University Grant Program Research Report

MEASURES OF RISK TAKING PROPENSITY

by

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and
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University of British Columbia.

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The views and opinions expressed in this report are those of the authors and are not necessarily endorsed by the Department of Industry, Trade and Commerce.

Working Paper 1

Measures of Risk Taking Propensity

An interim report prepared by
Kenneth R. MacCrimmon and Alfred Kwong
for the
ITC Risk Study Project
University of British Columbia

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I. OVERVIEW

The purpose of this paper is to present various measures of risk taking propensity that have been developed for the Industry, Trade and Commerce Risk Study Project. The core of the paper is part II where the risk instruments are given and discussed. In this section we shall briefly describe some of the purposes of this development and some of the premises underlying it.

There are obvious advantages in studying some aspect of behaviour of using instruments and designs used by others. This procedure aids comparison and allows a cumulative body of material to develop. Such an approval is especially compelling where the instrument has a long and successful history of use (e.g. the MMPI). In cases in which the instruments are dubious, this type of incremental extension seems dysfunctional.

It is our contention that this latter situation exists in studies of risk taking behaviour. No one instrument seems appropriate for assessing risk taking propensity. Some instruments used by earlier researchers seem to get perpetuated regardless of their lack of success. More attention needs to be devoted to the development of new measures and the screening of old ones and this is what we have been attempting to do.

It seems unlikely that we can uncover a best measure. Earlier research, particularly that of Kogan and Wallach, Slovic and Bassler suggest that there is no single personality risk taking disposition. While this conclusion seems quite reasonable, the earlier studies leading to it are somewhat weakened by the questionable measures of risk taking used.

These studies to imply though that if we are interested in studying risk taking in business situations involving technological change, innovation, ownership, etc, made to utilize items that bear a close relationship to these situations. The usual items directed toward college students lack both the face validity and the connection required.

The common ways of developing inventories in personality assessment should be examined here. These methods are: (1) constructs, (2) factor analysis, and (3) criterion groups (Edwards, 1959). We are clearly taking a construct approach in that we have identified the behaviours of risk taking that we are trying to map and we are developing items to this end. This implies that we want to obtain an evaluation of the behaviour of the subject in his real environment and to relate it to our measures. Due to the limited time we are likely to have with our subjects (perhaps up to 2 hours) a straight factor analysis approach is not feasible. Given the wide variety of different measures we must include, it is not possible to include many items for each measure. A factor analysis can be performed among the different measures, however. The use of criterion groups would be desirable and this is planned to some extent but it obviously implies a characterization on some other basis into high and low

risk categories. We plan to do this to some extent in professions (e.g. banker vs r. and d. manager), industry (high versus low technology), assessments by associates, and personal and business history record.

These questions of development basis are essentially those of validation. Our preference is for predictive validity but this depends on the extent to which we can identify and measure a definite risk situation performance by each subject. Some of the methods described at the end of the preceding paragraph will be utilized for this. The content validity of the measures will be checked by the usual procedures of sampling items. Convergent validity among measures can be expected to be higher than that found in earlier studies because of the way in which our set of measures is oriented toward a specific context. As mentioned above, face validity seems important since we have to interest and involve our subjects to elicit their participation. We do not place much reliance on construct validity, as that notion is generally used, in that the hypothesized relations between risk taking and other constructs have been generated in studies involving the risk measures were are dubious about. However, since it is easy to include a couple of the standard instruments that can be administered quickly and have reasonable face validity, we plan to do so.

The standard reliability checks will be made. That is, we plan test-retest situations in the pilot study. Split-half reliabilities, Item-whole reliabilities will be calculated. Tests will also be made comparing different subjects and different formats and orders.

There are many possible ways to characterize a risk instrument. For each of the measures in part II we give a listing of about 10 characteristics. While it is difficult to single out one factor, it does seem especially important to focus on the role the instrument asks the subject to assume and the extent to which he realizes, or feels he will realize, the outcomes. Some important role situations that we want to include in our package of risk measures--along with their current representation as shown by the section of part II in which they appear--are as follows:

- What have you done in situations S? (D-2)
- What will you do now you are confronted with situation S? (A-1)
- What would you do if you were confronted with situation S? (A-2, A-3, C-2)
- What has X done in situations S? (D-3)
- What would you do if you were Y and were confronted with situation S? (C-1)
- What would you advise Y to do if he were confronted with situation S? (B-1)

While this overview is very incomplete it seems desirable to terminate it at this point in order to get directly to the measures.

II. MEASURES

In the following sections, the risk propensity measures are described. For convenience in reading we have grouped them into four categories based roughly on their origin and type. This grouping is not intended to carry any implications about their actual administration. The four categories are: economic, psychological, management and interview.

Each of the sections is organized in the following way. Under each of the four major categories are 3 measures. For each measure, there is first a sub-section, (a), briefly describing the origin and background of the measure, including some key references. The next sub-section, (b), gives a general description of the measure we shall use. There is a discussion of how it differs from earlier ones and a listing of characteristics. Sub-section c, under each measure, gives the instructions to the experimenter. The next sub-section, (d), presents some details on the method of analysis and the scoring. Finally, sub-section e comprises the instrument itself.

A. Economic-Based Measures

Risk taking propensity has always been an important concern of economists. Adam Smith dealt explicitly with risk and more recently Frank Knight has stressed its importance. It has only been since von-Neumann and Morgenstern, however, that interest has been generated in actually assessing the risk taking propensity of individuals. Friedman and Savage have discussed at some length how an individual's attitude toward gambling, insurance and other risky situations can be studied. They stress the characterization of risk propensity by utility functions. Concave (segments of) utility functions imply risk averting while convex (segments of) utility functions imply risk taking behaviour. The utility functions are von-Neumann-Morgenstern utility functions that are interval scaled--that is the choice of an origin and a scale unit are arbitrary.

In the middle 1960s, Arrow and Pratt independently developed explicit measures of risk aversion. These measures involve the ratio of the second derivative of a utility function to the first derivative. Hence the utility function used must have a function form that is twice differentiable. Both these measures are local measures in the sense of being evaluated at a specific value.

Almost all the work in economics on risk taking focuses on a utility function representation. Even Markowitz who emphasizes an approach to portfolio selection involving mean and variance uses utility functions when characterizing individual risk propensity. Markowitz's concern with mean (even though Markowitz assumed that the preferred variance was always the smallest possible).

We use both variance and utility function measures in our attempt to assess risk taking propensity. Measure A-1 involves the variance format. The subject is presented with wagers based on stock prices and is asked to choose the wager he prefers. Each wager has a different variance and his risk propensity is characterized by the variance he is implicitly choosing. In 3 of the 5 sets the expected value is the same for all wagers in the set. In one set the expected value is higher for wagers having a higher variance, while in the other set the expected value is lower for wagers having a higher variance. Choices of the higher variance wagers in the latter set would lead one to question whether the subject was trying to fake a high risk taking propensity.

The other two measures, A-2 and A-3 both use the utility function representation and allow for the computation of the Arrow-Pratt local risk aversion measure (the relative risk aversion would also be computed). Measure A-2 asks the subject to consider his business role and presents him with a number of investments with uncertain outcomes. All these situations are binary wagers with probabilities of 0.5. The subject is asked to provide a certainty equivalent and from these certainty equivalences a utility function is fit.

Measure A-3, on the other hand, places the subject in a personal role where his own resources--not those of his company--are assumed to be at stake. It also differs from A-2 in that the subject's preferences over two different factors are measured at the same time--in fact, they are utilized to help measure each other. This is done

by means of examining trade-offs and these are used to help build up indifference curves. From the indifference curves, numerical utility functions can be obtained for each factor and the Arrow-Pratt measure can be calculated.

1. Stock Price Wagers

a. Background

Risk taking may be more accurately measured in situations where the outcomes are real rather than hypothetical. Beginning with Mosteller and Nogee, various researchers--including Edwards and Kogan and Wallach--have presented subjects with sets of wagers and then actually played out the subject's choices--with real money changing hands.

F.C.Mosteller and P.Nogee, "An experimental measurement of utility" JPE, 1951, pp.371-404.
W.Edwards, "Proabability preferences in gambling", Amer. J. Psy., 1953, pp.349-364.
N .Kogan and M.A.Wallach, Risk Taking: A Study in Cognition and Personality, Holt, Rinehart and Winston, N.Y., 1964.

With rare exceptions (Fryback, Goodman and Edwards), all these situations have involved college students and trivial stakes. In addition, the subjects were generally provided with the initial stakes for gambling.

D.G.Fryback, B.C.Goodman and W.Edwards, "Choices among gambles in a real gambling situation", J.Exp. Psy., in press, 1972.

b. General description of measure

We use five sets of wagers in which the subject is asked to choose which one of the five alternatives in each set he prefers. The five alternatives in each set are binary wagers which vary in the probability and amounts of win or loss. The bets are based on the fractional part of the prices of a group of stocks on the NYSE. Each of the sets has one alternative in which the subject receives $5 for sure. The chances of winning and the expected winnings are shown for each alternative.

The stocks used are chosen from a list of 20 frequently traded stocks in the price range $10 to $30. It is assumed that the distribution of fractional prices for stocks in this range is uniformly distributed.

Before they are shown the sets, the subjects are asked to make a choice: I.e., whether they would prefer to select the 5 stocks themselves or to have them selected randomly by a computer program. This in effect serves as some sort of a rough insight into chance vs. skill. Given that the assumption of randomness of fractional part of the prices holds, it does not really matter who does the choosing but for those people who believe that their skill can determine the outcome to a certain extent, they would prefer to select the 5 stocks out of the list of 20 themselves - thus giving us an idea of whether they are chance-oriented or skill-oriented.

In order to remove the effects of prior gains or loss, which tend to obscure the results, only one of the five sets will actually be played out. This will be done randomly.

Characteristics that one could note in these types of experiment as a measure of risk taking propensity are as follows:

Payoffs: Real.
Role: himself (the subject) as better.
Context: gambling; on the fractional part of prices of stocks. from the NYSE.
Inputs: description of the wagers opened to the subjects, situations of win or lose and the amount of win or loss; the chance of winning and the expected value of the bet.
Output: one alternative from each set by checking. Or the bet that they would want to play out.
Administration: experimenter should be present.
Perceived Control: yes.
Business relevance: stock prices.
Time: 15 minutes.

c. Instruction to Experimenters:

Experimenter must be present during the test and should see to it that privacy is maintained, to remove effects of peer competition. After the subject has read the instruction, tell him that he should be prepared to come up with a check (preferably, after the final bet has been selected randomly from the five choices that the subject has made - ask him to write out a check in the amount indicated in the loss part of the bet and that if he wins, the check will be destroyed.) This will be told to him before hand:

I guess you've read the instructions and glimpsed through the sets we have here. Now we will ask you to start making your choices. Please think about the bets carefully as we will ask you to prepare a check in the amount of the possible loss as indicated by your choice after we have randomly selected one of these sets to be played out. We will of course, destroy the check if you win and reimburse you for the value of the check expense, plus the amount that you have won. Now... which did you select - choose the stocks yourself or let the selection be done at random?....

The experimenter should come equipped with a random table to be used in the event that subject chose to have stocks selected at random. (Non-replacement random sampling - 5 stocks out of the list of 20).

d. Scoring:

We have come up with two scoring possibilities:

We compute first the variance of all the bets by using the formula: $p(1-p)(a-b)^2$ where p is the probability of winning and a is the amount of possible win and b is the amount of possible loss (from Coombs and Pruitt).

1. Assign "4", "3", "2", "1", "0" to wagers from lowest variance to the highest chosen in each set. Add numbers for each set together. Hence "20" is maximum risk aversion and "0" maximum risk taking.

2. Compute for each set the proportion of a wager's variance to the largest for that set. Then add proportions together and take unit complement. Hence most risk averse would be "5" and least risk averse would be "0".

VARIANCE CALCULATION

PROBABILITIES	PRODUCT
(.904)(.096)	.087
(.618)(.382)	.236
(.275)(.725)	.199
(.069)(.93)	.064

(.618)(.382)=.236

VARIANCE SET A	VARIANCE SET B	VARIANCE SET C	VARIANCE SET D
10.72	2117.23	11.71	9.59
61.94	354.50	72.28	50.65
259.49	85.27	359.44	196.83
1345.60	16.59	2,073.60	921.60

VARIANCE SET E
648.00
344.80
162.00
40.50

e. Instrument

STOCK PRICES BETTING

At the bottom of the page is a list of 20 stocks actively traded on the New York Stock Exchange. Five of these stocks will be selected and you will be presented with sets of wagers based on the prices of these 5 stocks. In each of the sets--labelled A,B,C,D,E -- you will be allowed to select the wager you most prefer. In each set, one of the options is not a wager at all, since if you select it, you will receive $5 for sure. With the other options you have a chance of receiving more than $5 but usually a corresponding chance of actually losing money. The average amount you can expect to win is shown for each wager, as are the chances of winning. You will select just one option from each of the sets. When you have finished selecting, we shall randomly pick one of the sets and then actually play out the option you chose in that set. If the result is that you win money, we will pay you immediately; while if the results indicate that you lose money, we expect immediate payment from you.

All wagers are based on the fractional part of the prices of the five stocks. You win if the fractional amount is 1/8, 3/8 or 5/8 while you lose the amount is 1/4, 1/2, 3/4, 7/8 or a whole number. Studies of the stock market have shown that no one ending amount is more likely than any other. All prices will be the closing prices of June 30, 1972.

Please answer the following questions:

Would you prefer to select the 5 stocks yourself or would you prefer to have them selected randomly by a computer program? . Please check (✓) one of the boxes.

a) Selected by me.
b) Selected randomly.

Pause here for the selection of the stocks.

1. AJ Industries		11. Mattel In.	
2. Ashld. Oil	1.20	12. Ogden Cp.	.50
3. ATO Inc.	.12	13. PanAm Wair	
4. Bache		14. SbW Air	
5. Bois Gas	.25b	15. Teldyn	
6. Budd Co.		16. Texaco	1.66
7. Cdn Pacific	.68	17. Textron	.90
8. Fed N Mtg.	.30	18. Trans.W.Air pf.	
9. Gulf Oil	1.50	19. Union Corp.	
10. Kellogg		20. Warn Com	.25

Set A: Please put a check (✓) in one of the boxes.

1. You receive $5 for sure ☐

2. You will receive $6.10, if at least 1 of the 5 stocks has a fractional price of 1/8, 3/8 or 5/8.
However, you lose and must pay $5 if no stock has one of these fractional prices.
Chance of winning: 90% ☐

3. You will receive $11.20 if at least 2 of the 5 stocks has fractional prices of 1/8, 3/8 or 5/8.
However, you must pay $5 if no stock or only 1 stock has one of these fractional prices.
Chance of winning: 62% ☐

4. You will receive $31.80 if at least 3 of the 5 stocks have fractional prices of 1/8, 3/8 or 5/8.
However, you must pay $5 if only 2 or fewer stocks have on of these fractional prices.
Chance of winning: 28% ☐

5. You will receive $140.00 if at least 4 of the 5 stocks have fractional prices of 1/8, 3/8 or 5/8.
However, you must pay $5 if only 3 or fewer stocks have one of these fractional prices.
Chance of winning: 7% ☐

All of the above wagers have expected winnings of $5.00.

SET B: Please put a check (✓) in one of the boxes.

1. You will receive $20. if at least 1 of the 5 stocks has a fractional price of 1/8, 3/8 or 5/8.
However, you must pay $136 if no stock has one of these fractional prices.
Chance of winning: 90% ☐

2. You will receive $20 if at least 2 of the 5 stocks have fractional prices of 1/8, 3/8 or 5/8.
However, you must pay $19.30 if only 0 or 1 stock has one of these fractional prices.
Chance of winning: 62% ☐

3. You will receive $20. if at least 3 of the 5 stocks have fractional prices of 1/8, 3/8 or 5/8.
However, you must pay $0.70 if only 2 or fewer stocks have one of these fractional prices.
Chance of winning: 28% ☐

4. You will receive $20 if at least 4 of the 5 stocks have fractional prices of 1/8, 3/8 or 5/8.
However, you will receive $3.90 if only 3 or fewer stocks have one of these fractional prices.
Chance of winning $20: 7% ☐

5. You receive $5 for sure. ☐

All of the above wagers have expected winnings of $5.00

SET C: Please put a check (✓) in one of the boxes.

1. You receive $5.00 for sure ☐

2. You will receive $6.60 if at least 1 of the 5 stocks has a fractional price of 1/8, 3/8 or 5/8.
However, you must pay $5.00 if no stocks has one of these fractional prices.
Chance of winning: 62% ☐ Expected winnings: $6.05

4. You will receive $37.50 if at least 3 of the 5 stocks have fractional prices of 1/8, 3/8 or 5/8.
However, you must pay $5.00 if 2 or fewer stocks have one of these fractional prices.
Chance of winning: 28% ☐ Expected winnings: $6.70

5. You will receive $175.00 if at least 4 of the 5 stocks have fractional prices of 1/8, 3/8 or 5/8.
However you must pay $5.00 if 3 or fewer stocks have one of these fractional prices.
Chance of winning: 7% ☐ Expected winnings: $7.40

SET D: Please put a check (✓) in one of the boxes.

1. You will receive $5.50 if at least 1 of the 5 stocks has a fractional price of 1/8, 3/8 or 5/8.
However you lose and must pay $5.00 if no stocks has one of these fractional prices.
Chance of winning: 90% ☐ Expected winnings: $4.50

2. You will receive $9.65 if at least 2 of the 5 stocks have fractional of 1/8, 3/8 or 5/8.
However you lose and must pay $5.00 of 0 or 1 stock has a fractional price of 1/8, 3/8 or 5/8.
Chance of winning: 62% ☐ Expected winning 4.05

3. You will receive $26.45 if at least 3 of the 5 stocks have fractional prices of 1/8, 3/8 or 5/8.
However you lose and must pay $5.00 if only 2 or fewer stocks have one of these fractional prices.
Chance of winning: 28% ☐ Expected winnings: $3.65

4. You will receive $115.00 if at least 4 of the 5 stocks have fractional prices of 1/8, 3/8 or 5/8.
However you lose and must pay $5.00 if only 3 or fewer stocks have one of these fractional prices.
Chance of winning: 7% ☐ Expected winnings: $3.30

5. You receive $5 for sure.

SET E

You win the amount in the win column of your selection if at least 2 of the 5 stocks have fractional prices of 1/8, 3/8 or 5/8.

However you will pay the amount in the lose column of your selection if only 0 or 1 stock has one of these fractional prices. In all of the wagers 1-4 below your chance of winning is 62%.

Your expected winnings are $5.00.

Please check (√) one of the boxes

	WIN	LOSE
1. ☐	$25.00	$27.40
2. ☐	$20	$10.30
3. ☐	$15	$11.20
4. ☐	$10	$ 3.10
5. ☐	You receive $5 for sure	

2. Certainty Equivalences

a. Background

A Utility function is the basic way by which an economist assesses risk propensity. Obtaining certainty equivalences from a subject is a standard way for getting utility functions. These methods have been used in experiments by Becker, DeGroot and Marschak and by Swalm, among others

G.M.Becker, M.H.Degroot and J.Marschak, "A Single Response Method"

R.O.Swalm, "Utility Theory: Insights into Risk Taking", Harvard Business Review, Nov.-Dec.'66, pp.123-136.

A systematic way for obtaining utility functions from the certainty equivalences is given by Schlaifer. Schlaifer also describes a set of computer programs for fitting various functional forms, such as exponential and piecewise exponentials, to the equivalence points. He also provides a set of bounds on the possible utility functions.

R.Schlaifer, Analysis of Decisions Under Uncertainty, McGraw-Hill, 1969, Chapter 5.

R.Schlaifer, Computer Programs for Elementary Decision Analysis.

Arrow and Pratt have independently proposed an absolute measure of risk aversion based on the negative of the ratio of the second derivative to the first derivative of a utility function.

K.J.Arrow, Essays in the Theory of Risk Bearing, Markham, Chicago, 1971, Chapter 3.

J.W.Pratt, "Risk aversion in the small and the large", Econometrica, 1964, pp.122-136.

b. General description of the measure

We essentially use the standard procedures for obtaining utility functions from certainty equivalences. We define an origin and a scale unit (slightly different from the Schlaifer procedure) and we then obtain 5 points on the utility function from the subject. One extra point is obtained for consistency checking. From these points piecewise exponential and polynomial functions are fit and the risk aversion index is calculated by taking derivatives of the fitted functions.

Some characteristics of this measure are:

Role: own business role
Context: business investments
Payoffs: hypothetical
Output: money amounts
Description: one paragraph including dollar amounts and probabilities
Time: about 3 minutes per question
Administration: experimenter assistance required

c. Instructions to the Experimenter:

This is where experimenter assistance counts the most. Read the instructions to the subject carefully and clarify points in the instructions the subject does not understand.

The first question - what is the maximum amount you would recommend be spent in a given year-means we're asking for his planning horizon-the amount of money he's used to dealing with in his business role. If he doesn't understand this question, rephrase it to read:

What is the usual amount you are given with for resource allocation and other purposes in business or the amount in the budget under your disposal?

Or the amount the company lets you handle, which you are usually dealing with?"

Thus X is the Planning horizon.

Question 1. is to determine the midpoint's (midpoint of planning horizon) utility value. Net means pure profit in this question. Break-even - no profit, no loss. Y is the amount certain. Thus, there is an illustration or example when he would take the standard contract when Y=X. And the small amount of Y, as an illustration, be some fraction of X, maybe 1/20 of his planning horizon or even $1 to be sure; thus, you must give him an example when Y is a small amount that he would probably take the special contract. Then ask him the minimum Y.

Question 2. is to determine his utility for loss. Again, X is his planning horizon. Then, in the second part of 2, if Z is a large number, say X (his planning horizon), he would probably do nothing. But if Z is a small number, here the experimenter gives Z as a fraction of X, like 1/20 of X (or even $1). Then the subject is asked the minimum Z value. (in order to determine utility of Z where EU=1/2)

Question 3. is looking at the losing side again. Here, we want the value of a settlement in order to get out of a situation. He stands to lose in this situation. And the Z mentioned here is his answed to Question 2.

In the second part of Question 3, you are asking him for the W value. The illustration when he probably would continue with the contract is when W is Z where Z, as mentioned, is his answer to 2. In the part where W is a very small number, give him an example, "say R" where R is some fraction of Z - possibly 1/20 of Z (or even $1) Then you ask him for W.

Question 4. is a check for consistency. Usually the subject is inconsistent. The Y value is the value he answered in Question 1 and the W value is his answer to Question 3.

In the second part, when you say "If V is a large negative value, which means you are buying your way out, say Y (his answer to Question 2), you probably would continue with the contract. While V is a large positive value, say M (where M is $\frac{9}{10}$ of Y), you would probably sell the contract. How large would a negative number or how much is the asking price for you to pay to get out of the contract before you continue with the contract?" Then he gives V.

d. Scoring

After fitting a function to the points provided by the subject, the term $-U''(r)/U'(r)$ is computed at the following points: r=0, r=X+Z/2 and perhaps some others. The precise points at which to evaluate the measure and how to aggregate these values has yet to be determined.

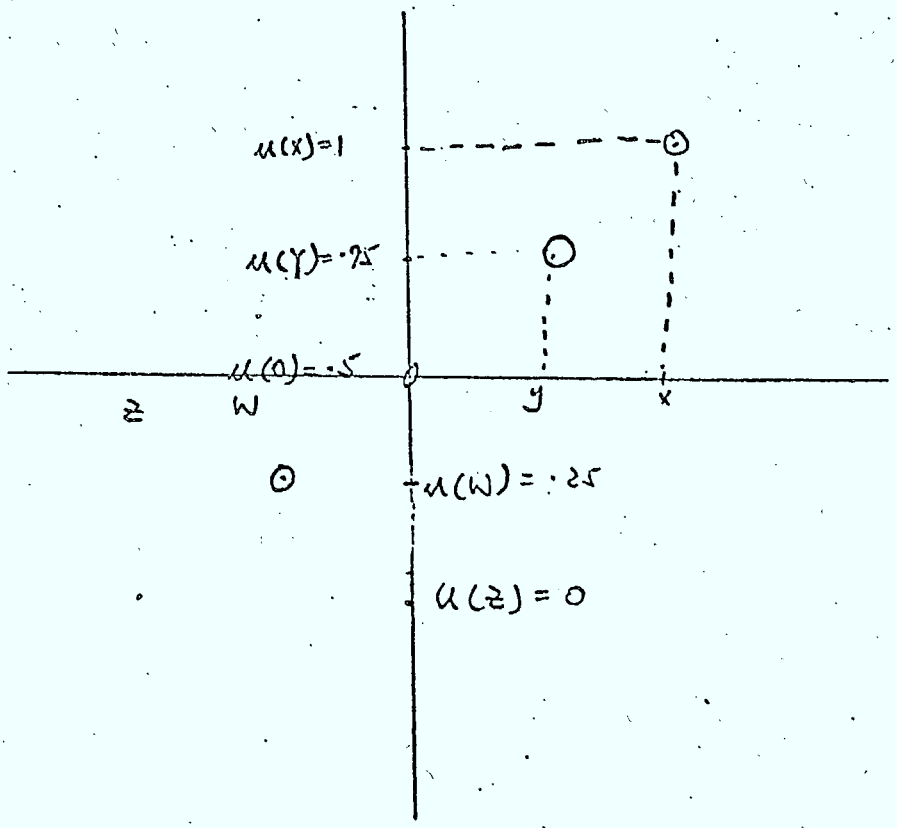
X: maximum amount allocatable
let U(X)=1
U(0)=.5

then 1. U(Y)=.5(1)+.5(.5)=.75

2. U(Z)=.5-.5(1)/.5=0

3. U(W)=.5(.5)+.5(0)=.25

4. U(V)=.5(.75)+.5(.25)=.5 check



e. Instrument

UTILITY FUNCTION VIA CERTAINTY EQUIVALENCES

In the following pages you are given four-investment - situations. In some of the cases you may enter into a contractual arrangement while in others you may buy your way out. In each case you have two alternatives. One alternative involves a sure amount of money while the outcomes of the other alternative are uncertain-depending on the success of the project. The chances for success in each case are 50-50.

In all cases the money amounts that are given or requested are to be interpreted as cash flows that will take place in the very near future--or alternatively, as the present value of future flows. All amounts are net after taxes.

In 3 of the 4 cases you are asked to give the sure amount such that you would be indifferent between the special contract and the other alternative while in the other case you are asked to give the amount of loss that would make you indifferent. So in each case two of the three money amounts are fixed and you are asked to specify the level for the third.

You are asked to make these choices in your capacity as a corporate decision maker and not as a private individual dealing with your own funds. Even though the alternatives are very simple compared with real business investments, try to give replies that you would take if you were actually confronted with these alternatives.

What is the maximum amount you would recommend be spent in a given year?

X: _____

1. Suppose you are faced with the following investment option. If you take a special contract you will net $X if the project is successful, while if the project is unsuccessful you will break even (i.e., neither gain nor lose). The best available information indicates that the chances of a successful project are 50-50. Your only other current alternative is to invest in a standard project in which you are assured of neting $Y.

If Y is a large number, say X, you would probably take the standard contract; while if Y is a very small number you would probably take the special contract. How small does Y have to before you would take the special contract?

minimum Y: _____

2. Suppose you are faced with the following investment option. If you take a special contract you will net $X if the project is successful, while if the project is unsuccessful you will lose your stake of $Z. The best available information indicates the chances of a successful project are 50-50. Your only other current alternative is to do nothing, in which case you neither gain nor lose.

If Z is a large number, say X, you would probably do nothing; while if Z is a very small number you would probably take the special contract. How small does Z have to be before you would take the

special contract?

minimum Z: _____

3. Suppose you are faced with the following investment option. You are involved in a special contract and if everything goes well from now on you will break even, however, if things go badly you will lose $Z. The best available information indicates the chances of things going well are 50-50. Your only other current alternative is to buy your way out of the contract for $W.

If W is a large number, say Z, you probably would continue with the contract; while if W is a very small number you would probably buy your way out. How large does W have to be before you would continue with the contract?

maximum W: _____

4. Suppose you are faced with the following investment option. You are involved in a special contract that will net you $Y if the project is successful, while if the project is unsuccessful you will lose $W. The best available information indicates that the chances of a successful project are 50-50. Your only other current alternative is to sell the contract for $V. (If V is negative, you are buying your way out.)

If V is a large negative number, say Y you probably would continue with the contract; while if V is a large positive number you would probably sell the contract. How large a negative number does V have to be before you would continue with the contract?

maximum V: _____

3 Indifference curves and derived utilities

a. Background

In assessing preferences, it is often natural to consider how much of one thing you would give up to attain something else. All consumer purchase decisions are of this form -- you consider how much money you would give up to acquire that automobile, refrigerator or steak. Also in situations where objects have different attributes or properties you consider how much of one you would give up for another. For example, how much salary are you willing to forego to work in a better location or how much immediate job satisfaction are you willing to forego to gain a better opportunity for advancement? The way to depict these trade-offs graphically is through indifference curves. The slope of the indifference curve at any point shows the marginal rate at which one attribute is substituted for another.

Indifference curves have been important conceptual tools in economics since Pareto. The most feasible way of actually obtaining indifference curves is given in:

K.R.MacCrimmon and M.Toda, "An experimental determination of indifference curves", Review of Economic Studies, Oct. 1969.

A variety of procedures have also been developed in deriving numerical utility functions from these indifference curves. Hence, the indifference curve procedure is not only an interesting reflection of preferences itself but also provides an alternative way (to the certainty equivalences method above) to get utilities.

b. General description of our measure

Since we use the certainty equivalence procedure to obtain, utilities from the subject in a business role, we shall use the indifference curve method to obtain trade-offs and utilities in a personal role context.

The characteristics of the instrument are as follows:

role: personal role
payoffs: hypothetical
context: career decisions
input form: questions about alternative jobs described by a salary and an addition chance of serious personal injury.
output: choices leading to indifference curves
time: about 3-5 minutes per indifference curve
administration: experimenter assisted
information acquistion: not relevant

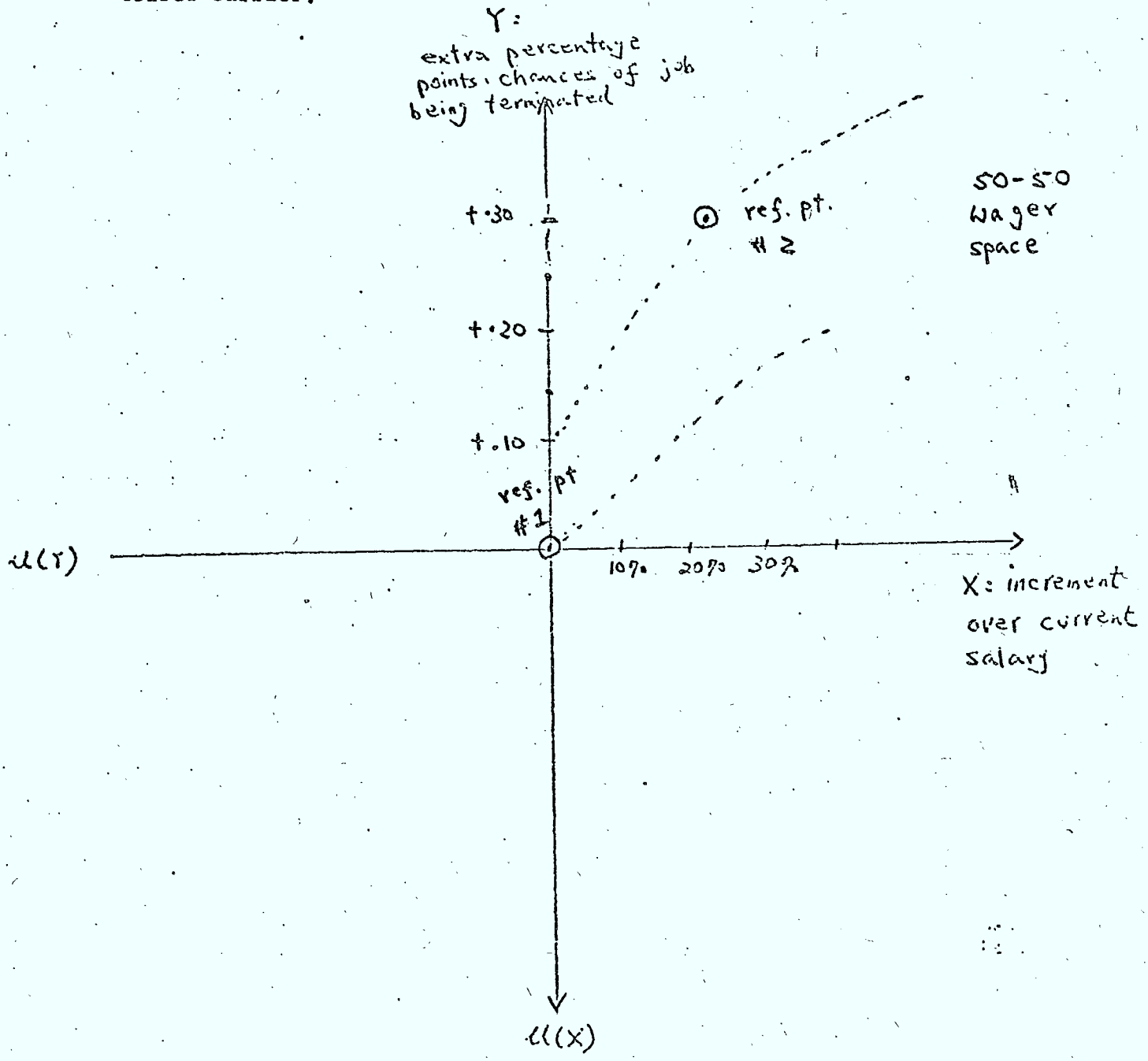
c. Instructions to the Experimenter

With this instrument the subjects' choices will determine the subsequent alternatives he is presented with. Initially a reference point will be chosen then alternative projects will be generated and compared with this reference point. The purpose is to build up rejection and acceptance regions which constrain the subject's

indifference curve through the reference point as tightly as possible. After a narrow region has been realized between the accept and reject regions then a second reference point will be selected and the same procedure used.

d. Scoring

The scoring on this will be essentially the same as that for the utility function obtained from certainty equivalences. In this case curve fitting procedures will be used to obtain either polynomial or an exponential utility funtions. Utility funtions will be separately obtained for salary increments and for chances of serious injury. Hence the risk aversion measure can be calculated as described earlier.



e. Instrument

INDIFFERENCE CURVE/UTILITY ASSESSMENT

There are probably various ways in which you feel you could improve the operations of your firm. Undoubtedly some of these are beyound the authority of your position. If you undertook these projects they may have one of two outcomes: (1) things may turn out well and your superiors are willing to overlook your unauthorized actions and reward you for what you did by increasing your salary, or (2) things may turn out poorly and your superiors may not be willing to overlook your unauthorized actions and will consider terminating you. Suppose you have a variety of possible projects you could consider and for each one you can assess ahead of time what the likely salary increment would be if things turned out well and what the increased chance of being fired was if things turned out poorly. Suppose in all cases the chances of things turning out well are 50-50. We would like to assess your preferences over sets of projects having various (after-tax) salary increments versus various extra chances of being terminated. Please consider these as carefully as you can and try to assume that they may actually apply to projects you might undertake.

Set 1:

Let us use as a reference point your current situation -- that is, your current salary of $ _____ and what you roughly assess as your current chance of being terminated _____ %.

Suppose now you consider a project with a 10 percentage points extra chance of being terminated, would you undertake the project if the salary increment you might get was 20 percent of your current salary? (Remember it is 50-50 that you receive one outcome versus the other).

Suppose you now consider a project with a 30 percentage points extra chance of being terminated, would you undertake the project if the salary increment you might get was 100% of your current salary?

The interviewer will now ask you to make further comparisons based on the answers you have given.

Set 2:

Let us now change the reference point from your current situation to one in which you have already committed yourself to undertaking some project and the one under consideration is a project with a 30 percentage points extra chance of being terminated or a 20% salary increment. You are now considering whether to definitely settle on this or should take something else -- in case though will you keep your present situation. So in each of the situations below remember you are comparing whether to take the project described there or the one having a 30 percentage points extra chance of being terminated or a 20% salary increment (lets call it the 30-20 project).

Suppose that as an alternative to the 30-20 project you consider a project with 10 percentage points extra chance of being terminated, would you undertake this project if the salary increment you might get was 10% higher than your current salary?

The interviewer will now ask you to make further comparisons based on the answers you have given.

B. Psychology-Based Measures

Influenced to a large extent by the economic and statistical literature, psychologists have become increasingly interested in risk taking within the past 20 years. Many of the studies in psychology take the form of experiments with the concepts described in section A, there are other studies though that use material with a less economic flavour. The first measure is of this form.

Choice dilemma problems were developed and used at M.I.T. about 13 years ago by Kogan and Wallach and Stoner. Such problems provide a one paragraph description of a situation in which a person has a choice between a relatively sure alternative with a quite assured outcome or a risky atternative with either a favourable outcome or an unfavourable outcome. The subject is asked to act as an advisor to this person and to recommend the minimum probability he should require for the risky alternative. Presumably, the risk advised reflects the subject's own risk propensity & the probability provides a direct numerical measure. Our measure B-1 utilizes 5 of the questions used by Kogan and Wallach and 5 constructed by us in this format. In addition, we have constructed 5 questions in which the probabilities are given in the statement and the subject is asked to choose the alternative he prefers. These questions are useful for orientation and also can provide a (dichotomous) measure of risk propensity.

Measure B-2 is also drawn from Kogan and Wallach. Subjects are asked to estimate the chances in 100 for particular events and to provide a confidence value for their estimate. It is presumed that subjects higher in confidence and more extreme in estimates are greater risk takers. While we are somewhat dubious about this measure we have drawn 20 items from Kogan and Wallach and included it since it is of a quite different form than any of the other measures.

Measure B-3 is not a measure of risk taking. Rather it takes a few of the items from a standard measure of internal vs external control (Rotter). A close relationship may be expected between risk taking and perceived control and since the measure can be quickly answered it seems worth including.

1. Choice-Dilemma Questions

a. Background

Choice or life dilemma problems have been widely used in studies of risky shift. These problems describe a situation in which the a person is confronted with two alternatives: a relatively risky action and a riskless action. A description of the possible outcomes of the actions is implied or is given verbally. The subject is asked to advise this person by indicating the lowest probability that the person should accept for the success of the risky action. The number given (in terms of "chances out of 10") is assumed to reflect the subject's own risk propensity. There have been various sets of choice dilemma questions used but perhaps the standard set is the 12 item questionnaire given in:

N.Kogan and M.A.Wallach, Risk Taking: A Study in Cognition and Personality, New York: Holt, Rinehart and Winston, 1964, Appendix E, pp.256-261.

Another set of items is given in

J.A.S.Stoner, "Risky & Cautious Shifts in Group Decisions: The Influence of Widely Held Values." J. of Exp. Soc. Psy. 1968 4, 442-459.

b. General description of the measure

We use a set of 15 items, five of which have been taken from the Kogan and Wallach questionnaire and the other ten have been constructed by us. Only items that deal with situations in which the decision maker is a businessman are used.

The first five items are choice dilemma descriptions in which a particular probability of the risky outcome appears in the statement and hence the output required is simply a choice between alternatives having a different level of riskiness. This is designed to lead the subjects into a familiarity with these problems before requesting the somewhat artificial output of a probability value. The next 10 items are in the standard choice dilemma format with the Kogan and Wallach items (numbers 6, 8, 10, 12, and 14) interleaved with the new items.

Characteristics to note in these types of questions as a measure of risk propenisty are the following:

Payoffs: hypothetical
Role: advisor to other individuals
Contexts: descriptions of realistic situations
Inputs: one paragraph verbal descriptions
Outputs: minimum acceptable probabilities (chosen alternative in first five items)
Time: about 1&1/2 minutes per item
Administration: experimenter assistance not needed.
Specificity of outcomes: probabilities requested, consequences described somewhat vaguely
Business relevance: business situations
Perceived control: none
Information acquisition: completely provided

c. Instructions to experimenter

These items can be self-administered by simply giving the instrument to the subject.

d. Scoring

On the first five items, a risk taking, a risk averting, and an intermediate alternative can be identified. The risk taking alternative receives a score of -1, the risk averting alternative receives a score of +1 and the intermediate alternative receives a score of 0. The scores for the five questions are then added together.

On the next ten items, the probabilities of the ten items are added together to form the risk aversion index.

On both scales, higher values imply higher levels of risk aversion.

The questions could be given non-equal weights in a variety of ways. Each subject could be asked to evaluate the seriousness of the situation and the scores could be weighted by these aggregate figures. Alternatively, the item scores could be weighted base on the aggregate mean or variance of that item across all subjects.

1. Company R has been considering investment in country J. whose market is becoming highly attractive for R's product. If the investment is not considered, the money will be used for a cost reduction study that would reduce cost by 9% annually. However, there are three other companies interested in country J. These three companies are known to be the stiffest competitors of R (their company sizes being approximately the same as R.) If R decides to go into J with its investment of $2 million he has two choices open to him: 1) Invest on his own. 2) Decide on a joint venture with 3 other competitors (i.e. also investing $2 million in this case by R) If R chooses to enter the market on its own, the three competitors are likely to enter and engage in competition ranging from massive adverting to price cutting. There is a .25 chance that R will win as the strongest (which means a return of at least 25% after tax on investment). If R goes for the joint venture, the return will be 12% after tax on investment with a probability of .8 and .2 that the return will less than 12%.
L is R's chairman of the Central Planning group and it has been left up to him to decide. If L chose to enter J's market and failed, it would mean a loss of $1 million on the first year and $200,000 subsequent and L is likely to be removed from his post.

If you're in L's shoes, what would you choose?
----go for cost reduction
----enter J. on your own
----enter J. on the joint venture proposal $250,000

2. Bert J., Supervisor of a small, obso lete spinning mill, was con-confronted with this dilemma: the company faced major production and planning problems and there was an argument between managing director, Mr. M, and a highly-educated young nephew who got into the mill and attempted to develop a programme to save the company from its problems. Bert. J. was known to be a favorite contender for promotion due to his qualifications and industry; Mr. M was the final decision maker in all promotion matters. J. believed that the programme of the young nephew could ease much of the problems the company faced and had a high chance of being successful in making the company more profitable. Bert J. had been called in by Mr. M to decide: which did he think was right: the traditional view point or the newphew's ambitious programme. To be in the middle would mean indifference and therefore a weakness in the eyes of the two.J knew that the nephew, for whatever changes he wanted to make, was in the company to stay and M. would most likely be around for more than 10 years yet.

If you were J., what would you do?
----chose M's side
----choose the nephew's side
----be in the middle

Please indicate reasons: (by checking) (as many as you think are needed)
----J. likely to be fired if he didn't choose M's side even though M is wrong.
----nephew's plan being too ambitious might create more problems
----it is better to stick with the sure, traditional way
----that is not J's problem
----nephew's plan, although ambitious and might create more problems, can change the internal environment
----others (please specify): _____

3. The research department of the WA chemical company came out with a new process for extracting oil from coconuts. It had been estimated that the profits from the preceding year, amounting to some $8 million will be used to build a plant somewhere in the coconut countries in southeast Asia for the purpose of extracting oil from the coconuts. However, there is a big-shot stockholder who has been troubling the company with his complaints that the dividends paid out by the company had been too low. He advised that WA should declare all of $8 million as dividends to satisfy the stockholders. On the other hand, they could use the $8 million for investment in a product line which had been traditionally profitable and well accepted. The product line mentioned is one of those old stable product which did not require much development. As for the result of the extraction research, the company could set up a plant and become very competitive in the coconut oil field. As far as the return to investment is concerned, the coconut venture, although there is some uncertainty, could easily earn 50% more than the "product line" venture.

If you were advising WA company, which would you choose?
----go into the coconut oil extraction
----give all the profits as dividends
----go into the product line venture and give your reasons:_____

4. Jack A., the personnel manager of a US firm in the Philippines, recently fired a supervisor for maltreating his subordinates. Before the employee left, he have Jack A this warning: that he should not, by all means, go to Baguio because that's his territory and Jack A would lose his life if he went there. Two weeks ago, Jack A was told by the higher-up to go to Baguio for a conference. He was an important participant in the convention. Of course he could have his assistant go to Baguio in his place but this would displease the higher-up and Jack A's chances for promotion next year would almost be reduced to zero. On the other hand, Baguio is a small place and the fired employee was known to have connections with a bunch of cut-throats there. And even if Jack brought a gun or some bodyguards along, there is a 60% chance that he could be shot or killed.

If you were Jack A, what would you do?.
----go to Baguio
----do not go and send assistant in your place.

5. Company OXO obtained a large contract requiring physical growth and expansion. As a result many production lines were installed with inadequate electrical controls. One employee had been severely injured due to inadequate wiring. Outside consultant checked the plant and made proposals. However, delays developed and no actions were taken by the board of directors to remedy the situation. Production, they indicated, must go on. The supervisor Z knew of all these developments and realized that if he pursued the Course of remedying the electrical controls without the board of directors giving the go signal, he could be removed from office.

If you were Z, what would you do?
----continue production as before
----stop production and undertake remedy
----stop production and ask Board of directors' opinions first
----continue production, ask Board of directors' opinions whether to remedy situation or not.

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

Imagine that you are advising Mr. A. Listed below are several probabilities or odds of the new company's proving financially sound.

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

----The chances are 1 in 10 that 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.

7. The research department came out with a new product. The higher-ups seemed to think that the product had potentials. The marketing manager was assigned the task to find out about the probability of the market accepting the product. The investment of $3 million lump-sum was needed for an economic plant to product the new product. On the other hand, the other alternative was to carry an old product which they had not produced before, which required also $3 million investment. The old product however has a return of only about 10% ROI after tax. The new product, if accepted by the market would mean a return of 20% or more ROI after tax and also promotion for K the marketing manager. However, if the product failed, the B.O.D. are likely to blame it on K and have him fired. If he pursued the "old product" he is likely to stay at his position for quite sometime. He is now 35 years old. Technically, the new product meant entry into a new industry and production-wise could be difficult. But if they started production, they would have a monopoly in the field for quite some time. If you were the marketing manager K, what is the lowest probability of success that you would consider acceptable to make it worthwhile for the company to start production of new product.

Please check the lowest probability that you would consider acceptable to make it worthwhile for the company to start production of new product.

----The chances are 1 in 10 that the new product will be very successful.
----The chances are 3 in 10 that the new product will be very successful.
----The chances are 5 in 10 that the new product will be very successful.
----The chances are 7 in 10 that the new product will be very successful.
----The Chances are 9 in 10 that the new product will be very successful.
----Place a check here if you think the new product should not be produced no matter what the probabilities.

8. 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 performed.

----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.
----Place a check here if you think Mr. B should not have the operation no matter what the probabilities.

9. Mr. T.D. is the sales manager of a US subsidiary in Africa. He has been approached by a member of the Parliament of that country to purchase $500,000 worth of capital equipments from the subsidiary on credit. In T.D.'s experience, some of the local politicians are known not to pay for their purchases. On the other hand, $500,000 means substantial profit to the subsidiary. T.D.'s sales performance, as viewed by the higher-ups, has not been quite satisfactory. If T.D. refused the politician's desire to purchase, there is also a possibility that the politician will get furious and might cause some trouble. However, the politician is a member of the minority party but there is a chance that he'd cause damage to the company. In T.D.'s belief, based on 10 years experience in dealing with the inhabitants, there is a small chance that the politician will pay the amount of purchase in less than a years time. If the politician didn't pay by the end of the year, the probability is zero that he will pay after that time.

If you were T.D., what is the lowest probability that your company will not be harmed by the politician before you undertake to supply him.

----The chances are 1 out of 10 that the politician will not cause damage to the company.

----The chances are 3 in 10 that the politician will not cause damage to the company.

----The chances are 5 in 10 that the politician will not cause damage to the company.

----The chances are 7 in 10 that the politician will not cause damage to the company.

----The chances are 9 in 10 that the politician will not cause damage to the company.

----Place a check here if you think Mr. T. D. should accept the politician's offer no matter what the probabilities.

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

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

Please check the lowest probability that you would consider acceptable for Mr. C to invest in Company X Stocks.

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

11. Mr. A.M., the personnel manager of a US construction Company in Indonesia, is confronted with a problem. Sing W., one of the company's foreman, had been rumoured of accepting bribes from construction supplies companies for purchase of construction materials. There is also a report that he, together with three other employees, has been stealing from the stockroom. The three other employees involved have confessed and indicated that Sing W. was their mastermind. However, there is a possibility that the three are lying. Sing W. was known to be an efficient worker and good foreman and was hard to replace. But if the confession of the three employees were true, it meant the company will continue to lose money from such pilferage.

If you were A.M., what is the lowest probability that the men are lying before you undertake not to fire Sing W.?

----The chances are 1 out of 10 that the men are lying.
----The chances are 3 in 10 that the men are lying.
----The chances are 5 in 10 that the men are lying.
----The chances are 7 in 10 that the men are lying.
----The chances are 9 in 10 that the men are lying.
----Place a check here if you think Mr. A.M. should retain Sing W no matter what the probabilities.

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

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

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

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

----The chances are 3 in 10 that the foreign country will remain politically stable.

----The chances are 5 in 10 that the foreign country will remain politically stable.

----The chances are 7 in 10 that the foreign country will remain politically stable.

----The chances are 9 in 10 that the foreign country will remain politically stable.

----Place a check here if you think Mr. E's corporation should not build a plant in the foreign country, no matter what the probabilities.

13. The M insurance company recently accepted a deal with a large shipping concern to have all his ships insured. The total value insured was about $200 million. The reasons that brought about the insurance were the hijacking of ships and ships that got lost at sea due to bad weather. M felt the amount insured was too big for one to handle. So, he wanted to have a part of the amount reursured.

If you were working for M, what percentage of the amount would you recommend to be reinsured?

----10%
----20%
----30%
----40%
----50%
----others, please specify _____

What is the lowest probability you find acceptable before you undertake to accept the handling of the total amount of insurance.

----The chances are 1 in 10 that the ships will be safe.
----The chances are 3 in 10 that the ships will be safe.
----The chances are 5 in 10 that the ships will be safe.
----The chances are 7 in 10 that the ships will be safe.
----The chances are 9 in 10 that the ships will be safe.
---- Place a check here if you think that the M insurance company should refuse the total amount no matter what the probabilities.

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

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

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

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

15. Peter J., the area manager of a US firm in southeast Asia, was confronted with a problem. The US West Coast strike has been going on for 3 months now and orders of exports have not been fulfilled as a consequence. Because of liquidity problem, he has arranged with the bank for an overdraft facility. To stop operation would mean temporary labor lay-offs and would also mean that if the US West Coast strike was suddenly settled, he would not be able to fulfill the order. But to continue production would mean inventory stockpiling and there is a possibility that power failures might set in and the inventory being produced would be all damaged. Also, overdraft meant interest payment which runs to about 15% per annum. In J's estimation, the probability that the West Coast strike will last only 3 months more was about .30 and the probability that there will be a power failure in 3 months time was about .20. Inventory stockpiling would amount to about .10 of total asset by the end of the third month. If he has not been able to ship his goods after three months, it meant that there is about .60 probability that there would be a power failure within six month's time.

If you were Mr. Peter J., what what would you do?
----stop production and wait three months & see
----continue production for three months and see
----continue production through out

What is the lowest probability that the strike will be settled in 3 months time before you undertake to stockpile?
----The chances are 1 in 10 that the strike will not last 3 months.
----The chances are 3 in 10 that the strike will not last 3 months.
----The chances are 5 in 10 that the strike will not last 3 months.
----The chances are 7 in 10 that the strike will not last 3 months.
----The chances are 9 in 1o that the strike will not last 3 months.
----Place a check here if you think that Peter J should continue production no matter what the probabilities.

2. Extremity/Confidence in Judgment

a. Background:

The judgment extremity confidence procedure first appeared in:

O.G.Brim, Jr. Attitude content-intensity and probability expectations. Amer. Social. Rev. 1955, 20, 68-76.

This was employed by Wallach and Kogan in 1959 and 1961:

M.A. Wallach and N.Kogan, Sex differences and judgmental processes. J. Pers. 1959, 27, 555-564.

_____. Aspects of judgment and decision-making: Interrelationships and changes with age. Behav. Sci. 1961, 6, 23-36.

Then, in 1964, in their study of risk-taking (op.cit.), Kogan and Wallach adapted this instrument. The test consists of 50 statements of the sort, "The chances that event X is so are about _____ in 100" Five confidence categories follow, with the subject requested to specify whether he is "Very sure," "Quite Sure," "Moderately sure," "Slightly sure," or "Not sure at all" of his judgment. (For a complete list of this instrument, please refer to Appendix D of Kogan and Wallach's Risk Taking... 1964).

It should be emphasized that confidence is evidently not a "strategy" variable here. It is an index of a subject's "introspective conviction regarding the correctness or appropriateness of his judgment or decisions." It seems that this is used in situations where greater extremity affords the possibility of a greater magnitude of errors and judgmental confidence or certainty, "which might be indicative of an individual's characteristic biases in perceiving probabilities of success or failure." This instrument has been used in relating extremity of confidence to sex differences (Wallach and Kogan 1959) and to masculinity scores in the MMPI (You may find this in:

C.L.Winder & K.R.Wurtz, A study of personality correlates of judgment behavior. Report, 1954, Stanford University, Department of Psychiatry, Contract No. 225-01, Office of Naval Research.

Although this is "not" the standard risk measurement, it does reflect the "willingness of a person to take the risk of errors in judgments." (After all, subjective probability has its basis in beliefs or degrees of confidence - to deviate a little from the subject).

b. General Description of Measure

Our Extremity Confidence items (20 items in all) have been selected from the Kogan and Wallach list on the basis of appropriateness to businessmen. This means that we had to "lif " the items that seem to be familiar to the businessmen in his everyday "judgment." Specifically, this would relate to economic items - where we have the amount that an adult male earns, business oriented items like new car having white walls rather than black - and to certain social items that a businessman is familiar with. In order to preserve generality so as to make the instrument applicable to other cultures or countries, we amended the word "American" in 1, 19, and 27 of the original list to read "of this country," "citizen," etc. Thus, we have selected the following items from Appendix D of Kogan and Wallach's book, Risk Taking - 1964: 1, 2, 10, 11, 13, 15, 16, 19, 20, 23, 25, 27, 30, 31, 36, 37, 38, 44, 45, and 47.

Characteristics to note in these types of questions as a measure of risk propensity are the following:

Payoffs: none (more on self-esteem).
Role: himself as a judge (subject)
Context: asking for the chances of an event related to economic data and familiar social-business data and the degree of confidence in judgment.
Input: one sentence for filling the blank and the level of confidence to be chosen.
Output: chances out of 100 for the event in the item and his level of confidence.
Administration: experimenter assistance not needed.
Outcomes (specificity): not mentioned.
Business Relevance: business and economic events plus social events that are often used as inputs to business decision making.
Perceived Control: none.
Perceived Skill: yes or some
Information Acquisition: based on estimates from subjects' judgment.
Time: 10 minutes.

c. Instructions to experimenter

Experimenter assistance is not needed during the administration of the instrument.

d. Scoring

The 5 confidence categories are weighted 5 to 1 respectively, following Kogan and Wallach, so that higher score would reflect higher confidence. With regard to extremity, judgments are more extreme as they deviate up or down from an estimate of 50 in 100 (which is considered the conservative answer).

For purpose of analysis, we separate extremity scores at each of three levels of confidence. Judgment rendered at "very sure" and "quite sure" levels are combined to yield a score for extremity under high confidence. Correspondingly, probability estimates given under "slightly sure" and "not sure al all" conditions are combined to yield a score for extremity under low confidence. Judgments in the "moderately sure" category are not included in the analysis so that we could make extremity comparisons under markedly different confidence conditions.

The rationale for using this measure is to ascertain the confidence level and the extremity of judgments of individuals who have been measured in terms of risk taking propensity by our other methods to test the following hypotheses:

1. That risk-takers are more confident in judgment.
2. The more confident one is, the less extreme the judgment.

e. Instrument

EXTREMITY-CONFIDENCE IN JUDGMENT

This questionnaire will help us find out about people's opinions about various things. Each item in the questionnaire will describe a specific event. We want your opinion as to how likely each event is. All of the items in the test will be of the form in which you estimate the number of chances out of 100 that a specific event occurs. Thus, if you judge an event to be very likely, you'd write a number close to 100; if you judge an event to be unlikely, you'd write a number close to 0; and if you judge an event to be about equally likely or unlikely, you'd write a number close to 50.

We also want you to indicate how sure you are of your opinions. So, after you've decided how likely an event is, we want you to indicate how confident you are of this judgment by circling one of the 5 categories below each question.

Please do not skip any questions.

1. The chances that an adult male in this country will earn at least $5000 a year are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

2. The chances that a new car will have white-wall rather than black tires are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

3. The chances that a juvenile delinquent will have a low intelligence (IQ 80 or less) are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

4. The chances that a drug salesman will travel more than 20,000 miles per year on business are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

5. The chances that a male smoker will buy filter-tip rather than regular cigarettes are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

6. The chances that a novel published in the United States will sell more than 5000 copies are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

7. The chances that an American male now at the age of 40 will live beyond the age of 55 are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

8. The chances that a family in this country will own its own homes are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

9. The chances that a household will have an extension phone in addition to a regular phone are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

10. The chances that a woman will totally abstain from alcoholic beverages are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

11. The chances that an American car in the low price range will still be in running order after ten years of use are about ____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

12. The chances that a middle-aged white collar worker and his wife will go to the movies at least once a week are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

13. The chances that a 21-year-old male will have spent at least one week in the hospital for accident or illness are about ____ in 100.

Very Sure	Quite Sure	moderately Sure	Slightly Sure	Not Sure At all

14. The chances that a son will go into the same kind of work as his father are about _____ in 100.

Very Sure	Quite Sure	Modernately Sure	Slightly Sure	Not Sure At all

15. The chances that a man 70 years old will need financial help from someone to support himself are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

16. The chances that a native-born citizen of this country will travel outside of this country at some time during his life are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

17. The chances that a seventh grade teacher in the public schools be a man are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

18. The chances that a five-card deal will have two cards of the same kind (one pair) are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

19. The chances that a male college graduate will stay with his first full-time job more than two years are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

20. The chances that a small business (for example, a gas station or a motel) will fail within two years after starting are about _____ in 100.

Very Sure	Quite Sure	Moderately Sure	Slightly Sure	Not Sure At all

3. Internal/External Control

a. Background

Rotter, et.al. (1962) constructed the test as an extension of the work done by Phares and James (Unpublished doctoral diss., Ohio State U., 1957). The James-Phares scale is the only instrument devised within the conceptual framework of Rotter et.al. Filler items were included in the test to serve as variety. Thus, they came out with a Likert-type (to remove social desirability bias) measure of 60 items, each item with pair of alternatives (one reflecting external-control, and another, internal) for the subject to select. This test was validated by them. Rotter (1966) revised the 60 items into a 29 item test by eliminating items highly correlated with the Marlowe Social Desirability Scale.

J.B.Rotter, M.Seeman and S.Liverant. Internal vs. External Control of Reinforcements: A Major Variable in Behavior Theory. In N.F.Washburne (ed.), Decisions, Values and Groups (vol. 2). London: Pergamon Press, 1962, pp. 473-516.

J.B.Rotter, Expectancies for Internal vs. External Control of Reinforcement. Psych. Mono., 80 (1) whole no. 609, 1966.

In recent years, the Rotter I-E Scale has come to be used as a standard test for I-E control. Shure and Meeker's Personality/Attitude Schedule has in their battery items from Rotter's I-E in:

G.H.Shure and R.J.Meeker. A Personality/Attitude Schedule for use in Experimental Bargaining Studies. J. Psycho. 1967, 233-252.

Liverant and Scodel demonstrated a relationship between risk-taking and I-E revealed by a forced choice personality inventory where the risk situation involved gambling choices, and that "a penchant for internal control evidently contributed to lower levels of risk-taking and to less variablility in the choice of decision alternatives where the setting involved chance - in other words, when in fact no internal control was possible."

S. Liverant and A. Scodel. "Internal and External Control as Determinant of Decision Making under conditions of Risk," Psych. Rep. 1960, 7, 59-67.

b. General description of the measure

We hope to use the Rotter I-E Scale in order to study whether such conclusion made by Liverant and Scodel is true or not and to see the relationship between risk-taking propensity among businessmen and their perceived locus of control.

Our test questions have been derived from Rotter's latter work and do not include items that are relevant only to the students. We have also removed items that seemed redundant with others. We took 2, 4, 6, 9, 11, 12, 13, , 17, 21, and 22, from the Rotter I-E Scale for our purposes - a total of 10 items.

Some characteristics of the method are:
Payoffs: none
Role: own personal role
Context: general attitudes on personal and world affairs
Input: pairs of statements, one reflecting internal control, the other reflecting external control
Output: choice of preferred statement
Administration: experimenter assistance not needed
Outcomes: not relevant
Business relevance: tangential
Perceived control: not relevant
Information acquisition: not relevant

c. Instructions to experimenter

Experimenter assistance not needed during administration of instrument.

d. Scoring

Count the number of internal control items chosen by the subject and use this as a score in the analysis.

e. Instrument

OPINION QUESTIONNAIRE

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true.

This is a measure of personal belief; obviously, there are no right or wrong answers.

Please answer these items on this inventory carefully but do not spend too much time on any one item. Be sure to find an answer to every item.

In some cases, you may discover that you believe both statements or neither one as true . In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned.

Also try to respond to each item independently when making your choice; do not be influenced by previous choices.

1. a. Many of the unhappy things in people's lives are partly due to bad luck.
   b People's misfortunes result from the mistakes they make.

2. a Capable people who fail to become leaders have not taken advantage of their opportunities.
   b Without the right breaks one cannot be an effective leader.

3. a Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
   b. In the long run people get the respect they deserve in this world.

4. a The average citizen can have an influence in government decisions.
   b This world is run by the few people in power and there is not much the little guy can do about it.

5. a I have often found that what is going to happen will happen.
   b Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

6. a By taking an active part in political and social affairs the people can control world events.
   b As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.

7. a It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
   b When I make plans, I am almost certain that I can make them work.

9. a Sometimes I feel that I don't have enough control over the direction my life is taking.
   b What happens to me is my own doing.

10. a Most misfortunes are the result of lack of ability, ignorance, laziness or all three.
    b In the long run the bad things that happen to us are balanced by the good ones.

C. Management-Based Measures

Although risk taking is an important element of management, there have been no measures of risk taking developed in the management literature per se. What we have grouped under this heading are adaptations of instruments used in management studies for other purposes. Even here, it is somewhat stretching the other purposes in calling them management based. Only the first measure, an in-basket, is truly used in management practice or education.

Measure C-1, then, is an risk in-basket situation. That is, we have taken subject asked to play the role of an executive assuming a new position and having to deal with etters and memos that have accumulated before his arrival--and have adapted the items so they are set in a more explicit risk context. The subject's response to these items and to a questionnaire at the end provide the basis for the risk measure assessment. Also included in this post-in-basket questionnaire is a modified semantic differential, with again the modification being an attempt to make the instrument more specific to risk taking.

Measure C-2 is also a simulated business role in which the subject is asked to rate various candidates for a business association position. The candidates are described in terms of four attributes, each of which takes on values varying in apparent risk propensity. As with the above measure, the post-instrument questionnaire and a risk-semantic differential provide the basis for the assessment of the subject himself.

The third measure, C-3, in this section is not intended as a direct measure of risk propensity. Rather it is an attempt to assess the creativity of the individual using a modified form of creativity tests given to students and the general population. It can be called the joining together of Guilford with Kahn and Weiner. Since creativity seems closely related to the phenomena we are interested in it seems worthwhile having this measure. We view it,though, as one of the more expendable ones.

1. In-basket Exercise

a. Background

The In-Basket Test is a result of the effort by experimenters to provide a way to "retain an adequate amount of complexity and realism in an experimental situation while still permitting the experimenter to control conditions rigorously." Thus, it is a rather elaborate, realistic situational test intended to simulate certain aspects of the job of an administrator. It is a collection of letters, memoranda, records of in-coming telephone calls and other materials that have supposedly collected in the in-basket of an administrative officer.

Hemphill, et. al, had used this type of test to study the decision-making processes of school adminstrators while others like Guetzkow employed it to study internation relations. For references are useful:

Hemphill, J.K., Griffiths, D.E., and Frederiksen, N. Administrative Performance and Personality: A Study of the Principal in a Simulated Elementary School New York: Teachers College, Bureau of Publication, 1962.

Frederiksen, N. "Factors in In-Basket Performance," Psychological Monographs 1962, 76 (22, whole No. 541).

Frederiksen N. "Correlates of Factors in In-Basket Performance," Office of Naval Research, Technical Report and Research Bulletin 63-12. Princeton, N.J.: ETS, 1963.

Guetzkow, H. "Use of Simulation in the Study of Inter-nation Relations," Behavioral Sciences, 1959, 4, 183-191.

Frederiksen N., "Validation of a Simulation Technique," Org. Behavior and Human Performance 1966, 1, 87-109.

The form of the In-Basket is attractive due to the proximity it has with the real world. In this sense, acceptance by respondents, especially businessmen, exposed to various business decision-making games, will induce better or useful responses. It provides an opportunity for the examinee to display spontaneously certain response tendencies which comprise his "personality." Also, he may have vague hypotheses as to what the scorer will look for. Thus, the disguise value of this form of instrument is quite acceptable by experimenters who wish to solicit more genuine responses.

b. General description of the measure

In our study of risk-taking propensity, we have altered some to be of the contents of the In-Basket so much so that there seems little resemblance with the orignal except by the name and the type of materials it carried.

Our In-Basket Test consists of 8 letters - two of which are "personal" letters from the son and close friend of Bill Bickner,

whose role the examinee was to assume. The business letters have been created out of situations recorded in case studies from International Business and the like. In each item, the situation has two alternatives - one a risky alternative and another a "certain" alternative. Both implied and stated consequences have been built into the items for the examinee to weigh. After writing down direct responses in the form of notes or wires, the examinee is asked to answer a number of questions that will serve as a means towards non-projective measurement and scoring.

The characteristics of our in basket exercise are:
Role: hypothetical division manager in multi-national company.
Payoffs: hypothetical outcomes accruing to position assumed.
Context: business
Input form: letters and memos in in-basket of said manager
Output form: notes and wires responding to in-basket items and answers to questions on item importance and rating of correspondents
Administration: can be self-administered
Time: 8 min/item plus 10 minutes for questionnaire at end.
Information acquisition: all information provided at outset.

c. Instructions to experimenters

Essentially, this is a self-administered test or one which does not need much supervision. The only thing that the experimenter should do is to clarify certain points that the examinees do not understand. The experimenter will tell the examinees that this is a test to determine the decision-making abilities of the examinees and the amount of time that it takes them to finish the exercise. Also, the experimenter should tell the examinees the number of questions that are contained in the exercise. But, it seems reasonable that the experimenters need not be present during the test as it is quite self-explanatory.

d. Scoring

Three different scores can be derived from this test, consisting of the following:

. Note/Wire respones:

Here, we have basically two alternatives: 1. The use of a judge or judges who will study the responses and grade them (from the total of a hundred). In the case of grading, the first thing that the judge should do is to order the note or wire responses according to the ranks so specified by the respondent in his answer to the questions at the end of the exercise. Then the judge will look at where the person is taking hish risk, where he takes moderate risk and where he is conservative. Thus, the judge could write down the following:

Name _____ (of the Respondent):
No. of Very risky (as perceived by respondent) alternatives that he took _____.
No. of Moderately risky alternatives that he took _____.
No. of Conservative alternatives that he took _____.

Then the Judge assigns a "grade" to the respondent based on how the respondent answers the various items. Higher grades for higher risk aversion.

Alternative 2: Just count the number of risky alternatives that the respondent took from all the items. And subtract this from 8. "0" means greater risk-taking.

. Response to answers on questions 1 and 2 of the questionnaire.

Scoring will be based on the grade he assigns to the item and the lowest probability he would consider acceptable in that particular item and take the product. Then Add up all these scores to arrive at aggregate.

. Semantic differential

For each adjective pair, the x that respondent puts down is valued in the following way:

Favorable Adj. 5 3 0 -3 -5 Unfavorable Adj.

The favorable adjectives are: rational, analytical, flexible, independent, confident, cautious, aggressive, clear, understanding, calm, strong, active, successful.

Add up all these values for each letter in the questionnaire. Then add up the scores he gets from evaluating Frank, Anderson and Sean, take the negative. Get sum of the scores he gets for the rest and get a total score.

For the responses to answers 1 and 2, a high risk-taker would have low score and for the Semantic Differential, likewise.

e. Instrument

IN-BASKET EXERCISE

Please do this work in your room which will become your "private office", for forty-five minutes. You will work as if you were Bill Bickner, Division Manager, Western Hemisphere Division of the Multinational Products Co. You just arrived in this new job, having come from the Pittsburgh plant where you were its manager. Your predecessor, Jim Norton, left last week for Europe to take up a special assignment. You were notified very recently of this new assignment and have had little time to become acquainted with the job.

Today is Wednesday, May 15, 1971. You have just come into the office at 7:45 p.m. and must leave promptly at 8:30 p.m. to catch a plane for Mexico City and an important meeting. You will not be back until Friday, May 24, 1971. Your secretary, Annabel, is home ill but will be in tomorrow.

The materials in the package were left in your in-basket on your desk by your secretary.

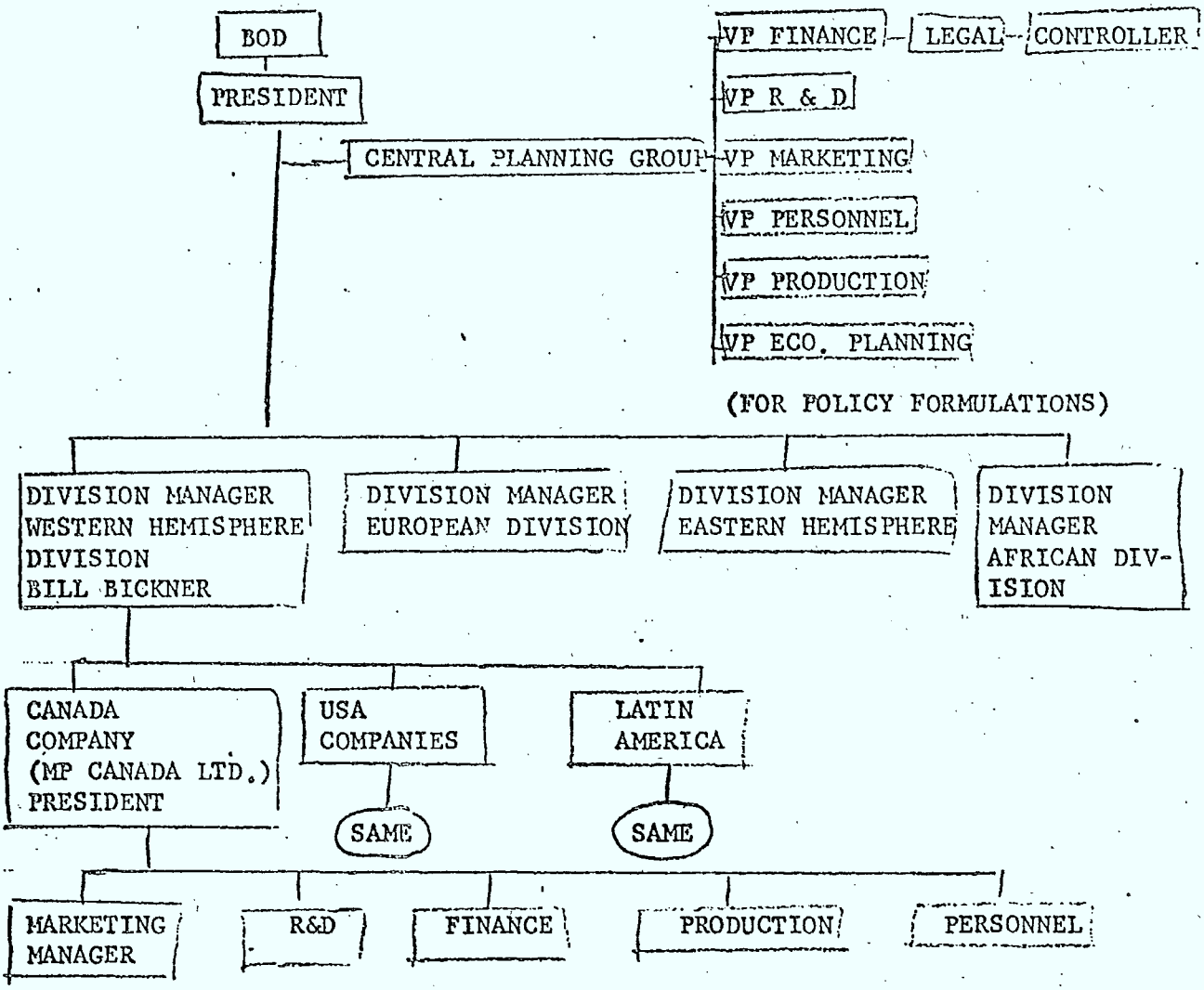
You are to go through the entire packet of materials by reading them and taking whatever action you deem appropriate on each item. Since your assistant will take charge of the actual drafting of the letters and as there is little time for you to write these formally, every action you wish to take should be written down in note form (with the major points outlined) or in wire form, where appropriate, either to yourself, to your secretary or to the person concerned. Please indicate in the notes and/or wires to whom they are addressed. Please write the notes and/or wire directly on the pieces of correspondence that you are dealing with.

After you are through, please answer the questions at the end of the exercise.

You are to use your own experience as the basis of your action in assuming the role of Bill Bickner.

NOTE!
THE DAY IS WEDNESDAY, MAY 15, 1971. TIME: 7:45 P.M.
WRITE DOWN EVERY ACTION YOU TAKE ON ANY ITEM.
YOU CANNOT CALL ON ANYONE FOR ASSISTANCE.
YOU MUST WORK WITH THE MATERIALS AT HAND
YOU WILL BE OUT OF THE OFFICE FROM 8:30 TONIGHT UNTIL NEXT FRIDAY MAY 24, 1971.
YOU CANNOT TAKE ANY OF THE MATERIALS WITH YOU ON YOUR TRIP.
BE SURE TO RECORD EVERY ACTION.
THE TELEPHONE SWITCHBOARD IS CLOSED.

MULTINATIONAL PRODUCTS COMPANY
PARTIAL ORGANIZATION CHART



MULTINATIONAL PRODUCTS (CANADA) LTD.
487 Hagen, MONTREAL

Mr. James Norton
Division Manager
Western Hemisphere Division
Multinational Products International
New York
USA

May 9, 1971

Dear Jim:

This is with reference to the PMG case I told you about in the previous letter dated April 27, 1971.

The PMG is planning to sue our company for patent violation, as you might recall. The case, however, has not yet been filed in court because of their proposal. The PMG legal counsel has informed us that they are willing to settle the matter extrajudicially. This means that we are to pay their company a sum of $150,000 for the alleged damage that the alleged patent violation has caused. However, if we do not consent to such arrangement, they will file the case in court and sue us for $1,000,000.

Our company lawyer, Mr. Benett, has informed me of the chances of our coming out of the court suit with only legal expenses to pay but he indicated that the chances are about 30% that the court will be favorable to our company -- in which case, our total expenses would amount to about $30,000. However, if we lost the case, we'd have to pay the $1,000,000. Mr. Benett also indicated that the usual length of time that the court case will take is about 5 months.

PMG is giving us a week to consider. If, by the end of the week, we have not come up with our decision, they will press their claim in court. After consultation with Mr. Benett, I've come to the conclusion that we should pay the $150,000 to avoid all these troubles. Of course, the consequence of this is that we admit our guilt even if such allegation is not true.

If you think that we should do otherwise, please wire us immediately. If not, just leave the matter to us and give us your support by mail.

Thanks.

Yours,

Arthur Calley

ITT
Radiogram

LT MULTIPRO
NEW YORK

PRESIDENT MITCHELL ARRESTED FOR ALLEGED SPYING FOR GOVERNMENT ALLEGATION FALSE BUT COULD MEAN COMPANY EXPROPRIATION STOP THIS IS A POLITICAL MATTER DUE TO MITCHELL FRIENDSHIP WITH PEDRO OF THE OPPOSITION PARTY. PLEASE ADVISE.

MULTIPRO
BUENOS AIRES
ARGENTINA

OFFICE MEMORANDUM
TO: BILL BICKNER
FROM: JOHN ASHLEY,
SPECIAL DEERATIONS
MESSAGE:

Bill, I think you should look in on this. Max Mitchell is innocent but his position in the company might affect our status if the event turned unfavorable to us. RPG is willing and has been offering to buy up BUENOS Aires Multipro. at the market value that we deem very reasonable. But chances are, Mitchell can be acquitted. If charged, the company runs the danger of outright expropriation w/o compensation. If acquitted, we have no problem. By the way, our Buenos Aires subsidiary is earning approximately 15% ROI after tax for the past five years -- one of the most profitable (our "strong" point). And our investment here, by the way, comes to about $150 million dollars.

I talked to Mitchell's lawyer, a prominent Argentinian and he said the odds are 3:1 that he will be convicted and the odds are 2:1 that our company will be dragged into the case and will be expropriated.

RPG is still willing to buy the company but now his offer is less than what we desired. In an analogous cost calculation, it comes out that we recover our investment plus a return calculated to be about 9% ROI after tax for a period of 5 years. RPG is giving us a last offer.

Mitchell's lawyer said, in 3 days' time, the court will be bringing out the charge formally and at that time we'll know whether the company is part of the charge.

If we immediately wire Buenos Aires for sale, the contract will immediately be signed and by the time the court convenes, the company is no longer ours. I think we should sell.

John.

Dad, May 9, 1971

I just scribled you this note from the dormitory today so that this could reach you in time. Congratulations, Dad. I'm sure you'll do well in your job.

Staying here for summer work sure makes me depressed, especially if I couldn't at least see you and give you my congratulation. And engineering is no fun considering the calculus and the algebra that can make one's head spin.

By the way, I tried applying for a scholarship in music and had to take test, interviews, and mini-recitals. Although I may not be the best thing since Beethoven, the Committee on Scholarship has just approved my application. They want me immediately to enroll in their faculty. Of course, this would mean my having to give up engineering to pursue my carreer in music. I have given this matter serious thought. And for several days, I weighed the pros and cons of the choices. As I see it, with an engineering degree, employment is never a problem but definitely, I think I'm mediocre in this field.
As to music I like the field and I think I'm a good pianist and composer but the biggest set-back one could think of is the possibility of success. In this strange age, I don't know whether it is what de Ortega calls barbarism of specialization (the industrial state, mechanical man, and the like) or not, musicians have a hard time surviving or for that matter become a success. But I think if a person has talent, the world will recognize it -- I mean I hope. I remember you said to me once that as far as my case is concerned, it is even money -- like a flip of a coin -- i.e., whether I become successful or remain totally unknown. Even money is a bit frightening but what the heck -- isn't it better to be a talented even though unknown artist than a mediocre engineer? Of course, this could mean my having to rely on the family purse for quite some time after graduation, at least until I gain success. So, I have decided to put in my application to the faculty two weeks from now.

You know I've listened to your advice. And now, I'm still willing to listen. Please write, Dad and I'll listen.

Love,

Frank.

PROJECT TEAM NO. 8

MR. BILL BICKNER
DIVISION MANAGER
MULTINATIONAL PRODUCTS
NEW YORK

Dear Bill,

Re: Investment Proposal-6802: Panama

This is a preliminary report to our final report. As per instruction of the V.P. on Economic Planning the decision rests on you. If we go in all all, it will be a $100 million investment. But as we recommend it, we might as well forget the deal.

The government insistence on price control will affect our profit figure very much. Moreover, there is a tremendous pressure for local ownership (but this is still in the form of a bill) the prospect for exports also isn't that well -- what with tarriff walls and the like.

Definitely, the first three years, we won't break even because of the size of the market. Of course, by the third year, there is a possibility we can hit it big as far as profit is concerned. Just as we projected it in our time series analysis, there seems to be no turning point for the better. The chances of our becoming very successful is slim. Even though there is a possibility that Panama will grow to be our best market yet, we can lose the $100 M investment if events turned against us. The political bargaining that is going on here gives us the impression that we'll be a target for government intervention.

We are awaiting your word for a pull-out and we strongly recommend the dropping of the idea of investing here. Please advice by wire.

I think a 20% chance of success is slight (or if very, very successful--i.e. ROI after tax of 20% -- is about .10 in terms of chance).

The final report will be in by next week.

Yours truly,

Sergio Alfeir
Project Team Leader
Panama.

NOTE

Mr. Bickner:

Mr. Buenaventura Fulgencio, who is a large buyer of our Puerto Rico Company's products, came in today to see you. But since you were not in, I asked him to return in a week's time. However, he said he'll only be here for less than a week and cannot wait that long.

He says our Puerto Rico Company is supplying his competitor with industrial products; he believes that the competitor is new in the field and quite inexperienced. And he keeps on stressing that the said competitor, although much bigger than his company, is likely to fail. Mr. Fulgencio wants our company in Puerto Rico to stop supplying this competitor with our industrial products. He says his company has been buying from our company for the past 5 years with an annual purchase of about $2 million. (I took the liberty of checking this out and what he is saying is true). He knows that this competitor of his has promised our company an annual purchase order of $5 million a year but then this competitor might just become a flop and lose his shirt. Mr. Fulgencio says we either stop this "foolishness" or he will no longer buy from us. He wants us to wire Puerto Rico. The odds, he says, is very slim that his competitor will succeed - "Long Shot - about three to one."

He says this is an ultimatum.

He'll be back tomorrow for the answer.

Annabel.

MR. BILL BICKNER
MULTINATIONAL PRODUCTS (INTERNATIONAL)
NEW YORK

May 10, 1971

Dear Bill:

Well, I've decided that the best thing for me to do is really to go out on my own after our discussion last week. Being an R & D man in a very stable organization is getting on my nerves considering that I guess I'll be at my present position for quite a long time more before any promotion prospects.

But this idea of going into the special coconut oil extraction business is something new and we can make it big. I've made all sorts of arrangement as you suggested and the Philippine government is willing to let me establish a company there. Now, I'm waiting for you.

Remember your dream of having your own business and becoming rich? This is it, Bill. If we are successful, we'll be millionaires overnight. As far as our plans are concerned, nothing can stop us from getting rich except some twist of fate -- like revolution in the Philippines or the price of coconut oil suddenly droping in the world market. But definitely, if we made it, we'll be the happiest guys in the world. Well, what do you say?

Definitely, I need your management ability and you'll be the president of the company. Together with your investment, our company will start out on quite a large scale. Of course, if things became bad, we might just say goodbye to fortune and an end to all our investment. As I see it, we're not getting any younger. You're forty-eight and I'm forty -- so why not give it a try? I know: your present job and your recent promotion is something good -- must be about $50,000 a year but then you're not your own man. Also once you decide to come with me, your company will not take you back.

I say it's a 60-40 thing -- .60 that we'll fail and .40 that we become very rich. So, please wire me your answer. If it is a no, I'll understand and if it's yes, then I start the plans. You see, the Mrs. and I are planning a trip to Hawaii next week so send me words immediately.

How did Julius Ceasar say it? I came, I saw and I what? So, send in a yes.

I'm expecting your answer. Like we say in the frat— nothing ventured nothing gained!

See you soon.

Fraternally,

Sean.

MULTINATIONAL PRODUCTS, LTD.
GUATEMALA, GUATEMALA

Mr. Jim Norton
Division Manager
Western Hemisphere Division
New York

May 6, 1971

Dear Sir:

Re: Mel Anderson, Production Manager

This is with reference to the result of three month's production under M. Anderson's guidance.

In order to increase production to an efficient scale, Mr. Anderson decided to do some time-and-motion study in the plant when he got here. I know how important this study is to the survival of the company. But it has created certain conflicts which I think you should know about. The employees feel that such study is disrupting their work and an insult to their productivity -- that to time someone while he is working is to be suspicious of his ability to work fast. Antonio Javier, the Union President, called on me to complain about the study's effects on the morale of the men. I have, after this, made certain inquiries as to the truth of his statement. Definitely, there are some segments of the labor force that are irritated by the study but a few of them do not mind such intrusion. It has been rumoured that Javier plans a walk-out to be followed by a strike but the decision can be made only by voting. At any rate, it is a 70:30 deal that the Javier suggestion might go through. In order to avoid the consequences, I stopped Anderson from the study. However, Anderson refused my recommendation and continued. He said the study will improve productivity by 30%.

As a joint partner in your company, I feel that I have the right to intervene for the good of the company. And knowing how the situation has turned to worse, I have written you for your restraining order -- stopping Anderson from such foolishness.

Our production may have certain difficulties -- we may have back orders once in a while but our overall performance is not bad considering that we have an ROI figure of 9% after tax (Of course, part of this success owes itself to the Guatemalan government industrial incentive grant for tax credits and the like). So, there is no reason why we couldn't continue our previous set up.

Javier is calling a meeting a week from now and I hope you could wire us for instruction.

Yours truly,

Miguel Vargas
Multinational Pro. Ltd.
Guatemala

MULTINATIONAL PRODUCTS (BRAZIL) S.A.
SALVADOR, BRAZIL

MR. JIM NORTON
DIVISION MANAGER
WESTERN HEMISPHERE DIV.
MULTINATIONAL PRODUCTS INT.
N.Y.
USA

May 10, 1971

Dear Jim:

Thank you for your letter of April 30, 1971. Our operations here, ever since we started two years ago, have been quite fruitful. However, I'm writing you this letter to seek your advice as a friend.

You know that I've been at this job for only four months and that you had to write me once so often to see how things are going (for that I owe you my eternal gratitude). But something turned up that seems out of the ordinary, which I think you should know about.

Mr. Ivan Guevarra, the head of the Internal Revenue of Brazil, has just assigned five of his boys to inspect our records for possible tax evasion. As far as this is concerned, we are not worried because we feel that we have been paying our taxes in the proper manner. But his five men have been giving our accounting department a lot of problems and this has hampered their work very much.

Jose Toledo, our company lawyer, said that usually inspection takes "several months" and sometimes they pick on small details which a big company such as ours may have overlooked. Our accounting department told me that our records are in order but, of course, there is a possibility that, sometimes, we do miss out on some details - as is usual in big compaines. The real point is Toledo thinks Guevarra is asking for some dole out to keep his boys and himself happy. Usually, the dole out amounts to about $3000 (U.S.) and once we give in, we'll be free from all these interferences. However, that is not the problem.

I know our head office, especially Mr. Williams, doesn't believe in such action. But I think the decision could be justified if they know our case.

Toledo said Guevarra is known to be of the sort who is willing to let things past -- if the price is right. However, he said, one of his boys, who is in the inspection, a Mr. Bello, is an ambitious sort who might not be willing to accept the gift and might even go to the extent of exposing his superior together with bringing our company to court. In Toledo's opinion, the chances are about .50 that we can get Guevarra to stop all these inspections and Bello to overlook the matter. But then there is a .50 chance that Bello, if we give Guevarra the money to be distributed among his boys, will refuse and raise hell. Because of this, I think we should refrain from giving them any money.

Please advise.

Yours truly,

Roger Richards
President
Multinational Products (Brazil) S.A.

IN-BASKET QUESTIONNAIRE

Please Answer the Following Question:

A. Please rank the items in the order of importance to you as a businessman. (i.e., importance in terms of the seriousness of the consequences of the alternatives or situations you perceive in each item).

Also, please assign "grades" to these items that you so ranked by giving the higher ranks higher grades and the lower items lower grades - the weight should be given out of a possible score of 100.

B. Indicate the lowest chances that you find acceptable before you undertake to:

a. Pursue the case in court in item 1.
   1. The chances are _____ out of 10 that the company wins the case.
   2. No matter what the chances, you won't pursue the case in court but settle. ☐
b. Do not sell the Buenos Aires Company in item 2.
   1. The chances are _____ out of 10 that Mitchell will be acquitted.
   2. No matter what the chances, should sell the Buenos Aires Company. ☐
   (put a check in the box if you think alternative 2 is the right choice for you.)
c. Tell Frank to go ahead with Music in item 3.
   1. The chances are _____ out of 10 that Frank will be successful.
   2. No matter what the chances, Frank should not go into music. ☐
   (put a check in the box if you think alternative 2 is the right choice for you.)
d. Pursue the Panama investment in item 4.
   1. The chances are _____ out of 10 that the Panama company will be successful or profitable after the first 3 years - i.e. ROI after tax of 15% or more .
   2. No matter what the chances, should not consider Panama investment. ☐
   (put a check in the box if you think alternative 2 is the right choice for you.)
e. Continue supplying Fulgencio's competitor with the Puerto Rico Company's industrial product in item 5.
   1. The chances are _____ out of 10 that the competitor of Mr. Fulgencio will be successful and continue the annual purchase of $5 million.
   2. No matter what the chances, stop supplying this competitor and follow Fulgencio's advice. ☐
   (put a check in the box if you think alternative 2 is the right choice for you.)
f. Tell Anderson to continue with the Time and Motion Study in item 6.
   1. The chances are _____ out of 10 that the strike will not occur.
   2. No matter what the chances, Anderson should stop the time and motion study. ☐
   (put a check in the box if you think alternative 2 is the right choice for you.)

g. Accept Sean's offer to go into the Coconut business and leave Multiproduct International in item 7.
   1. The chances are _____ out of 10 that the coconut venture will be successful.
   2. No matter what the chances, stay with Multiproduct International. ☐
      (put a check in the box if you think alternative 2 is the right choice for you.)

h. Pay the $3,000.00 to Guevarra in item 8.
   1. The chances are _____ out of 10 that Guevarra stops all these inspections and Bello overlooks the matter.
   2. No matter what the chances, you would not pay the dole-out. ☐
      (put a check in the box if you think alternative 2 is the right choice for you.)

c. For each of the letter below, put an x in each of the adjective pairs, which we have called the adjective continuity scale to indicate how you perceive the person concerned to be as far as these adjectives are concerned. Although the information available to you, contained only in the items of the In-Basket, may be scanty, please try to form your opinion on these people.

Note:

For Example:

Calm 1. 2. 3. 4. 5. Excitable

If you think the person is very calm, put an x in 1.; if you think he is slightly calm, put an x in 2.; if neither calm nor excitable (i.e., neutral), the x should be placed on 3.; if very excitable, an x should be placed on 5; (If slightly excitable, on 4)

This holds true for the rest of the adjective pairs.

Thus:

Adjective on LEFT	VERY		SLIGHTLY		NEUTRAL	SLIGHTLY	VERY	Adjective on RIGHT
1. Arthur Calley is:								
Rational	____	____	____	____	____			Irrational
Analytical	____	____	____	____	____			Intuitive
Rigid	____	____	____	____	____			Flexible
Independent	____	____	____	____	____			Dependent
Unsure	____	____	____	____	____			Confident
Cautious	____	____	____	____	____			Reckless
Calm	____	____	____	____	____			Excitable
Passive	____	____	____	____	____			Active
Strong	____	____	____	____	____			Weak
Unsuccessful	____	____	____	____	____			Successful

2. John is:

Rational	___	___	___	___	___	Irrational
Analytical	___	___	___	___	___	Intuitive
Rigid	___	___	___	___	___	Flexible
Independent	___	___	___	___	___	Dependent
Unsure	___	___	___	___	___	Confident
Cautious	___	___	___	___	___	Reckless
Calm	___	___	___	___	___	Excitable
Passive	___	___	___	___	___	Active
Strong	___	___	___	___	___	Weak
Unsuccessful	___	___	___	___	___	Successful

3. Frank is:

Rational	___	___	___	___	___	Irrational
Analytical	___	___	___	___	___	Intuitive
Rigid	___	___	___	___	___	Flexible
Independent	___	___	___	___	___	Dependent
Unsure	___	___	___	___	___	Confident
Cautious	___	___	___	___	___	Reckless
Calm	___	___	___	___	___	Excitable
Passive	___	___	___	___	___	Active
Strong	___	___	___	___	___	Weak
Unsuccessful	___	___	___	___	___	Successful

4. Sergio Alfeir is:

Rational	___	___	___	___	___	Irrational
Analytical	___	___	___	___	___	Intuitive
Rigid	___	___	___	___	___	Flexible
Independent	___	___	___	___	___	Dependent
Unsure	___	___	___	___	___	Confident
Cautious	___	___	___	___	___	Reckless
Calm	___	___	___	___	___	Excitable
Passive	___	___	___	___	___	Active
Strong	___	___	___	___	___	Weak
Unsuccessful	___	___	___	___	___	Successful

5. Fulgencio is:

Rational	___	___	___	___	___	Irrational
Analytical	___	___	___	___	___	Intuitive
Rigid	___	___	___	___	___	Flexible
Independent	___	___	___	___	___	Dependent
Unsure	___	___	___	___	___	Confident
Cautious	___	___	___	___	___	Reckless
Calm	___	___	___	___	___	Excitable
Passive	___	___	___	___	___	Active
Strong	___	___	___	___	___	Weak
Unsuccessful	___	___	___	___	___	Successful

6. Anderson is:

Rational	____	____	____	____	____	Irrational
Analytical	____	____	____	____	____	Intuitive
Rigid	____	____	____	____	____	Flexible
Independent	____	____	____	____	____	Dependent
Unsure	____	____	____	____	____	Confident
Cautious	____	____	____	____	____	Reckless
Calm	____	____	____	____	____	Excitable
Passive	____	____	____	____	____	Active
Strong	____	____	____	____	____	Weak
Unsuccessful	____	____	____	____	____	Successful

7. Sean is:

Rational	____	____	____	____	____	Irrational
Analytical	____	____	____	____	____	Intuitive
Rigid	____	____	____	____	____	Flexible
Independent	____	____	____	____	____	Dependent
Unsure	____	____	____	____	____	Confident
Cautious	____	____	____	____	____	Reckless
Calm	____	____	____	____	____	Excitable
Passive	____	____	____	____	____	Active
Strong	____	____	____	____	____	Weak
Unsuccessful	____	____	____	____	____	Successful

8. Richards is:

Rational	____	____	____	____	____	Irrational
Analytical	____	____	____	____	____	Intuitive
Rigid	____	____	____	____	____	Flexible
Independent	____	____	____	____	____	Dependent
Unsure	____	____	____	____	____	Confident
Cautious	____	____	____	____	____	Reckless
Calm	____	____	____	____	____	Excitable
Passive	____	____	____	____	____	Active
Strong	____	____	____	____	____	Weak
Unsuccessful	____	____	____	____	____	Successful

2. Multi-Attribute Alternative Choice

a. Background

Theories of decision-making can roughly be dichotomized into: 1) theories that are focused on the choice itself, and 2) theories that are focused on the process preceeding the choice, with the solution being some satisfactory by-product of the process. One distinction that should be made between the theories is that, in general, choice-type theories are prescriptive while process-type theories are descriptive. Various studies concerning the process by which choice has been selected indicate that, often than not, decision-makers commit certain errors of logic concerning preferences, due to their limited information processing capacities. Where the decision-makers are to make a selection out of alternatives that consist of many attributes, the normative part of the theory calls for ordering of the alternatives in terms of the criteria they have and the nearness of the alternatives to these criteria. The idea of "more is preferred to less" from economics is applied in decision-making, in the ordering of two alternatives where one alternative has more of an attribute with the rest similar to another one, this should be preferred. The idea of dominance is thus an outgrowth of this theory. However, the prescriptive theory sometimes could not account for certain inconsistencies in the descriptive sense - i.e. that there are situations where more is not preferred to less.

For the descriptive theorists, a situation where they offer the subjects under study alternatives varying in the degree of superiority or inferiority of various attributes could give them certain insights into the anatomy of one element of decision-making-the decision-maker.

The notion of multiattribute alternative choice is apparent in:
K.R.MacCrimmon,"Decision Making Among Multiple Attribute Alternatives" RAND, 1968.
_____, "The Structure of Multiattribute Decisions" Management Science, 1973 in press.

The setting up of a management laboratory where the experimenter could look at how a decision-maker orders alternatives and handles attributes will definitely contribute much to descriptive theory.

To our knowledge, no one has employed this type of experiment to look at the handling of attributes that concern various dimensions of risk and decision-maker's personal values concerning these attributes.
P.Slovic and S Lichenstein in:
_____, "Comparison of Bayesian and Regression Approaches to the Study of Information Processing in Judgment," Organizational Beh. and Performance, 6, #6, 1971, 649-749
have talked a little about the general multiple attribute choices. What is hoped for is that one could apply these experiments for multi-attribute choices for studying specifically the risk-taking dimension of alternatives. This would in effect give one certain information concerning the hierarchy of a subject's preferences (i.e. the extent to which he orders the alternatives and how he does it).

Indirectly, such method of experiment touches upon the nature of the subject's risk-taking propensity.

b. General Description

the nature of the orientation to the subjects in the instrument. Specifically, the participant is asked to judge the qualifications of nine persons who were described in the set. The participant is only given a very minimal amount of information, with the justification in the Instruction that such is usually the case in the world. Four attributes have been given for each alternative - and each attribute ranges from low to medium to high possession of the attribute. These attributes are in the form of the persons' risk-taking behavior in four dimensions: 1) Risk concerning career; 2) Risk concerning leisure - specifically gambling risk; 3) Risk concerning life and health; and 4) Risk concerning business. There, only 9 combinations have been selected in the test construction from a possible total of 8 combinations. These have been selected by using the dominance rule where the alternatives ('persons') vary in these attributes from the most risk-aversed in all four attributes to the least risk-aversed in all four with one attriubte changing in degree each step (or from one alternative to the next). For a clearer idea of this, see the part of Attribute Value Key in our scoring section.

The assumption basically of our instrument is that if the decision-maker were to choose a person from a list with description provided, be necessarily conforms to the idea of "self image" where his ordering of choices would reflect his own predisposition. It would be much better, if, explicit in the instruction, he were to choose someone who resembles him closely in the possession of these attributes. The instruction we have provided here will give you an idea of what we mean.

Some characteristics that can be noted in this type of instrument are:

Role: own personal and business role in a hypthetical situation
Payoffs: not relevant
Context: business - selection of a person to become an officer of an association.
Input form: name, age, status of alternatives with description of 5 short paragraphs, one for each attribute. Questions on ordering and Semantic Differential
Output: written responses - ordering of these alternatives, assignment of points to alternatives, choosing degrees to which 3 persons can be described in terms of adjective pairs provided.
Information acquisition: provided
Administration: experimenter assistance not needed
Timing: thirty minutes for entire instrument

c. Instructions to the experimenter

This is a paper test that needs very little supervision and the explanations have been included in the Instructions to the Participants. The experimenter should tell the participants the time limits allowed for the exercise. Since this is an individual test, the participant should be given his own room to work in and be told that the results will be made known only to him and will benefit him tremendously.

d. Scoring

The order in terms of the persons in this game from the lowest risk-taker to the highest is as follows:

1. Butterworth
2. Foxwell

3. Robertson
4. Atkinson
5. Moore
6. Owens
7. Little
8. Stimpson
10. Hepburn

Alternative in scoring could be

1. Use of the SPEARMAN RANK CORRELATION AS AN INDEX OF RISK TAKING:

Formula: $r = 1-\left(6\sum_{i=1}^{n} d_i^2/(n^3 - n)\right) = 1 - \left(6\sum_{i=1}^{h} d_j^2/720\right)$

Thus, those who are risk-averters would have the Spearman Rank Correlation close to 1.

2. Use the following weights:

Assume that for High we give 1. For Medium we give 3 and Low we give 5 for each attribute.

Thus we have the following weights:

1. Hepburn - 4	4/108
2. Stimpson - 6	6/108
3. Little - 8	8/108
4. Owens - 10	10/108
5. Moore - 12	12/108
6. Atkinson - 14	14/108
7. Robertson - 16	16/108
8. Foxwell - 18	18/108
9. Butterworth - 20	20/108
108 Total	

We can either use the proportions or the absolute numbers as weights and multiply these by the "grades" they assign each of the persons. Thus, the higher the score the lower his risk taking propensity.

SEMANTIC DIFFERENTIAL:

The score on each adjective pair will be added up for a total score on each person (the person so named in this section).

Favorable Adjective 5 3 0 -3 -5 Unfavorable Adj.

The favorable adjectives are: Rational, Analytical, Flexible, Independent, Confident, Cautious, Calm, Active, Strong, Successful.

We look at the scores the respondent obtained and see where his highest score lies. If it lies with Butterworth - he is a risk averter; if it lies with Moore - he is a moderate risk-taker; if it lies with Hepburn - he is a great risk-taker. For the various "shades," we look at how he scores Hepburn and deduced from there where the respondent lies in the risk-taking propensity continuum.

High Risk-taker _____ Moderate _____ Low Risk Taker

Attribute value key:

	BUSINESS RISK	GAMBLING RISK	CAREER SOCIAL	LIFE	NAME OF INDIVIDUALS
1.	L	L	L	L	BUTTERWORTH
2.	M	L	L	L	FOXWELL
3.	H	L	L	L	ROBERTSON
4.	H	M	L	L	ATKINSON
5.	H	H	L	L	MOORE
6.	H	H	H	L	LITTLE
7.	H	H	H	M	STIMPSON

8.	H	H	H	H	HEPBURN
9.	H	H	M	L	OWENS

e. Instrument

MANAGERIAL JUDGMENT

The value, they say, of a manager rests in his ability to gain insights into all situations; thus, success is dependent not only on the knowledge possessed by a manager but by how he judges.

In the next few pages, there are brief descriptions of individuals (who are assumed to be considered members of a list furnished you by the Association of Manufacturers as applicants to the position of the Assoication of Manufacturers representative.) We would like you to study the various characteristics of these individuals and make your judgment by answering the questions listed below

In this way, we shall know at least a little bit about how you judge -- in the face of incomplete information.

The Representative , as mentioned above, is the one that will take charge of the administration of the Assoication -- among other things, he will be a liason man between government and manufacturers, act as consultant for small manufacturers, director for business lunches and gatherings, and the like.

Because they offered you this job and you've been unable to accept the post due to your work in the office, the association recommended that you should get one from the list that would approximate more or less your own make-up, even though 'some' of the situations these people have been in are quite dissimilar.

1. To assist the Association , please rank the individuals in the order of acceptance and give each a rating out of a maximum of 100.

NAME: MAX BUTTERWORTH
STATUS: MARRIED
AGE: FORTY
DESCRIPTION:
----Superiors say he is very agreeable--complies with the rules of the organization and thinks career is very important and should not in any way be jeopardized.

----good, clean leisure--no gambling habits (in fact, detest gambling and bets.)

----safety to life and health is an important consideration for him. No amount of money can replace human loss. He himself does'nt go for sports that are considered dangerous.

----His approach to business is very conventional and standardized. He's is of the school of thought of "gradual" investment where one doesn't go into new products which possess the danger of losing one's shirt - "justified only if the ROI is very, very high as margin for safety."

NAME: WILLIAM JAMES ATKINSON
STATUS: MARRIED
AGE: FORTY
DESCRIPTION:
----in all of his recommendations he goes for investments that warrant big capital and new product development, knowing sometimes how the odds are against success. He thinks he is a schumpeterian, i.e., one who goes for highly oscillating success-failure projects especially when it concerns newer products.

----good clean hobbies: golf and chess. He refrains from ever endangering his life by "unnecessary" athletics like motor car racing and the like.

----gambling is good now and then. He rated himself as a moderate gambler-not too much at stake and not too little.

----He has planned his career very well and considers it of outmost importance. He is considered very agreeable by his superiors and executes orders to the letter.

NAME: STEWARD STIMPSON
AGE: FORTY
STATUS: MARRIED
DESCRIPTION:
----thinks a successful company is always one that goes into newer frontiers by introducing new products, even when the chances for acceptance are slim. Even investment in politically unstable economies on a large scale can be very profitable if the company is willing to put up the resources and accept named ROI.

----he sometimes thinks that one should once in a while face dangers by mountain-climbing and the like. But he is not willing to act as investigator for company opportunities in countries that have high chances of violent upheavals.

----willing to resign when his ideas turn out to be unsound. He is not agreeable when he thinks the superiors are wrong. Career is not that important to him.

----Gambles a lot in Las Vegas and Reno with high stakes.

NAME: DONALD MOORE
AGE: FORTY
DESCRIPTION:
----very agreeable according to superiors. Strives hard to get to the top and maintains that career is above everything else. Orders are executed without question.

----Peaceful man. Doesn't go for "wild sports" like mountain climbing or deep sea diving. He says that life is so precious that we should give anything to preserve it -- especially one's own."

----Gambles excessively. He has all his savings tied up in speculative stocks. Known to frequent the race tracks and to place big bets.

----recommends always that the company go for big investment in new fields or new countries even when the probabilities are slim for any reasonable break-even of cost.

NAME: DOUGLAS FOXWELL
AGE: FORTY
STATUS: MARRIED
DESCRIPTION:
----his view on modern living: morality is now losing grounds especially when it comes to the permissivemess of gambling-which is for him the root of all evils. He himself doesn't gamble-not even on games like bridge.

----The trend towards disregard of the sacredness of human life is seen, he says. The various sports that have been developed are dangerous and should be avoided. Life is most important-and he says we must safeguard our lives above all.

----He is a good worker. Complies readily with his superiors. Works hard to develop his career. Superiors rate him as an excell nt implementation expert. He rates career very highly.

----His varous recommendations for investment reveal that he goes for moderate product development, for moderate size investment in foreign countries. A balance, he says, should be made between speculative stocks and bonds in the company's securities.

NAME: LIONEL OWENS
AGE: FORTY
STATUS: MARRIED
DESCRIPTION:
----stresses pioneering in new products even when there is a slim chance for success. His recommendation for investing excess cash in speculative securities was disapproved by his company because of the high risks involved.

----he himself plays in the stock market for speculation issues. Leisure: poker games and horse racing, going for big stakes and bets.

----thinks the various activities like motor car racing, deep sea diving, mountain climbing is not worth his while to bet his life on. It is suicidal for one to just throw one's life away by exposing oneself to such dangers. "I myself refused a high paying job in Argentina because of all these foolish executive kidnappings going on."

----career is of moderate importance to him. He's agreeable most of the time. But, in one minor case, nearly had been fired for implementing the opposite of what is required.

NAME: ISAAC ROBERTSON
AGE: FORTY
STATUS: MARRIED
DESCRIPTION:
----refuses foreign assignment even with high pay because of the instability of life in other countries, especially those that are known to have violent uprisings. He thinks he can work better in an environment where one is not worried about one's life.

----good, clean man, No gambling habits.

----very agreeable according to his superiors, he is one that takes career very seriously and will not jeopardize it for anything. He complies with all or any orders given to him.

----think that an industry must always be dynamic in order to attract good businessmen. Business should be such that one can go into it with all his investments and engage in competition for new products.

NAME: MICHAEL HEPBURN
AGE: FORTY
STATUS: MARRIED
DESCRIPTION:
----leisure: poker and horse-races-goes for long shots. Known to be a frequent visitor of Reno and Las Vegas.

----Fights to have his ideas, when he knows them to be right, heard by his superiors. Will not comply with rules when he thinks they're wrong. He says career is not that important when it comes to facing the truth. Superiors think his ideas are sometimes unreasonable. Suspended once for instituting changes when his higher-up was away.

----owns a sports car. Joined the Indianapolis 500 during his prime-his wooden leg is a symbol of his racing days. Nowadays, he has mountain climbing for his sport even in his condition.

----went into business upon graduation. The company went bankrupt as a result of the market rejection of his new product. He hopes to go back into this line when he retires.

NAME: ALFRED LITTLE
AGE: FORTY
STATUS: MARRIED
DESCRIPTION:
----in the field of research, has been known to engage in problems where odds of coming out with a successful findings are slim. New product development is stressed in all his recommendations. He says the company must the willing to invest heavily in newer markets.

----Gambles to excess. He has been nicknmaed "Poker Little" because of his high stakes and bluff techniques.

----quiet life. No dangerous sports for him. He likes chess and music and detests situations where one's life might be in jeopardy. "The funny thing about people nowadays is that they have got such a compulsion to die. As for me, I don't belong to the suicide cult."

----he has the habit of questioning superiors' ideas and of not complying even at the expense of demotion.

Managerial Judgment Questionnaire

PLEASE ANSWER THIS AFTER THE EXERCISE.

For each of the letter below, put an X in each of the adjective pairs, which we shall call the adjective continuity scale to indicate how you perceive the person concerned to be as far as these adjectives are concerned. Although the information available to you, contained only in the preceeding pages, may be scanty, please try to form your opinion on these people.

For Example:

Calm 1. 2. 3. 4. 5. Excitable

If you think the person is very calm put an X in 1.; if you think he is slightly calm, put an X in 2.; if neither calm nor excitable (i.e., neutral), the X should be placed on 3.; if slightly excitable, an X should be placed on 4.; if very excitable, an X should be placed on 5.

This holds true for the rest of the adjective pairs.

Thus:

Adjective on LEFT	VERY	SLIGHTLY	NEUTRAL	SLIGHTLY	VERY	Adjective On RIGHT.

A. Moore is: (or seems)

Rational	____	____	____	____	____	Irrational
Analytical	____	____	____	____	____	Intuitive
Rigid	____	____	____	____	____	Flexible
Independent	____	____	____	____	____	Dependent
Unsure	____	____	____	____	____	Confident
Cautious	____	____	____	____	____	Reckless
Calm	____	____	____	____	____	Excitable
Passive	____	____	____	____	____	Active
Strong	____	____	____	____	____	Weak
Unsuccessful	____	____	____	____	____	Successful

B. Butterworth is (or seems)

Rational	____	____	____	____	____	Irrational
Analytical	____	____	____	____	____	Intuitive
Rigid	____	____	____	____	____	Flexible
Independent	____	____	____	____	____	Dependent
Unsure	____	____	____	____	____	Confident
Cautious	____	____	____	____	____	Reckless
Passive	____	____	____	____	____	Active
Strong	____	____	____	____	____	Weak
Unsuccessful	____	____	____	____	____	Successful

C. Hepburn is (or seems)

Rational	_____	_____	_____	_____	_____	Irrational
Analytical	_____	_____	_____	_____	_____	Intuitive
Rigid	_____	_____	_____	_____	_____	Flexible
Independent	_____	_____	_____	_____	_____	Dependent
Unsure	_____	_____	_____	_____	_____	Confident
Cautious	_____	_____	_____	_____	_____	Reckless
Calm	_____	_____	_____	_____	_____	Excitable
Passive	_____	_____	_____	_____	_____	Active
Strong	_____	_____	_____	_____	_____	Weak
Unsuccessful	_____	_____	_____	_____	_____	Successful

3. Future Technology Questions:

a. Background:

Various forms of tests are in existence today to determine the imaginativeness of individuals. The Structure of the Intellect of Guilford contains such a scale to ascertain the perceptive capability of an individual. However, the questions used in the SOI and other aptitude tests are usually so trivial and uninteresting that boredom could be induced - and to use the same set on businessmen would mean to invite an absence of motivation. For example, "List down the number of uses of coat hangers" does not seem appropriate to be given to a group of businessmen who might not take the exercise seriously. What is needed is thus a revised questionnaire that hopes to measure the same thing or construct.

The Guilford factor called Divergent Production of Semantic Classes (DMC) is defined as "the ability to produce many categories of ideas appropriate in meaning to a given idea. "The tests consist of the Utility Test (e.g., "List down the number of uses for a common brick.") where the scoring for flexibility shown in the ideas presented comes from the number of shifts of classes in the uses given; Alternative Uses - e.g., "List as many as six uses for an object such as a newspaper other than the common use which is stated"; and Multiple Grouping - e.g., "Arrange given words into different meaningful groups." Thus, this particular scale is used to select people who might have creative potential. The factor called Divergent Production is a major dimension which is defined as "Generation of information from given information, where the emphasis is upon variety and quality of output from the same source, which is likely to involve what has been called transfer." This operation (or divergent production) is clearly involved in the aptitudes of creative potentials. Thus, this is a search for abilities having to do with fluency and flexibility of thinking, ability concerned with the ready flow of ideas and with readiness to change direction or to modify information.

For those who would like to see the original complete set of the Divergent Production dimension,

J.P. Guilford, The Nature of Human Intelligence 1967, MacGraw Hill, N.Y., pp. 138-170.

M.N.Meeker, The Structure of the Intellect, Charles Merrill, Ohio, 1969.

b. General description of the measure

Our questionnaire for measuring creative potential and for assessing Divergent Production is based on:

H.Kahn and A.J.Weiner, "The Next Thirty three years - A Framework for Speculation" in Toward the Year 2000, Daniel Bell (ed.), Houghtin Mifflin, Boston, 1967, pp. 73-100.

_____, The Year 2000 (A Framework for Speculation on the Next 33 Years), MacMillan, N.Y., 1967.

We took from Kahn and Weiner's list of 100 technical innovations ten such innovations which we find appropriate to the businessmen and pruned these into 2 items that would reflect generality across industries (to avoid industry-bias). The subjects are asked to answer 3 questions: one, on the opportunities for business he sees in the inventions; two, opportunities he sees for himself in his personal role; and three, the company's capability and problems of trying to take advantage of these inventions.

This is not a measure of risk-taking but is intended for a study of the possible relationship between risk and innovative potentials.

Characteristics of this kind of test are:

Role: himself as businessman and in his personal role.

Context: description of inventions to be developed sometime in the next 33 years, that are seen to have business potentials.

Inputs: 2 items of the general inventions.

Output: list of opportunities he sees in business for himself and his company's ability to take advantage of such inventions.

Time: about 10 minutes.

Administration: experimenter assistance needed to keep track of time.

Perceived Control: none.

Perceived Skill: yes.

Information Acquisitions: general information provided but the answers will have to be based on subject's own knowledge and imagination.

c. Instructions to the experimenter

The time limit is 10 minutes and the experimenter should see that this is observed. The following verbal comments will be given by the experimenter:

"I guess you've read the questions and the instructions now. You are given ten minutes to answer the 3 questions. Please do not spend too much time on the questions and do not elaborate lengthily. Put down any ideas relevant to the questions and do not worry about whether they are way out or not. Let this be a free flow of ideas as they come along. Thank you. Please proceed."

d. Scoring

1. FOR A: Scoring for Imaginativeness: the number of items or products he lists in A. that are unique and innovative as compared to the others.
   Scoring for Ability to generate as many opportunities - count the number of items he lists in A.

2. FOR B: this is a checking question on ruthfulness and should reflect the ability to see limitations.
   Ability to see limitations: number of items or ingredients that his company lacks.

   Index of Insight: this is simply adding up 1. Scoring for Imaginativeness to the score he gets for C. (add up the number of items unique in answer to C as compared to other subjects)

Index of Perceptual width - whether innovative or not, add up merely his score in scoring for ability to generate as many opportunities with the list he generates in C.

e. Instrument

FUTURE TECHNOLOGY QUESTIONNAIRE

In Herman Kahn's and Antony J. Weiner's "The Next Thirty-three Years - A Framework for Speculation," they came out with a list of 100 technical innovations that are likely to be produced or have been produced in the next thirty three years (or in 2000 A.D.). Some of these items are:

1. The extensive use of computers in the home - to run the household and communicate with the outside world, home education via video and computerized and programmed learning - possibly, with the use of robots and machines "slaved" to humans. - etc.

2. New sources of power for ground transportation (storage -battery, fuel-cell propulsion or support by electromagnetic fields, jet machines, anti-gravity, etc.) and new airborne vehicles (ground-effect machines, VTOL and STOL Superhelicopters, giant supersonic jets). And the multiple applications of masers, lasers for sensing, measuring, communicating, cut-up, heating, welding, power transmission, illumination, destructive (defensive) and other purposes.

Please answer the follwoing questions briefly:

A. In the light of the above-mentioned items, what are some of the opportunities you see (i.e., in terms of products that your company can sell or services that your company can provide, applications to business and the like) that your company could take advantage of? (please list down as many - not much elaboration needed):

B. In the light of your answers to (A), can the company you're presently employed in be highly successful? What do you think are ingredients for success in the coming era and where are you lacking in?

C. What opportunities do you see in these developments as outlined in 1. and 2. that you yourself can take advantage of - in your personal role? (mode of life, new role in the era, home life, office life, etc.)?

D. Interview-Based Measures

The use of personal interviews is quite prevalent in business research today, where the interviewer comes prepared with a set of questions to ask, altering the presentation of questions to fit the occasion. It's outstanding advantage is the flexibility it has as a 'projective' measure. To have the subjects talked freely has the advantage of narrowing in on their attitudes by studying their choice of words and the way they describe certain situations.

The first part of this set is not exactly an interview instrument but the mere fact that it asks questions in the form of resumé's and standard application form, we have included this in the interview-based category.

Much more analohous to the techniques of interview, as usually practiced by psychologists with free flow verbal responses, are our last two measures which are basically projective. Lacking in administration ease, these methods gain in flexibility in that the interviewer can change the questions during the process if he finds the questions inappropriate. These have relevance to a kind of philosophy where "to be perceived is to exist," in this case, risk exists where the subjects see the risk; and asking them for definitions or explanations would give one an idea of the values they hold and their perception of the risk environment.

1. Personal History Record

a/b Background and General description of the measure

This is primarily a questionnaire of getting at personal data concerning the individual, whcih he can answer without much diffiuclty. The rationale of inclusion of the items (or bits of information) runs as follows:

1. Education - this could 'possibly' reflect the training of the individual in theories and models and thus, would constitute a part of his total source of knowledge. Risk-taking disposition can be viewed as partly influenced by reinforcement from the environment. The nature of the atmosphere of his educational institution could explain portions of his risk-taking disposition. To some psychologists, the educational institution is a source of conservatism due to the strict "you've got to be certain" atmosphere in scholarly work. Also, education, as an independent variable, could serve to explain r-t disposition cross-culturally by the logic of the difference in educational institutional philosophy.

2. Age and Position - age has been found to be a personal characteristics that influence risk-taking - i.e., that the more one grows in age, the more one increases in risk aversion. This remains to be rediscovered. Position in the company would reflect to a certain extent the actual control the man has over his internal environment. It is the contention that people who are in marketing functions are greater risk-takers than those in Finance -- i.e. that people aim for various positions subject to their risk-taking propensity.

3. Status - married people are said to be lesser takers than unmarried ones. This hypothesis will be tested by looking at the possible presence of relationship of status to risk-taking disposition (ceteris paribus, of course.)

4. Salary - this, admitting that society has really used money as the gauge of worth, reflects the degree of success a person has with regards to his profession. On the theoretical side, risk-taking is directly related to salary - i.e. that great risk-takers have better success that low risk-takers.

5. Health - a person's willingness to take risk is influenced by the health he is in and by the health of his family. A man with a daughter about to be operated on is not likely to try implementing changes at the risk of losing his job.

6. Personal Debt - this reflects his willingness to incur liabilities for various purposes. In the face of an uncertain future, incurring large debt is inviting greater risk.

7. Insurance - the amount of insurance held indicates the degree to which the individual is attempting to hedge against major losses. This is presumed to have a direct bearing on his risk attitude.

8. Cash Savings - we have from elementary economics the transaction demand for money because of the non-synchronization of inflow and outflow. People they say carry more cash in times of greater uncertainty; thus, greater cash savings could reflect less risk-taking.

9. Leisure Spending - this would involve his "utility" for gambling (thus explaining for the convexity of his U function at a certain range.) This is some sort of an ex-post assumption that a person with greater interest in gambling will exhibit greater risk-taking in our gambling games (stock market wager, etc.) This could serve as a construct validity of our gambling test. Sports reflect his disposition in seeking quieter or more lively sports. Those who contend that risk-taking propensity is a general disposition would argue that a person willing to engage in more dangerous sports is also willing to take risk in business.

The characteristics of this instrument are:
Role: Own personal role
Payoffs: Not relevant
Context: Personal record
Input form: Set of question items - survey
Output: Words or brief responses
Information acquistion: not relevant
Administration: self-administered
Timing: 10 minutes.

c. Instructions to the experimenter
No instuctions needed.

d. Method of analysis (scoring)
The entire group data will be partitioned into various cells where only one "independent" variable is supposed to vary to see whether there is any correlation between that variable and risk-taking propensity.

Possibly, judges looking at the personal record independently would try to determine what kind of a risk-taker the individual is (without looking at the results of the measures themselves.) They could rank the individual on three levels of risk-taking disposition: High-Medium Low and on different dimensions of risk.

e. Instrument

PERSONAL RECORD

NAME: _____ STATUS: _____

AGE: _____ NO. OF CHILDREN: _____

Position in the company _____ ANNUAL SALARY: _____

EDUCATION: (DEGREE) _____
SCHOOL _____

INSURANCE:
AMOUNT OF LIFE INSURANCE CARRIED (i.e. INSUREABLE VALUE)
_____

ANY OTHER KINDS OF INSURANCE:
KIND AMOUNT

HEALTH:
a. Personal: (Good health?) --yes --no
If no, what are you suffering from (e.g. heart disease, etc.)
_____

b. Family: (Good health?) --yes --no
If no, how many are not in good health? _____
Relationship to you: _____

c. Accidents:
RECENTLY BEEN INVOLVED IN ACCIDENT:
--yes --no
If yes, what is the nature: _____
WHAT ABOUT RECENT ACCIDENTS TO FAMILY MEMBERS
--yes --no
If yes, how many: _____
nature of accident: _____
Relationship of these people to you _____

PERSONAL DEBT:
1. Do you carry credit cards?

2. Nature of credit cards. (consumer, diner, etc.)

3. Personal loans from the bank? --yes --no
If yes, amount of loan _____

4. Any other debts?
Where borrowed Amount For what purposes

5. Amount of cash savings _____

LEISURE SPENDING:

1. Do you play:
   Poker? --yes --no
   If yes, ----often (once a week at least)
   ----sometimes (less than once a month)
   ----occasionally (less than 10 times a year)
   AMOUNT OF AVERAGE STAKE: _____

2. Horse Racing? --yes --no
   ----often (once a week at least)
   ----sometimes (less than once a month)
   ----occasionally (less than 10 times a year.)
   AVERAGE AMOUNT OF STAKE: _____

3. Any other games?
   ----yes
   ----no
   If yes:
   Kind Amount (Average Stake) How often

4. Sports:
   Kind of Sports How Often: Where

2. Personal Interview

a. Background and General description of the measure

Similar to a self-rating test, the use of personal interview with certain discretion given to the experimenter would serve as a study of risk-taking in a natural setting. Certain shortcomings definitely are apparent in this kind of an interview - i.e. an ex-post look at previous decision may not equate the risk involved at the time of decision with the risk he sees now in that decision. However, face with a whole line of questions, the interviewee will try to think of actual situations where risk-taking has been done. Part of this interview is to ascertain, by asking him questions on criteria and alternatives, the soundness of his decision-making process. Also, asking him about his view of the company - i.e. the reasonable amount of cash (risk measure, to a certain extent) carried in asset, would reflect the possible divergence of his preferences and the company's.

Question no. 3 on the attributes of a good job would reflect his criteria in seeking employment and would give us an idea of what he wants. (later in the analysis, this could be used to study any possible relationship between motivation and risk-taking). As part of this exercise, he is asked to give company experiences and to talk about what happened during the occasion. Also, inherent in the reinforcement study of decisions by superiors and peer groups are F_2, F_3 and E'. Then, we ask him for a definition of a risky decision and a not risky decision -- i.e. to probe more into what is supposed to be a universal definition.

The part of Personal consists of questions directed at the risks he has taken in his personal role-risk to life, risk to loss in the stock market, in the mutual fund business, and the like. Also, decision-making process study is incorporated in this part to ascertain information-seeking processes and consumer purchases in order to see how he weighs certain factors and the like.

The characteristics of this instrument are:
Role: own personal and business roles
Payoffs: not relevant
Context: business and personal
Input form: verbal questions asked by the interviewer
Output form: oral responses - tape recorded or notes made by interviewer
Information acquisition: may ask interviewer for clarification, discussion, etc.
Administration: interviewer required
Timing: 30-40 minutes

c. Instruction to Experimenter:

This prepared questionnaire is not to be shown to the subjects but will be asked by the experimenter who is given some discretion. The questions prepared in advance serves as a guideline to the interview process. He has to realize however what we hope to accomplish as our objectives in asking these questions. Ask each question slowly and give the subjects lee-way to answer them. If possible,

point out the inconsistencies of answers to the subject. The object of the consumer purchase question is to narrow in on the subjects and to see how he makes decisions. (The purchased item must be of great value -- in terms of money - if possible, a very infrequently purchased item.)

d. Method of Scoring:

This can possibly be done by subjective assessment in eight of his answers to the questions. How risky is risky to him can ascertain his level of risk-taking and his examples of risk situation would reflect whether these really are risky situations or not.

Dimensions of Risk:

1. Gambling Risk -- high
   medium
   low

2. Business Risk (Investment)
   high
   medium
   low

3. Risk to Person: (i.e. life or health)
   high
   medium
   low

4. Risk to Social Situations: (career)
   high
   medium
   low

The above dimensions would be all-inclusive of the whole facet of risk-taking propensity. The judges will rate the individual on these.

As a check on rating on his peer or superior or subordinate. Judge whether he rates these individuals as high, medium, or low on risk-taking propensities.

PERSONAL INTERVIEW:

BUSINESS GENERAL:

1. What is the average amount allocated to the part of the company under your control annually? (Average amount in your accountable budget?) _____

2. What do you think should be the reasonable amount that your company should carry in its cash assets or any company similar to yours for that matter?

3. What do you think are the attributes of a "good" job? Please rank them in terms of importance: (e.g., challenge, autonomy, high salary, fringe benefits, social interaction opportunity, good working conditions, etc.) List 5 of these attributes at least.

4. What do you think are some of the problems faced by companies similar to your own?

5. What do you think is an appropriate level of debt-equity ratio?

DECISION MAKING IN BUSINESS

1. Please cite some company experiences in which investment or resources are at stake in a situation of risk?

2. Why do say they are risky?

3. What were the alternatives?

4. What were the chances of various outcomes? And what are these outcomes?

5. What did you recommend the company do? Why?

6. What did your superior say to your recommendation?
   What did they want to do?
   What did the company actually do?

7. What did your colleagues or peers say about your recommendations?
   What were their recommendations?
   Who are these peers? (names of the peers)

8. When do you say a business decision is risky?
(i.e. what factors make the decision risky?)

9. When do you say a business decision is not risky?
Why?

PERSONAL

1. In your personal life, what situations have you encountered that you may call risky? Why is it risky? (example: an operation, saving a drowning woman)

2. What were the chances of outcomes? What were these outcomes?

3. What were your alternatives?

4. What was your decision? Do you think your decision was conservative or not?

5. Have you ever played in the stock market? (IF YES,)
What is your decision rule in buying or selling?
What are the kinds of stocks you carry (e.e., blue-chips, speculative?) Why did you buy these particular stocks? What were the alternatives you considered? What were your objectives?
What were the odds? What were the consequences? Did you make any money? How much?

6. Have you ever been involved with mutual funds? (IF YES,)
What were your rules in buying or selling?
What kind of investments were these funds involved in? What alternatives did you usually consider? What chances of lose or win did you see? How did you arrive at these chances? What were your objectives. Did you lose any money? How much did you lose or make?

7. What about consumer purchases?
Have you bought a car recently?
If no, how about a boat?
If no, how about a house?
If no, how about any piece of property? What kind?
What did you want in the purchase? (i.e., your objectives?)
What were your alternatives? And how much were these?
How did you decide to pay? (by cash or installment or credit?) Why?
What did you decide to do? Why?
How much did you pay for your purchase?
What were the odds involved? Or the dangers (of a bad buy?)
What were the consequences of such occurences?

3. Rating Interview

a. Background:

This kind of a rating system rests on the assumption that a person close to the individual being rated knows enough about the latter's risk-taking disposition to make a judgment. The danger of bias and of people's tendency to rate others as "less of a risk-taker" than themselves (or perceive themselves to be at least as willing as their peers to take risk) is always present in this kind of a test. This is evident in:

W.C.HINDS,Jr. Individual and group decisions in gambling situations. Unpublished Master's Thesis, Sloan School of Management. MIT, Cambridge 1962.
R.Brown. Social Psychology. N.Y.: The Free Press, 1965
M.A.Wallach and C.W.Wing, Jr. Is risk a value? Journal of Pers. and Soc. Psycho. 1970, 14, 149-156.
E.P.Willems. Risk is a value. Psycho. Rep. 1969, 24, 81-82

In:
P.Slovic. Convergent Validation of Risk-taking Measure. J. of abn. and Soc. Psycho. 1962, 65 (1), 68-71,

A risk rating scheme was employed where the subjects were asked to rate their fellow fraternity brothers on a bipolar trait of general willingness to take risks - the A pole defined as "Loves to take risks. A daredevil" and the B pole labelled "Cautious. Does not like to take chances." However, this method of risk rating had no significant correlation whatsoever with other risk measures like Dot Estimation, Word Meanings,Experience Inventory, Job preference Inventory, Variance Preferences and Probability Preferences. However, it is possible that the rating system being bi-polar, was not refine enough to have intermediate values.

In a business situation, managers are frequently asked to assess their personnel and often they form opinions concerning their associates in the same level of the organization as they are and of their immediate superiors. On the one hand, an experiment of our nature requires certain inputs from people around the subject about the latter's abilities as decision-maker and on his willingness in general to take risk, and on the other, it requires the subject to evaluate some of his business associates. The objective of such a test is to see how the subject is being perceived by other people and how other people perceive him. In the first instance, where the subject is asked to rate the other people, he is in fact employing his value on risk as a gauge through which he measures other people. In the second instance, where the subject is being perceived, it is possible that convergence of opinions concerning the subject's risk-taking propensity would correlate with the individual's scores on our risk measures. The only way that bias can be handled is to analyze the reasons behind the judgments of these individuals. The points of reference through which a person's risk-taking attitude is measured shift and provide a multidimensional perspective of the individual. Also, the provision of questions of how the subject views other people would give the experimenter certain ideas on the opinions

held by subject about people constituting his business environment.

b. General description of the measure

There are two parts to our rating interview: (A) consists of rating by subjects who have taken the risk-taking propensity measures on three kinds of individuals in the organization: his immediate superior, his associate whom he interacts most frequently with, and a promising immediate subordinate. (the rationale for including "promising" as a condition of the subordinate is to be able to see what "best" to him means and what his expectations are concerning this subordinate); (B) is rating of the subject by three people: his immediate superior, one of his associate on the same level of the organization, and one of his immddiate subordinate. On A, the subject is asked to describe the individual concerned as a manager by using adjective-pairs adopted from the semantic differental - 4 pairs in all: cautious-reckless, defensive-aggressive, confident-unsure, and rigid-flexible. As in the case of the semantic differential, degrees between extremes of adjectives are provided for the subject to score the individuals on, e.g. cautious 1 2 3 4 5 reckless where 1 is very cautious, 2 is slightly cautious, 3 is neither cautious nor reckless, 4 is slightly reckless, 5 is very reckless. Then he is asked to rate the individual as a risk-taker-whether high, moderate, or medium-where high is defined as "takes great risks. A daredevil," moderate as "sometimes takes risks. Sometimes not." and low as "doesn't take risk at all." Then, he must give reasons for his rating of these individuals and give an instance where such attitude is reflected. Only for ratings on his immediate subordinate and on his peer, that we ask him to compare the individuals with himself - in order to see whether Willems' contention is true or not.

Part B is intended for other people viewing the subject and uses more or less the same type of questions.

The characteristics of this questionnaire are:
Role: business role
Payoffs: not relevant
Context: own business position and relationships with others
Input form: short questions asked by the interviewer and also rating by adjective descriptions
Output: short evaluations and ratings
Information acquisition: interviewer required
Timing: 5 minutes per person rated.

c. Instructions to Experimenter

The experimenter must be on hand to arrange interviews with these individuals and to give these interviews after the risk measures have been given. He is to read the instructions to the subject. If there is no immediate superior, you may skip the part on immediate superior. (as in the case of interviewing members of the Board of Director.) Write down the answers as you go along. Clarify the questions if they do not seem clear. Give the individuals time to think about the questions. However, make sure that each part can be finished in less than 30 minutes.

d. Method of Analysis (Scoring)

The Semantic Differential item will be scored by: Favorable Adjective 5 3 0 -3 -5 unfavorable Adj. to arrive at a total

score. (A negative score means the individual does not rate the person highly.)

To test whether there is any correlation in rating of the individual with the result of risk measure. Individuals will be grouped into three levels of risk-taking propensity by relying on this instrument and see whether the means of these groups differ significantly. Also, see whether a majority of the subjects would in fact rate their associates at most as willing as subjects to take risk in order to see whether Willems' contention holds.

Asking for examples why he thinks the individual is that kind of a risk-taker would give us some idea of the person's definition of "risk" or "conservatism."

e. Instrument

RATING INTERVIEW

A. Rating by Subject who has taken the risk-taking Propensity Measure.

NAME OF SUBJECT _____

Instruction: This is an interview to ascertain your assessment of some of your business associates. You will be asked to rate one of your associate who is on the same level in the organization as you are - someone whom you interact most frequently with; one of your promising immediate subordinate; and your immediate superiors on some of the scales that we have provided. For each of these persons, you will be provided with pairs of adjectives for you to describe him. With each pair of adjectives, you will ask whether he is: very, slightly, neither-nor. Also, we would like to ask you about reasons for some of these assessments. Shall we proceed?

I. On your immediate Superior.

Name _____

1. How do you find him as a manager?
(Note to Experimenter: circle one of these adverbs.)

	Very	Slightly	Neutral	Slightly	Very	
Cautious						Reckless
Defensive						Aggressive
Confident						Unsure
Rigid						Flexible

2. How do you rate him as a risk-taker?
High (meaning takes great risk. A daredevil)
Low (meaning doesn't take risk at all.)
Medium (sometimes takes risk sometimes NOT)

3. Why do you suppose he is that kind of a risk-taker:

4. For example, what decisions did he take recently that seems conservative or risky?

II. Please pick an associate of yours whom you interact frequently with and who is on the same level as you are in the organization.

Name _____

1. How do you rate him as a manager?

Cautious						Reckless
Defensive						Aggressive
Confident						Unsure
Rigid						Flexible.

2. How do you rate him as a risk-taker?
High
Moderate
Low

3. How does he compare with you as a risk-taker?
a. Very much more of a risk-taker than you _____
b. Slightly more of a risk-taker _____
c. Same with you _____
d. Slightly less _____
e. Very much less _____

4. Why do you suppose he is that kind of a risk-taker?

5. For example, what recent decisions he made reflect that kind of a risk-taking attitude?

III. Please name one of your immediate subordinate who seems very or most promising:
Name _____

1. How do you rate him as a businessman or manager?

Cautious	_____	_____	_____	_____	_____	Reckless
Defensive	_____	_____	_____	_____	_____	Aggressive
Confident	_____	_____	_____	_____	_____	Unsure
Rigid	_____	_____	_____	_____	_____	Flexible

2. How do you rate him as a risk-taker?
High
Moderate
Low

3. How does he compare with you as a risk-taker?
a. Very much more of a risk-taker than you _____
b. Slightly more of a risk-taker than you _____
c. Same as you _____
d. Slightly less _____
e. Very much less _____

4. Why do you suppose he is that kind of a risk-taker?

5. For example, what recent decisions he made reflect that kind of a risk-taking attitude?

B. Rating of Subject by Other People

Instructions

We would like you to help us shed some light on _____ (name of subject) whom we learned you know well enough to comment on. You will be provided with pairs of adjectives for you to describe him on. Please try to give a true assessment of this individual. Definitely, your assessment will be kept as confidential. The adverbs for these adjective pairs are very, slightly, neither-nor. Shall we proceed?

I. By his immediate superior:
Name _____

1. How do you rate Mr. _____ (name of subject) as a manager?
Is he:

	Very	Slightly	Neither	Slightly	Very	
Cautious						Reckless
Defensive	_____	_____	_____	_____	_____	Aggressive
Confident	_____	_____	_____	_____	_____	Unsure
Rigid	_____	_____	_____	_____	_____	Flexible

2. How do you rate him as a risk-taker?
   High (means he takes great risks. A daredevil)
   Moderate (sometimes he takes risk, sometimes not)
   Low (takes very little or no risk at all)

3. Why do you suppose he is that kind of a risk-taker?

4. For instance, what decisions did he make recently that would reflect this kind of a risk-taking attitude?

II. By an associate who is on the same level in the organization as the subject: (Read the Instructions) (Same as I)
   Name of Associate _____

1. How do you rate Mr. _____ (name of subject) as a manager?

Cautious	_____	_____	_____	_____	_____	Reckless
Defensive	_____	_____	_____	_____	_____	Aggressive
Confident	_____	_____	_____	_____	_____	Unsure
Rigid	_____	_____	_____	_____	_____	Flexible

2. How do you rate him as a risk-taker?
   High (meaning he takes great risks. A daredevil)
   Moderate (takes moderate risk. Sometimes great, sometimes not)
   Low (takes no or very little risk. Avoids risk)

3. Why do you suppose he is that kind of a risk-taker?

4. For instance, what decisions did he make recently that would reflect this kind of a risk-taking attitude?

III. By one of the Subject's immediate subordinate
   Name of Subordinate _____
   (Read the instructions same as I)

1. How do you rate Mr. _____ (name of subject) as a manager?

Cautious	_____	_____	_____	_____	_____	Reckless
Defensive	_____	_____	_____	_____	_____	Aggressive
Confident	_____	_____	_____	_____	_____	Unsure
Rigid	_____	_____	_____	_____	_____	Flexible

2. How do you rate him as a risk-taker?
   High (meaning he takes great risks. A daredevil)
   Moderate (takes moderate risks. Sometimes, great. Sometimes not)
   Low (takes no or little risk. Avoid risky situations)

3. Why do you suppose he is that kind of a risk-taker?

4. For instance, what decisions did he make recently that would reflect this kind of a risk-taking attitude?

III. SUMMARY

This paper describes the current status of the development of measures of risk taking propensity. The description of a measure in this paper does not mean that we shall use the measure in the form presented--indeed we may not use the measure in any form. There are also candidate measures that are not described in this paper.

It would seem desirable to spend further time investigating the possibilities of measures of: information seeking. (e.g., tying in a Bayesian optimal sample size with the assessed utility function), direct exhibition of skill and alternatives based on level of skill to be expended, having the subject critique a real life risk situation (e.g., airline hijacking), portfolio diversification, need achievement (particularly a modified French 'test of insight'), category width, tolerance for ambiguity, degree to which the subject would take risky alternative despite 'expert' opinion to the contrary, assessed probabilities for verifiable situations (e.g., plane crash), direct risk premiums in wagers, questions with different success probabilities, management game risk situation involving feedback, and problem solving in which clues can be acquired.

The historical and descriptive material included in this paper is incomplete and perhaps in some cases misleading. We include it only as a basis for triggering connections in a later writeup. Critiques, suggestions, etc. are solicted on the instruments themselves rather than on the organization or descriptive aspects of this paper.

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