMBING

beautiful :__:_:_:_:_:_:_:_:_:_: ugly
strong     :__:_:_:_:_:_:_:_:_:_:_:_: weak
noisy      :__:_:_:_:_:_:_:_:_:_:_:_: quiet
bad        :__:_:_:_:_:_:_:_:_:_:_:_: good
fast       :__:_:_:_:_:_:_:_:_:_:_:_: slow
unpleasant :__:_:_:_:_:_:_:_:_:_:_:_: pleasant
light      :__:_:_:_:_:_:_:_:_:_:_:_: heavy

PRESTIGE

beautiful :__:_:_:_:_:_:_:_:_:_:_: ugly
strong     :__:_:_:_:_:_:_:_:_:_:_:_: weak
noisy      :__:_:_:_:_:_:_:_:_:_:_:_: quiet
bad        :__:_:_:_:_:_:_:_:_:_:_:_: good
fast       :__:_:_:_:_:_:_:_:_:_:_:_: slow
unpleasant :__:_:_:_:_:_:_:_:_:_:_:_: pleasant
light      :__:_:_:_:_:_:_:_:_:_:_:_: heavy

HEAT

beautiful :__:_:_:_:_:_:_:_:_:_:_:_: ugly
strong     :__:_:_:_:_:_:_:_:_:_:_:_: weak
noisy      :__:_:_:_:_:_:_:_:_:_:_:_: quiet
bad        :__:_:_:_:_:_:_:_:_:_:_:_: good
fast       :__:_:_:_:_:_:_:_:_:_:_:_: slow
unpleasant :__:_:_:_:_:_:_:_:_:_:_:_: pleasant
light      :__:_:_:_:_:_:_:_:_:_:_:_: heavy

RISK

beautiful :__:_:_:_:_:_:_:_:_:_:_:_: ugly
strong     :__:_:_:_:_:_:_:_:_:_:_:_: weak
noisy      :__:_:_:_:_:_:_:_:_:_:_:_: quiet
bad        :__:_:_:_:_:_:_:_:_:_:_:_: good
fast       :__:_:_:_:_:_:_:_:_:_:_:_: slow
unpleasant :__:_:_:_:_:_:_:_:_:_:_:_: pleasant
light      :__:_:_:_:_:_:_:_:_:_:_:_: heavy
SUCCESS

beautiful :______________________: ugly
strong :______________________: weak
noisy :______________________: quiet
bad :______________________: good
fast :______________________: slow
unpleasant:______________________: pleasant
light :______________________: heavy

MONEY

beautiful :______________________: ugly
strong :______________________: weak
noisy :______________________: quiet
bad :______________________: good
fast :______________________: slow
unpleasant:______________________: pleasant
light :______________________: heavy

GAMBLING

beautiful :______________________: ugly
strong :______________________: weak
noisy :______________________: quiet
bad :______________________: good
fast :______________________: slow
unpleasant:______________________: pleasant
light :______________________: heavy

STONE

beautiful :______________________: ugly
strong :______________________: weak
noisy :______________________: quiet
bad :______________________: good
fast :______________________: slow
unpleasant:______________________: pleasant
light :______________________: heavy
SCIENCE

- **beautiful**: ___:___:___:___:___:___: ugly
- **strong**: ___:___:___:___:___:___: weak
- **noisy**: ___:___:___:___:___:___: quiet
- **bad**: ___:___:___:___:___:___: good
- **fast**: ___:___:___:___:___:___: slow
- **unpleasant**: ___:___:___:___:___:___: unpleasant
- **light**: ___:___:___:___:___:___: heavy

LOTTERY

- **beautiful**: ___:___:___:___:___:___: ugly
- **strong**: ___:___:___:___:___:___: weak
- **noisy**: ___:___:___:___:___:___: quiet
- **bad**: ___:___:___:___:___:___: good
- **fast**: ___:___:___:___:___:___: slow
- **unpleasant**: ___:___:___:___:___:___: unpleasant
- **light**: ___:___:___:___:___:___: heavy

PUNCTUALITY

- **beautiful**: ___:___:___:___:___:___: ugly
- **strong**: ___:___:___:___:___:___: weak
- **noisy**: ___:___:___:___:___:___: quiet
- **bad**: ___:___:___:___:___:___: good
- **fast**: ___:___:___:___:___:___: slow
- **unpleasant**: ___:___:___:___:___:___: unpleasant
- **light**: ___:___:___:___:___:___: heavy

FUTURE

- **beautiful**: ___:___:___:___:___:___: ugly
- **strong**: ___:___:___:___:___:___: weak
- **noisy**: ___:___:___:___:___:___: quiet
- **bad**: ___:___:___:___:___:___: good
- **fast**: ___:___:___:___:___:___: slow
- **unpleasant**: ___:___:___:___:___:___: unpleasant
- **light**: ___:___:___:___:___:___: heavy
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A. 2. Opinion Questionnaire

On the following pages, you will find a series of situations that are likely to occur in everyday life. The central person in each situation is faced with a choice between two alternative courses of action, which we might call X and Y. For each person, 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 desirable or attractive alternative, X, be chosen. In making your recommendations for each situation, you have to consider two things:

1. You have to first decide whether or not the central person should try to attain the more attractive, but less certain, alternative, or whether he should keep the less attractive, but more certain alternative. If you decide that the less attractive but more certain alternative should be chosen, check the answer which reads:
   __________ Place a check here if you think Mr. ___ should not take the more attractive but less certain alternative no matter what the probabilities.

2. If you decide that the central person should try to attain the more attractive but less certain alternative, you must then decide how much of a chance should be taken in trying to achieve it.

   If you think that the central person should be very certain of attaining the more attractive alternative before he tries to achieve it, check the answer which reads:
The chances are 9 in 10 that •••-----

If you think that the central person should be quite certain of attaining the more attractive alternative before he tries to achieve it, check the answer which reads:

The chances are 7 in 10 that •••-----

If you think that the central person should be moderately certain of attaining the more attractive alternative before he tries to achieve it, check the answer which reads:

The chances are 5 in 10 that •••-----

If you think that the central person should be slightly certain of attaining the more attractive alternative before he tries to achieve it, check the answer which reads:

The chances are 3 in 10 that •••-----

Finally, if you think that the central person should be just barely certain of attaining the more attractive alternative before he tries to achieve it, check the answer which reads:

The chances are 1 in 10 that •••-----

Remember that the less certain alternative is, in all cases, the more desirable or attractive alternative for the central person. In all cases, the potential outcomes are greater, but the chances of attaining them are less.

Read each situation carefully before giving your judgment. There are no right or wrong answers to any of the problems - just try to place yourself in the position of the central person in each of the
situations. There are six situations in all. Please do not omit any of them.

Are there any questions about what you have to do? If not, please turn over the page and begin working on the problems. Work entirely on your own. There is no time limit, but work rapidly; do not spend too much time on any one problem.

Please check only ONE answer for each problem.
1. Mr. A., an electrical engineer, who is married and has one child, has been working for a large electronics corporation since graduating from the university five years ago. He is assured of a lifetime job with a modest, though adequate, salary, and liberal pension benefits upon retirement. On the other hand, it is very unlikely that his salary will increase much before he retires. While attending a convention, Mr. A. is offered a job with a small, newly founded company which has a highly uncertain future. The new job would pay more to start and would offer the possibility of a share in the ownership if the company survived the competition of the larger firms.

Imagine that you are advising Mr. A. Listed below are several probabilities or odds of the new company's proving financially sound. Please check the lowest probability that you consider acceptable to make it worthwhile for M. 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 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 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. 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 that would be almost certain to work or, on the other hand, should he try a more complicated and risky play which could 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 lowest probability or odds that you would consider acceptable for the risky play to be attempted.

_________ The chances are 1 in 10 that the risky play will work.
_________ The chances are 3 in 10 that the risky play will work.
_________ The chances are 5 in 10 that the risky play will work.
_________ The chances are 7 in 10 that the risky play will work.
_________ The chances are 9 in 10 that the risky play will work.

_________ Place a check here if you think that Mr. D. should not attempt the risky play, no matter what the probabilities.
4. Mr. E. is president of a light metals corporation. 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 same country, 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 investment.

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 lowest probability that you would consider acceptable for Mr. E.'s corporation to build a plant in that country.

_______ 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.

_______ The chances are 9 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 5 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 1 in 10 that the foreign country will remain politically stable.
5. Mr. F. is currently a final year undergraduate 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 world-wide reputation for excellence in chemistry. While a degree from University X would signify outstanding training in this field, the standards are so very rigorous that only a fraction of the degree candidates actually receive a degree. University Y, on the other hand, has much less of a 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 a degree 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 University X rather than University Y.

- The chances are 1 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 5 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 9 in 10 that Mr. F. would receive a degree from University X.

Place a check here if you think that Mr. F. should not enroll in University X, no matter what the probabilities.
6. 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 lowest probability that you would consider acceptable for the risky play in question to be attempted.

[ ] Place a check here if you think Mr. G. should not attempt the risky play, no matter what the probabilities.

[ ] The chances are 9 in 10 that the play would succeed.
[ ] The chances are 7 in 10 that the play would succeed.
[ ] The chances are 5 in 10 that the play would succeed.
[ ] The chances are 3 in 10 that the play would succeed.
[ ] The chances are 1 in 10 that the play would succeed.
A. 3. Post-Performance Questionnaire

1. We are trying to determine how well the subjects who are taking part in this experiment know one another. We know that many of you are classmates, but we would still ask you to indicate how well you know the other members of your group. Simply indicate how long you have known the other members, and indicate whether they are "Personal friends," "Acquaintances," "Just in the Same Class," or simply "Go to the Same School."

<table>
<thead>
<tr>
<th>Other Members' Names</th>
<th>Known How Long</th>
<th>How Well Known</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
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</tr>
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<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. How much have you heard about this part of the experiment from your classmates?  (Please check - [X])

   Nothing_____

   A Little____ (Please explain:________________________)

   Some Details____ (Please explain:_______________________)

   Everything_____ (Please explain:_______________________)

3. We would now like to ask you to consider at which problem success would be most attractive FOR YOU. Give this problem a score of 1. Then consider at which problem success would be next most attractive FOR YOU. Give this problem a score of 2. Continue until you have ranked all 6 problems in their order of attractiveness of success FOR YOU.
Problem 1
Problem 2
Problem 3
Problem 4
Problem 5
Problem 6
APPENDIX B

SUPPLEMENTARY RESULTS

TABLE XXVII. FREQUENCY OF INITIAL INDIVIDUAL RISK TAKING AT EACH LEVEL OF RISK OVER ALL PROBLEMS COMBINED FOR JAPAN, PHILIPPINES, AND AUSTRALIA

<table>
<thead>
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<th>5/10</th>
<th>7/10</th>
<th>9/10</th>
<th>10/10</th>
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</thead>
<tbody>
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TABLE XXVIII. FREQUENCY OF GROUP RISK TAKING AT EACH LEVEL OF RISK OVER ALL PROBLEMS COMBINED FOR JAPANESE, FILIPINO, AND AUSTRALIAN GROUPS

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TABLE XXIX. FREQUENCY OF INITIAL INDIVIDUAL RISK TAKING AT EACH LEVEL OF RISK FOR EACH PROBLEM AMONG JAPANESE, FILIPINO, AND AUSTRALIAN SUBJECTS

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TABLE XXX. FREQUENCY OF GROUP RISK TAKING AT EACH LEVEL OF RISK FOR EACH PROBLEM AMONG JAPANESE, FILIPINO, AND AUSTRALIAN GROUPS

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TABLE XXX. (Continued) FREQUENCY OF GROUP RISK TAKING AT EACH LEVEL OF RISK FOR EACH PROBLEM AMONG JAPANESE, FILIPINO, AND AUSTRALIAN GROUPS

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<table>
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<td>7/10</td>
<td>9/10</td>
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<td>1</td>
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</tr>
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<td>1</td>
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</tr>
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<table>
<thead>
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<td>7/10</td>
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<td>10/10</td>
</tr>
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TABLE XXXI. MEANS AND STANDARD DEVIATIONS OF INITIAL RISK TAKING SCORES IN RELATION TO PROBLEMS AND THE VALUE OF RISK BASED ON FOUR PROBABILITY RISK CONCEPTS AMONG AUSTRALIAN EXPERIMENTAL SUBJECTS

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<th>M</th>
<th>SD</th>
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Analysis of Variance

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<tr>
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<tr>
<td>Error 1</td>
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</tr>
<tr>
<td>Within Ss</td>
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<td></td>
</tr>
<tr>
<td>Problems (B)</td>
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<td>51.44</td>
<td>8.40***</td>
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***p < .001
TABLE XXXII. MEANS AND STANDARD DEVIATIONS OF INITIAL RISK TAKING SCORES IN RELATION TO PROBLEMS AND THE VALUE OF RISK BASED ON "RISK" CONCEPT EVALUATION AMONG AUSTRALIAN EXPERIMENTAL SUBJECTS

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Analysis of Variance

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<tr>
<td>Between Ss</td>
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<td></td>
<td></td>
</tr>
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<td>6.71*</td>
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</tr>
<tr>
<td>Within Ss</td>
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*p < .025

***p < .001
Table XXXIII. Means and standard deviations of initial risk taking scores in relation to problems and the value of risk based on "risk" concept evaluation among Japanese experimental subjects.

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Analysis of Variance

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<td>Value of Risk (A)</td>
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TABLE XXXIV. MEANS AND STANDARD DEVIATIONS FOR CONTROL CONCEPTS IN RELATION TO VALUE - JAPAN
(N = 24 IN EACH GROUP)

<table>
<thead>
<tr>
<th>Concept</th>
<th>High Value</th>
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<tr>
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<td>M</td>
<td>SD</td>
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<td>15.21</td>
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<td>Lake</td>
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Analysis of Variance

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<td>Concepts (B)</td>
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<td>9.17</td>
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***p < .001
TABLE XXXV. INDIVIDUAL RANK ORDER CORRELATIONS BETWEEN ATTRACTIVENESS OF SUCCESS RANKINGS AND RANKINGS OF INITIAL INDIVIDUAL RISK TAKING FOR ALL EXPERIMENTAL SUBJECTS - JAPAN, PHILIPPINES, AND AUSTRALIA (N = 47 IN EACH COUNTRY)

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TABLE XXXV. (Continued) INDIVIDUAL RANK ORDER CORRELATIONS BETWEEN ATTRACTIVENESS OF SUCCESS RANKINGS AND RANKINGS OF INITIAL INDIVIDUAL RISK TAKING FOR ALL EXPERIMENTAL SUBJECTS - JAPAN, PHILIPPINES, AND AUSTRALIA (N = 47 IN EACH COUNTRY)

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