

INDIVIDUAL RISK PREFERENCES AS  
CRITERIA IN PERSONNEL SELECTION AND PLACEMENT

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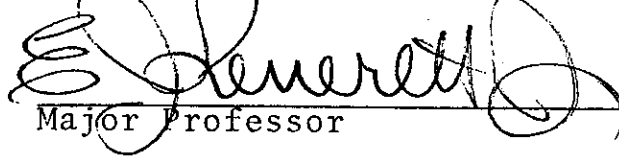
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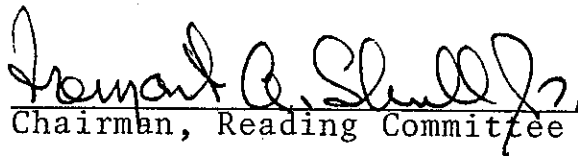
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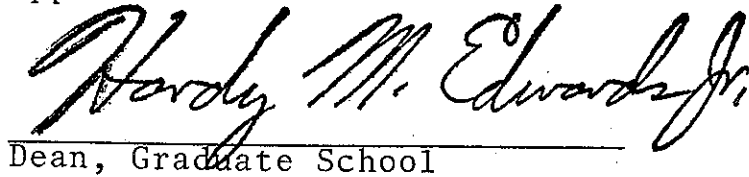
  
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## CHAPTER I

### INTRODUCTION

One of the most serious problems faced by the corporate executive today is that of personnel selection. This problem encompasses two major concerns: identification of competent prospective employees and retention of such employees, thereby reducing turnover rate. Psychological tests for evaluation of prospective employees have been used for years without conspicuous success. Employee selection seems to be primarily a hit-or-miss situation. This study examines another approach to the problem that could prove to be of use to the personnel manager in employee selection and placement in job roles within the business enterprise.

The present method of evaluating prospective employees is to administer tests that supposedly measure at a given level of proficiency an individual's ability to perform certain tasks and to interview candidates and evaluate their social attributes and ability to work within the organization. However, this method seems to be very limited in its ability to identify important relationships that exist between the individual and the assigned role.



Because of this limitation, many employees find that their roles are different from what they had expected, and many employers find that their employees perform at unpredicted levels. This indicates an imbalance between the abilities and desires of the employee and the requirements of the assigned work role that can lead to dissatisfaction and inefficiency, disturbing the employee, co-workers, and the organization as a whole. The imbalance results generally from a conflict between company objectives and personal objectives.

Techniques currently being used to compensate for this imbalance and the inability of the selection system to function at the desired level of accuracy include rigorous psychological testing and interviewing and probationary employee periods characterized by relatively low pay. These methods have experienced only limited success, principally because they do not directly explore the primary relationship existing between an individual's job-oriented attitudes and the specific role to be performed.

This study examines individual occupational roles to detect role components that are related closely to the level of success perceived by the employee. The study then will measure those components to determine if one is a better predictor of success than the others. If so, a new tool for the personnel manager can be developed, and a new contribution to organizational theory can be made.

### The Concept of Risk in the Study

To provide a basis for the arguments presented in this study, the concept of risk, which is pervasive in the business enterprise, is used. Every employee, manager, clerk, and owner is faced with risk. With responsibility comes risk, and there is some responsibility associated with every role in the enterprise. The nature of the responsibility varies from role to role and thereby so does risk, but it is ever present. The responsibility may involve supervision, either of employees or processes, but the carrying out of any role duties requires discretion to satisfy the responsibility incumbent in the role.

In a role that frequently requires the exercise of discretion, such as a managerial or clerical role, dissimilar alternatives usually are presented to the incumbent in role, who must make decisions to the best of his or her ability. These alternatives create uncertainty about the decisions an incumbent might make and therefore, unless perfect information is available, create risk. An individual exercising discretion in role, then, simply is handling risk.

With this assumption made and a basis for the conceptual framework established, a study of the major components of risk-taking behavior is beneficial. These components, when identified, can be examined to find if they are in any way related to the success of an individual in role. If such a relationship can be established, the

process of selecting potentially successful employees can be enhanced.

To break the concept of risk in role into its component parts, the attitudes of individuals toward risk must be examined. The manner in which an individual responds to risk in role can be identified in terms of two of its component parts. The first is concerned with the amount and type of risk and individual is willing and/or able to bear. The second is concerned with the length of time an individual is willing and/or able to bear risk. While these two components do not, in and of themselves, give a complete picture of risk-handling behavior, they do indicate areas for study of the risk-handling phenomenon.

#### Risk and the Organization

The differences in risk-handling ability that exist among members of business organizations give rise to what is called the organizational hierarchy. Those who are good risk handlers often rise in the hierarchy, and those who are not good at risk handling remain stationary or regress, either by demotion or by leaving the organization. Several attempts have been made to identify and measure these differences, and some success has been realized. A brief review of the literature indicates several techniques for assessing risk-handling ability.

### Risk Measurement and Utility Analysis

Friedman and Savage observed that individuals faced with alternatives differing in degree of risk will display differing reactions to that risk. These reactions can be rationalized by an extension of orthodox utility analysis.<sup>1</sup>

By utilizing techniques of observable individual behavior and generalizing the evidence on the behavior of consumer units, Friedman and Savage developed a graph of the function describing the utility of money income. The graph plots the utility gained by an individual for increases in monetary income and is applicable directly to analysis for utility for risk. This was shown by Coombs and Pruitt in their studies of variance preferences that extend the concept of utility for risk.<sup>2</sup> The present study simply changes the concept of utility for money to utility for risk, thereby providing a framework for analysis of utility for risk.

The Friedman-Savage model is useful in this study because it indicates a method for detecting risk-handling abilities. One major finding of the utility model is that while the graph is positively sloped initially there is a point above which utility increases at a decreasing rate with respect to risk. At this point, an individual would expect to receive less utility for each additional unit of risk. The individual would accept no more risk, since his or her marginal utility would begin to increase at a

decreasing rate. In other words, more risk would be unacceptable at this point.

By detecting in the utility function this point at which individuals seem to turn away from risk, individuals in the study can be compared easily. This point, which is referred to in this study as the turn-away-from-risk-point (TAFR), provides a measure for the risk characteristics of an individual. The data provided by this measure are used in this study to calculate the risk index (RI) on an individual basis. The technique used is original, having been developed by the author from the utility models of Friedman and Savage and Coombs and Pruitt. To validate the technique, it is compared to other risk measures that have been validated. (See Chapter IV, pp. 110-111.)

#### Risk Measurement and Probability Preferences

Another method for measuring risk involves the concept of probability preferences developed by Atkinson. In his studies, Atkinson found that strength of motivation and risk-handling capacity were highly correlated. He also found that motivation to achieve is greatest when uncertainty is greatest.<sup>3</sup> Since uncertainty is greatest when probability is at one-half (0.50), an individual who is highly motivated prefers intermediate probabilities of success when handling situations involving uncertainty. Atkinson found a similar differential preference for intermediate risk by persons high

in risk-handling capacity.

The testing of the theory of probability preferences provides a substantiated tool for studying individual risk-handling capacity. Atkinson developed a valid, reliable test for assessing risk-handling capacity. He presented subjects with sets of alternative situations, the expected values in a given set being held equal and the probability of winning and the value won being varied. The probability multiplied by the value to be won gives the expected value of the alternative. Following is an example:

Choose the alternative you prefer (expected value = \$.30):

1. 1/6 probability of winning \$1.80
2. 2/6 probability of winning \$0.90
3. 3/6 probability of winning \$0.60
4. 4/6 probability of winning \$0.45
5. 5/6 probability of winning \$0.36
6. 6/6 probability of winning \$0.30

Persons high in risk-handling ability would be expected to choose intermediate probabilities such as 3/6 or 4/6 rather than 1/6 or 6/6. Their degree of adherence to the theory can then be measured, indicating their risk-handling capacity.

This same test is used in this study for two reasons: it will measure risk-handling capacity in and of itself, and it will provide a comparison for the heretofore unvalidated utility test developed by the author from the techniques of Friedman and Savage. In this way, this test can be validated through correlation analysis.

Using the tools supplied by Friedman and Savage, Atkinson, and Coombs and Pruitt, the question, How much risk is an individual willing to bear? can be answered. Individual risk-handling capacity has been the focus of these studies, and they have had some success. The present study uses them in combination by implementing the utility model through use of the variance preference and utility models. It then provides validation for the utility model through correlation analysis with the validated probability preference model to give a measure of risk-handling ability.

#### Measuring Risk and the Time Span of Discretion

The other area of concern when measuring an individual's risk-handling ability is expressed by the question, How long is an individual willing and/or able to bear risk? Jaques narrowed the topic by limiting his definition of time span of discretion to encompass the individual's given decision-making role. He found that a direct relationship exists between time span of discretion and level of work attained in the business enterprise.<sup>4</sup>

This concept is related to this study because of the finding that time span of discretion in the business enterprise follows the same pattern as does risk-handling ability. Top executives who have proven their risk-handling ability also perform their decision-making role in terms of longer time span. For example, the President of the United States

performs his role in a longer time frame than does the shop steward.

The measurement techniques employed by Jaques in his studies of time span of discretion involve an accurate approximation of the length of time that passes between assigning a discretionary task and reviewing the progress that has been made toward completing the task. Many times a formal review is not possible. In this instance, the detection of marginally sub-standard discretion, either in terms of inferior quality or unacceptably slow progress, constitutes a review process.

There are other measures of time span of discretion that are easily identifiable in discretionary roles. Among them are 1) length of time in current position, 2) types of decisions made in role, 3) amount of money involved in the decisions made in role, 4) frequency of performance evaluation of the organization by an individual, 5) time required to train someone to assume the duties of the discretionary role, and 6) length of advance time an individual uses to project trends associated with the role.

Using the time span of discretion model developed by Jaques, an accurate measurement of the time element of risk involved in discretionary roles can be obtained. When used in conjunction with the techniques of Friedman and Savage, Coombs and Pruitt, and Atkinson, a model for measuring the risk-handling ability of an individual in a discretionary



role is obtained. From this model, this study attempts to discover any relationships associated with these risk measures that are successful predictors of success.

### Objectives of the Study

The objective of this study is to develop a model of risk measures that can be used by personnel managers in selection and placement of personnel. This is done by implementing the time span of discretion and risk-handling measures discussed above. The scope of the research is limited to the insurance industry, especially the independent property-liability insurance agencies in the State of Georgia. This industry lends itself to study because of the apparent causative relationship between individual ability to handle risk and the independent variable in the study, success. The major task of the study will be to identify the risk measure, either time span of discretion or risk propensity, that is the most highly correlated with success.

The measure of success to be used will be assessed on the basis of the individual's perceived notion of success. Moment and Fisher suggested that success might prove to be a good benchmark for a study involving effective decision-making and risk-handling when they reported that effectiveness in decision making and the execution of the tasks of managerial roles were closely related to satisfaction, a notion of perceived success.<sup>5</sup> If it is assumed that success is desirable, and there is a detectable

relationship between success and any of the aforementioned risk measures, the objective of the study will be realized. It will be possible to predict success among individuals by applying the appropriate test.

### Methodology

The data-gathering technique used here is the survey method. The population of independent property liability insurance agencies in the State of Georgia, at the time of the survey, was composed of 1,488 agencies. For the first mailing, five hundred agencies randomly were chosen to receive questionnaires. Directions for completing the questionnaires were provided in a cover letter.

The correspondence was mailed to the principals of the agencies, who were instructed to choose in their agency an employee who had reached, for all practical purposes, a terminal position. The principal then filled out the information requested on the questionnaire and instructed the employee to do the same on a second questionnaire that also was provided. Thus data were gathered for the principal and an employee of each agency. Analysis of the two groups of questionnaires shows differences existing between proven successful persons and those who have not been as successful.

To the initial mailing, 117 principals and 65 employees replied, for response rates of 23.4% and 13%, respectively. The low response rate was indicative of

possible non-response bias, which must be taken into account in the interpretation of the results. Because of the nature of the information required by the study, respondents remained anonymous. Follow up on those who did not reply, therefore, was impossible.

To obtain a larger number of responses for analysis, however, a second mailing was sent to another random group of 500 agencies. The response rates for the second mailing were 17.8% for the principals and 9% for the employees. The over-all response rates for the principals and the employees were 20.6% and 11.1% respectively. Using t-tests for significance, it was found that significant difference exists in only one variable of the thirteen tested. This variable was used in the calculation of the probability preference measure for employees when using the agency's money. (See Chapter IV.) From these data, it can be concluded that, except for the one variable mentioned, no significant difference exists between the two mailings. The data are still subject to possible non-response bias.

The data were then scored to calculate a risk index (RI) (Friedman and Savage), a probability preference index (PI) (Atkinson), a variance preference index (VAR) (Coombs and Pruitt), and a time span of discretion index (TSD) (Jaques). For PI, VAR, and TSD, the scoring techniques developed by the respective authors are adapted for use in

the study. For RI, the author of this study devised an original scoring technique based on the concepts of utility developed by Friedman and Savage. The validity of this measure is demonstrated by comparing it with a validated measure, the probability preference model developed by Atkinson. Reliability of the RI is established by the fact that there is no significant difference among twelve of the thirteen variables compared between the two mailings.

Along with the success measures, the calculated indices are used as input to a computer model for correlation analysis. For this purpose, factor analysis is used. The model provides means, standard deviations, and coefficients of variation for the variables and calculates the correlation coefficients for them. These data are then analyzed to determine the degree of statistical difference existing between the means of the distribution variables as well as the correlation that exists between them. From this model, the hypotheses of the study can be tested.

#### Hypotheses

To identify the risk-handling abilities of the individuals in the samples, the distinction is made in the study between occupational and personal roles. Since this study primarily is concerned with the occupational role, it is necessary to distinguish it from the personal role. The

questionnaires were designed to inquire about both roles to enable comparison between them. Hence, there are indices calculated from the data gathered for occupational roles and personal roles.

The first hypothesis is designed to measure this difference between the two roles. It is stated as follows:

**Risk Hypothesis:** There is no significant difference between the perception of risk in personal roles as compared to the perception of risk in occupational roles for the individuals in the sample.

**Criteria:** Accept the Risk Hypothesis if there is no significant difference between the two distributions as measured by the instrument at the 0.05 level. (See Appendix D.)

The other hypotheses are concerned with the measure that is the better indicator of success in personal and occupational roles, respectively. The two measures to be tested represent the two aspects of risk-handling behavior mentioned previously, namely, the amount and type of risk an individual is willing and/or able to bear and the length of time a person is willing and/or able to bear risk. These hypotheses are stated as follows:

**Success Hypothesis, Personal:** In personal roles, the risk propensity index provides a better indicator of success than does the time span index.

**Criteria:** Accept the Success Hypothesis, Personal if there is a significantly higher correlation between

the risk propensity measure and success in personal roles than the correlation between the time span measure and success in personal roles. Tests for significance are at the 0.05 level.

Success Hypothesis,  
Occupational:

In occupational roles, the risk propensity provides a better indicator of success than the time span index.

Criteria:

Accept the Success Hypothesis, Occupational if there is a significantly higher correlation between the risk propensity measure and success in occupational roles than the correlation between the time span measure and success in occupational roles. Significance is tested at the 0.05 level.

The testing of these hypotheses should identify any measures from those examined that are applicable to the objectives of the study. This analysis also will give an indication of the strength of the correlation and will allow conclusions to be drawn as to the possible effectiveness of the best measure.

### Results and Conclusions

Before entering into any analysis involving the risk-propensity index as a measure, the RI, which is scored according to the author's original scoring technique, must be validated. This is done by comparing the correlation coefficient between the unvalidated RI and the previously validated (Atkinson) probability preference index in both personal and occupational roles. If a significant correlation

between the variables is found (RI and PI), the technique for calculating the RI is valid. The data are as follows:

For Principals: Correlation coefficients between the RI and PI

Personal roles	.89270
Occupational roles	.89954

For Employees: Correlation coefficients between the RI and PI

Personal roles	.90740
Occupational roles	.89157

Analysis of these correlation coefficients shows that there is no significant differences between the results obtained by the RI and the PI and therefore validates the results of the RI.

Having demonstrated that the RI is a valid measure in terms of the PI as validated by Jaques, the first hypothesis can be tested. It involves the perception of risk in personal and occupational roles.

The relevant data are as follows:

<u>Personal Roles</u>		<u>Occupational Roles</u>	
Principals	$n_1 = 206$	$n_2 = 206$	
( $t = 1.96$ 0.05 level)	$\bar{x}_1 = 3.13$	$\bar{x}_2 = 2.89$	
	$\sigma_1 = 1.54$	$\sigma_2 = 1.59$	
Employees	$n_1 = 111$	$n_2 = 111$	
( $t = 1.96$ 0.05 level)	$\bar{x} = 2.85$	$\bar{x}_2 = 2.72$	
	$\sigma_1 = 1.51$	$\sigma_2 = 1.61$	

The t-values calculated from these data are:

Principals:  $t = 1.568$       Employees:  $t = 0.618$ .

Consequently, the Risk Hypothesis must be accepted with the conclusion that there is no significant difference in the perception of risk by the samples in occupational roles versus personal roles.

The other set of hypotheses is concerned with detecting the better predictor of success, the time parameter of risk taking versus the amount/type of risk parameter. To determine which of these parameters is the better predictor of success, correlation analysis is used. The correlation coefficients of the time-span measure and the risk-propensity measure versus success in both personal and occupational roles are the basic instrument for this analysis. The pertinent data are presented in Table 1.

The Success Hypothesis, Personal is concerned with personal roles for both principals and employees, and the data show that the time span indices (TSD) are more highly correlated with success than are the risk indices (RI) (Principals: TSD vs. Success = .96014; RI vs. Success = .86475 / Employees: TSD vs. Success = .96020; RI vs. Success = .86847). Using the Fisher  $z'$ -transformation to test for significance (see Appendix E for calculations), we find that the difference is significant at the 0.05 level.<sup>6</sup> It is significant, in fact, beyond the 0.001 level for infinite degrees of freedom, proving that the TSD is a better



measure of success in personal roles than is the RI.

TABLE 1  
DATA USED IN TESTING THE  
SUCCESS HYPOTHESES

Variable Correlation Coefficients	Perceived Success, Personal	Perceived Success, Occupational
	<u>Principals</u>	
Time Span Index	.96014	.96927
Risk Index	.86475	.85966
	<u>Employees</u>	
Time Span Index	.96020	.95834
Risk Index	.86847	.83583

The Success Hypothesis, Occupational is concerned with occupational roles and, again, the data show that the TSD is more highly correlated with the success measure than is the RI (Principals: TSD vs. Success = .96927; RI vs. Success = .85966 / Employees: TSD vs. Success = .95834; RI vs. Success = .83583). Applying the Fisher  $z'$ -transformation to these data, we find that the difference is significant at the 0.05 level. It also is significant beyond the 0.001 level. It is clear that the TSD is a better predictor of success than RI in occupational and personal roles.

It is important to note at this point that the correlation coefficients for these indices versus perceived success are very high. The range for the correlation coefficients for TSD versus success is from .95834 to .96927. For the RI versus success, the range is .83583 to .86847. Both measures can be said to be relatively powerful predictors of success, but the significant difference, with the TSD being the more highly correlated measure with success, shows that the TSD is significantly superior to the RI measure as a tool for assessing possible success in role performance in the business organizations studied herein. This finding has strong implications for the personnel manager because it can give him or her a better assessment of the future of a given individual in the organization.

Identification of the TSD measure as the better predictor of success in organization and personal roles is not the last step in the process. It can be argued that knowing an individual's perceived TSD is of little help in and of itself in determining the suitability of that individual for a given occupational role. Unless the role itself can be assessed as to the time-span requirements, knowledge about an individual is useless.

The techniques employed by Jaques are concerned not only with the individual. He demonstrated that the TSD can be calculated for the role itself by any of several methods,

which are explained in Chapter II in detail. By using the techniques developed by Jaques, the time span of the individual and of the role can be measured. The process of personnel selection then becomes a matter of matching the perceived time span of discretion of the individual to a role of similar time span requirements. The results of this study show that this method of personnel selection and placement could be of great value to the personnel manager.

#### Appurtenant Data from the Study

In preparing this study, much data that are not directly related to the major hypotheses have been gathered (see Appendix C). These data reflect certain characteristics of the samples that are important in identifying certain demographic aspects of the samples. The following summary is included to describe and compare and contrast the samples.

As might be expected, on the average the principals are older, better educated, and better paid than the employees. The majority of principals are male, while the majority of employees are female. Very few individuals in either group have earned a professional degree such as the CPCU designation.

The principals generally have been in their position longer than have the employees and are faced with more ambiguous decisions. Related to this is the amount of money involved, on the average, in decisions made by the two groups. Characteristically, the principals were faced with

decisions involving significantly more money than were the employees. The former also were evaluated less frequently than the latter, indicating a longer time span of discretion. The employee group preferred to be reviewed more often than the principals, supporting the time-span conclusions concerning inherent differences in the two roles. There is no statistically significant difference in success or satisfaction between the two samples.

The results of the calculated indices used in the study show no significant difference between the principals group and the employees group in any index (VAR, RI, PI, OR TSD). Although the differences are not statistically significant for any index, the results obtained from the variance preference index and the risk index seem to contradict each other. The shift from their own money to the agency's money showed a slight increase in utility for risk in the variance preference measure for the employees only, while the risk measure showed a decreased utility for risk for the same shift in both groups. If these results were statistically significant, this would be an important discrepancy and would be contrary to the theories on which this study is based. It is accepted generally that individuals exhibit more utility for risk with someone else's money than with their own. This is supported by the results shown by the probability preference index. Such was not the case with the variance preference index and risk index. If

significance could be established (such was not the case here), the theory of variance preferences or the risk calculations would be contradicted. As it is, the results only cast doubt on the theory of variance preferences in these samples rather than contradict the theory outright. They also could give rise to questions as to the risk characteristics of the samples and the risk measure itself.

As expected, the time-span index for the principals indicates a longer time frame in which they are allowed to work than that for the employees. The probability preference index indicates that both groups prefer intermediate probabilities, with the principals showing a stronger adherence to the theory than the employees.

#### Further Analysis of the Correlation Matrix

Aside from the data in the correlation model that applies directly to the main hypotheses tested, there is much useful information presented concerning the relationships among the variables. From these additional data, several questions that might occur can be answered. Among these are questions relating to the relationship between age and time span of discretion or between age and success, for example. It is important to note that all the correlation coefficients discussed here are statistically significant because of the relatively large sample sizes. This discussion, therefore, must be made in terms of relative

strength of the correlations rather than the statistical significance. Even so, these relationships are interesting.

To further analyze the correlation matrix (Table 2 below), the correlation coefficients between age, education, compensation, and satisfaction and the indices calculated for the risk measures are examined. Age appears to be highly correlated with time span and success, while being less highly correlated with the risk indices, probability indices, and variance preference indices. The variable lowest correlated with age is the turn-away-from-risk point, which is to be expected because the TAFR measure should exhibit a tendency toward intermediate risk for the highly successful individuals.

The correlations with the education variable are very similar to those with the age variable, with time span and success being highly correlated with education. The correlations between education and the risk measure, the probability preference measure, and the variance measure are lower than between TSD and success. Again, the correlation between education and TAFR also is lowest of the indices examined.

The compensation variables were highly correlated with the TSD and success, as would be expected, but they are not as highly correlated with the risk measure as are the age and education variables. Compensation seems to be more highly correlated with the variance preference measure than with the risk measure. The TAFR measure again was the

TABLE 2  
CORRELATION MATRIX SUMMARY

Variable Number	TSD <sup>a</sup> (45)	RIO <sup>b</sup> (46)	RIA <sup>c</sup> (48)	PIO <sup>d</sup> (47)	PIA <sup>e</sup> (49)	VARPL <sup>f</sup> (21)	VAROL <sup>g</sup> (22)	TAFRO <sup>h</sup> (43)	TAFRP <sup>i</sup> (44)	Success, P <sup>j</sup> (19)	Success, O <sup>k</sup> (18)
<u>Employees</u>											
Age (1)	.90382	.79892	.76288	.80472	.76382	.82195	.79376	.66100	.61858	.89166	.88059
Education (2)	.93534	.85065	.83591	.84577	.85179	.88024	.86038	.73339	.72007	.92677	.92349
Current Compensation (5)	.93675	.82963	.81416	.80578	.80051	.87901	.85873	.70408	.67607	.92371	.91989
Past Compensation (7)	.96171	.87254	.85106	.84078	.82716	.88969	.86792	.72967	.69477	.96362	.96014
Satisfaction Personal (16)	.95499	.86607	.84988	.85123	.82027	.87249	.85507	.73393	.68934	.98453	.96504
Satisfaction Occupational (17)	.94320	.84747	.82450	.83555	.81189	.84816	.82816	.70499	.66295	.96225	.96314

a = Time Span of Discretion  
b = Risk Index, Own Money  
c = Risk Agency, Agency Money  
d = Probability Index, Own Money  
e = Probability Index, Agency Money  
f = Variance Preference, Personal Life  
g = Variance Preference, Occupational Life  
h = Turn Away From Risk, Occupational  
i = Turn Away From Risk, Personal  
j = Success, Personal  
k = Success, Occupational

TABLE 2 (Continued)

Variable Number	TSD <sup>a</sup> (45)	RIO <sup>b</sup> (46)	RIA <sup>c</sup> (48)	PIO <sup>d</sup> (47)	PIA <sup>e</sup> (49)	VARPL <sup>f</sup> (21)	VAROL <sup>g</sup> (22)	TAFR <sup>h</sup> (43)	TAFR <sup>i</sup> (44)	Success, P <sup>j</sup> (20)	Success, O <sup>k</sup> (18)
<u>Principals</u>											
Age (1)	.94908	.83855	.81990	.82713	.82254	.85623	.83175	.73031	.68102	.91802	.91415
Education (2)	.94928	.87731	.86425	.85239	.84094	.88611	.87465	.77176	.73523	.93758	.94106
Compensation (5)	.92669	.79974	.79915	.79309	.78064	.84293	.83326	.69671	.67500	.89356	.91213
Past Compensation (7)	.91021	.78195	.77765	.78242	.77047	.82902	.81592	.68697	.66102	.87799	.88794
Satisfaction Personal (16)	.95309	.84835	.83286	.81527	.80704	.87431	.86016	.72975	.68926	.97655	.96123
Satisfaction Occupational (17)	.95255	.85587	.83987	.82847	.81616	.95984	.86169	.74192	.70144	.95984	.96648



lowest correlated variable with the compensation variable.

The satisfaction measure seems to be highly correlated with TSD and success, as would be expected, and the correlation between these variables is very high. An interesting observation is that the satisfaction in occupational roles is very highly correlated with the variance preference measure for occupational roles. This might lead to the conclusion that variance in terms of the Coombs and Pruitt model is a highly important factor in job-related satisfaction, thereby supporting their findings.

While no concrete conclusions that are statistically significant as to the strength of the correlations can be drawn from this discussion, the data presented here do give additional information about the sample and the risk measures involved in the study. No major contradiction of any theory is evident from these data, but there is some support given to the pertinent theories.

#### Summary

The major objective of this study is to develop a predictive model to aid the personnel manager in selection and placement of employees. In terms of the concepts of risk-handling behavior utilized here, this has been done. Of the measures of risk-handling ability examined, the time factor was found to be the most important. This aspect, which is concerned with the amount of time an individual is

willing and/or able to bear risk, known as the time span of discretion, was shown to be the best predictor of success in organizational coping and is shown to be typified on the individual level as indicated by Jaques. It also was found that there is no significant difference in the perception of risk from the personal role to the organizational role among the individuals tested.

It must be realized, however, that this study is limited by the fact that it deals with a dynamic topic in a static time frame. That is, the techniques proposed and tested here must be implemented in an actual organizational setting for a time to see if those persons whom the model projects as being potentially successful individuals actually turn out to be successful. This would require years of evaluation and is not possible in a one- or two-year time frame. Further research definitely is indicated here.

The implications of the study are indeed important. The matching of time-span requirements of a particular role to the perceived time span of discretion of an individual, in terms of the techniques used in this study, could prove to be a highly valuable tool to the personnel manager. If the model is as successful as this study indicates, changes in the theory of personnel selection and placement are indicated.

### Footnotes

<sup>1</sup>Milton J. Friedman and L. J. Savage, "The Utility Analysis of Choices Involving Risk," Journal of Political Economy, LVI (August 1948), 279-304.

<sup>2</sup>C. H. Coombs and D. G. Pruitt, "Components of Risk in Decision Making: Probability and Variance Preference," Journal of Experimental Psychology, LX, No. 5 (November 1960), 265-277.

<sup>3</sup>John W. Atkinson, "Motivational Determinants of Risk-Taking Behavior," in A Theory of Achievement and Motivation (New York: John Wiley & Sons, Inc., 1966), pp. 359-372.

<sup>4</sup>Elliott Jaques, Equitable Payment (London: Heinemann, 1963), pp. 11-12.

<sup>5</sup>David Moment and Dalmar Fisher, Autonomy in Organizational Life (Cambridge, Massachusetts: Schenkman Publishing Co., Inc., 1975).

<sup>6</sup>J. F. Kenny and E. S. Keeping, Mathematics of Statistics (2d ed.; Princeton, New Jersey: D. Van Nostrand Company, Inc., 1951), II, 221-223.

CHAPTER II  
LITERATURE REVIEW

The Concept of Work

Through the ages, the concept of work has undergone many changes. The Greeks, Romans, and Hebrews thought of work as painful drudgery; not until the Reformation did work take on a positive connotation. The Protestant Church established the notion that work not only was necessary to earn one's living but, more importantly, it was a means by which one could share profits with the poor. A new atmosphere and a changed attitude toward work prevailed.

By mid-nineteenth century in the United States, this Protestant or Puritan Work Ethic obtained full expression. It dictated that all who could must work; idleness is bad. By steady and methodical work alone can we build a great and prosperous nation. Work thus took on a good connotation, being a remedy for pain, loneliness, disappointment in love, death of a dear one, and doubts about the purposes of life.

The concept of work has been studied and analyzed like no other concept in the realm of human endeavor. Almost every facet of human behavior is postulated as being

directly or indirectly related to work. J. A. C. Brown states,

Work is an essential part of man's life since it is that aspect of his life which gives him status and binds him to society. . . . That there are often many aspects of work which men do not like is self-evident, but there are few people who are not more unhappy without work than with it, even when we exclude the financial reward altogether.<sup>1</sup>

Frederick Herzberg et al. focused on an important aspect of work in their study on motivation to work.<sup>2</sup> Their primary conclusion was that the most significant factor contributing to the mental health of a majority of our citizens was the potential for motivation to work. While their prescriptions could not be applied to some segments of our society, they rejected the notion that the future would render work more meaningless to most people and the pursuit of leisure would become the prominent motivator of society. They expressed belief that fulfillment is found in activities meaningfully related to one's own needs as well as those of society. As far as the manager in the work place is concerned, they determined that his task is to structure the work situation so that the worker can get maximum satisfaction of personal needs while meeting the needs of the work organization or the larger society.<sup>3</sup>

The importance of work to the present study centers on the relationship between work and role. That is to say, if man perceives an imbalance between his assigned work

role and his capability or desire to perform tasks associated with the role, he may become dissatisfied and inefficient, hurting himself, his co-workers, and the organization as a whole. If there were some valid way that the capability of an individual to perform the tasks of a given work role could be measured, the possible imbalance could be identified and alternative action could be taken to ensure that the imbalance would be alleviated.

The concept of work in its economic sense involves the exercise of discretion within the prescribed limits of the role in the business enterprise. What is meant by exercise of discretion? For all practical purposes, it refers to making choices in situations involving uncertainty. In the vernacular of today's business enterprise, this process is known as decision making. The success of an individual exercising discretion in role is related directly to the quality of decisions made by that individual. (If he can and does make effective decisions, it follows that he is proficient in his decision-making capacity.) The ramifications of the decision-making process may or may not be intuitively obvious to the decision maker, that is, he may or may not be able to discern the outcome of any given decision or group of related decisions, but his exercise of discretion directly affects not only his success in the task at hand, but also his perceived satisfaction in role. This in turn affects his performance

in the enterprise and the performance of the enterprise as a whole. The close relationship between exercise of discretion and success and satisfaction leads to the question, Is there some method by which an individual's success in making decisions in a given role could be predicted before or during his assignment to a role requiring exercise of discretion? More specifically, is there a level of decision making within the enterprise at which we could expect an individual to be best suited to carry out the expected discretionary tasks, within the prescribed limits of the task, according to his inherent ability to handle uncertainty and make decisions? The identification of such a level of work could be the key to solving the problem of personnel selection.

It seems that identification and evaluation of an individual's ability to handle the decision-making aspects of particular tasks could lead to an assessment of that individual's ability to cope with the discretionary responsibilities of a given task. Such a technique could lead to a better "fit" between the abilities of individuals and the requirements of the roles that are assigned to them and therefore produce a higher level of satisfaction and success, both for the individual in role and the organization as a whole. This would enhance the quality of output of the enterprise and would lend itself to the propositions of Herzberg et al. concerning the ultimate goal of

the enterprise, namely the prime motivation factors for individuals in their roles in business enterprises.

#### Detectable Differences between Personal and Occupational Roles

Since larger amounts of money are involved in occupational role decisions than in personal role decisions, it is believed that the approach in the enterprise to handling risk, a factor of perceived notions, will differ from the approach to handling risk in personal life.

There also exists a possible difference in the type of risk involved in each role. In the personal role, the risk affects the individual alone, except for those members of his family who are indirectly affected. It can be argued that this also affects the organization of which the individual is a part, since any factor affecting one member also affects the organization as a whole. The effect on the organization, however, is relatively minor compared to risks that affect the organization directly. In decisions involving the organization as a whole, the individual is affected indirectly and the organization is affected directly. This could lead to a difference in the perception of risk from organizational to personal roles.

#### The Success Parameter

To identify those individuals who are proficient in exercise of discretion, a measure of perceived success is used. Because the term success is abstract, the focus is



on the notion of perceived success, allowing the subjects of the study to make value judgments about their attained success. Every person has an innate feeling about his or her level of success. The evaluation of that level probably is accurate, since criteria for success are known to the person, at least subjectively.

Pertinent information concerning the individual and his or her role in the business enterprise is given by Moment and Fisher in their book, Autonomy in Organizational Life.<sup>4</sup> They examined the aspects of decision making leading to effectiveness in managerial roles and identified certain characteristics that typified the effective decision maker. They found that effectiveness in decision making and the execution of managerial role tasks were related closely to satisfaction and, therefore, to perceived success. This indicates that perceived success might prove to be a good benchmark for a study of effective decision making and the practices and attitudes of those who make effective decisions.

Moment and Fisher express an attitude toward work that is concurrent with the definition used in this study (pp. 40-41). A series of questions included in their book points towards some of the questions asked here:

Is there any utility in thinking of organizational life as "work," or would it be more accurate to describe it as "role performances" by trained and indoctrinated actors? Can there be no meanings other than dramatic and political to

working? Must ambitious young men and women ultimately succumb to the historically aristocratic view of finding one's position and filling it graciously, rather than accomplishing something more than good acting? In short, what are the possibilities for people finding personal gratification in organizational work?<sup>5</sup>

In evaluating these questions and others that are related closely to them, it is evident that some technique is necessary to enable ambitious young men and women to find personal gratification and success rather than succumb to the historically aristocratic view of "filling a position." This study seeks to identify such a tool.

#### Comparison of Time Span and Risk Handling in Indicating Success

An important concept to be explored involves determining which is the better predictor of success in role, time span or risk propensity? (These concepts are discussed later in this chapter.)

These two concepts have been chosen for study here, to the exclusion of others, because they relate to two of the most important parameters of decision making, namely, the length of time one is willing an/or able to bear the risk of the decision-making process and the amount and type of risk a person is willing and/or able to bear in the process.

After implementing the time-span measurement techniques and the various risk-propensity measures, computer analysis will determine in personal and occupational

endeavors which measure is the better indicator of success and has the most bearing on the satisfaction and success experienced by individuals. This is an important concept as it will identify those areas of the enterprise that give rise to its ultimate success in terms of the individuals who compose its work force. If either time span or risk propensity can be shown to be significantly better than the other at measuring success, it could lead to a technique for personnel selection and placement that would assure a better fit between employees and their occupational roles.

#### Implications for Indicating Future Success and Performance

The approach used in this study could have far-reaching implications for the personnel officer concerning the role for which a person might best be suited. In the past, there has been a tendency to focus attention on the available individuals in the job market and to find an individual who can fill a predetermined slot in the executive system. The individual is a variable, and the role is rigid. This technique has some merit and has been used extensively, but it has several drawbacks.

If there is conflict between the abilities of the individual and the requirements of the role, the individual is forced to conform to the role structure and dissatisfaction results. The personnel officer is faced with the decision of whether to hire the best available employee or

one who can fit the available role. This assumes that he has at his disposal some techniques for identifying the various capabilities of the individual as well as the requirements of the role.

The indicators utilized in this study might prove that it is possible to determine the level of work required in a given role. The task then would be to select an individual whose preferred level of work is commensurate with the role to be filled.

This can be accomplished through a time-span analysis or risk-propensity analysis (as described later in this chapter), which evaluates the role and the person who performs that role. Since roles in today's organizations are relatively rigid in nature, such analysis may provide a better evaluation of both role and individual, enabling better conformity and promoting a better situation for the incumbent in role and, hence, a greater level of success.

#### A Description of the Roles to be Studied

The roles to be studied herein are those of the principals of independent property-liability insurance agencies and employees of those agencies. A description of the role of principal is interesting and complex.

The person occupying the role of principal is the chief executive officer of the enterprise and must perform a myriad of tasks that vary somewhat with agency size. The

larger agencies provide subordinates to perform some of the day-to-day tasks. Even so, responsibility for the enterprise inheres in the role of principal. He or she is charged with managing the operations of the agency and deciding which products to offer, requiring further decisions regarding types of policies to write and with which companies. In this role, he or she is faced with choices involving product mix and company mix, both of which vary widely across the industry.

Also inherent in the role are financial policy making (whether or not to extend credit, how to invest premiums received but not yet due to the insurance company), selecting and implementing accounting procedures whether computerized or not, setting salary and commission levels for employees, and handling or overseeing the personnel and hiring practices of the agency. These and other in-shop activities are the sole responsibility of the principal. Moreover, there may be a board of directors whose demands for performance must be heeded.

In addition to these activities, the principal frequently is called on to sell or service policies since customer satisfaction and renewal business is of major concern to the agency. The establishment's growth pattern must be planned carefully by the principal, who must not upset a profitable policy-company mix. He or she also is responsible for keeping abreast of the new developments in the industry

as far as policies and products offered are concerned. Despite the complexity of the role--there are many other tasks too numerous to mention here--the principal must be aware of and understand all agency transactions.

In all of these areas of endeavor, the agency principal must make decisions while being faced constantly with varying degrees of uncertainty with which the agency must cope. The role certainly requires that the principal be one of the individuals in the executive system most familiar with the decision-making process. And if the agency is to be successful, the principal must be a better-than-average, if not superb, risk handler. Otherwise, the requirements of the role would be too great.

There are those individuals, of course, who acquire their agencies through inheritance or direct or indirect purchase. In some cases, these individuals are not the principal decision makers in the agency, and some control must be instituted in order to minimize bias owing to their influence on the statistics given by the sample. Such principals may or may not be of ability equal to the others. For the most part, the individuals of interest in this study are those who serve as ongoing leaders and principal decision makers in their respective agencies. Their common characteristics will be sought to identify those behavior attributes that contribute to the decision-making process of the successful agency enterprise.

### The Definition of Work

Before entering into a definitive study of man's relationship with work in the occupational role and the perceived success therefrom, there must be established a concrete definition of work that eliminates semantic vagueness concerning the concept. The concept of work also must be related to the purposes of this study to show the importance of the concept of decision making in common work. The remainder of this chapter explores these concepts and provides the theoretical framework for analysis in this study.

There are many concepts referred to as work. In physics, work is defined precisely as the operation of force in producing movement of mass through space. But this definition does not apply to work in the psychological sense. According to the physics definition, in holding up the world with his shoulders Atlas would be doing no work since there is no motion involved. Nevertheless, in psychological terms, he would certainly be working. It is the essence of the definition of psychological work, the work the individual perceives himself or herself to be doing, that is of utmost importance in this study. Therefore, when work is mentioned herein, the cogent concept is that of psychological work.

Dictionary definitions of work refer generally to something that is done, some action that involves exertion

directed to some specific end, for example, the gaining of one's livelihood. There also is no indication given as to how the content of psychological work might be measured. Often there is a distinction drawn between manual work and so-called brainwork. But whether brainwork is more difficult, more fatiguing, or more valuable than physical work is left to the imagination of the reader. The difficulty stems from the lack of any common social framework within which the whole issue of the value of work may be considered.<sup>6</sup>

The economic view of work approaches the concept in terms of the value of labor or its productivity, neither of which takes us to the heart of the problem, since there is no clear indication of what is meant by labor in the context of psychological work. Productivity is of no more help, since it attempts to describe the result of work. It is a term implying the results of effort of many persons and is of no value unless we can separate the individual contributions of the members of the group contributing to the whole.

There are several requirements that the definition we seek must meet, for this study seeks to identify the relationships among satisfaction, success, and other concepts to which work is related. Any such definition must meet the normal conditions of any scientific definition. It must be objective, comprehensive, and exclusive, and it



must serve as the basis for quantification. Since the value of labor also is felt in terms of the amount of responsibility carried, it must encompass the notion of responsibility in relative degrees for the various types of work being done. In Measurement of Responsibility, Jaques gives us such a definition: work is the exercise of discretion within prescribed limits in order to reach a goal or objective.<sup>7</sup> This definition is consistent with common usage and distinguishes between the two major components of the activity of work, namely, the discretionary content that a person is expected to exercise and the prescribed content, comprising the rules, regulations, procedures and policies, the customs and practices, and the physical limitations that set external limits within which discretion can be exercised. Within this framework, the definition of work leads to the description and quantification of the measurement of work in terms of the discretion exercised in the execution of the work role.

#### The Concept of Work in this Study

The above definition admittedly is general in scope, and it remains to distinguish the field of work with which we are concerned in the realm of psychological work. In general, the types of work are distinguished by the goal of the work, in terms of the discretion exercised. If the distinction is made between economic work and non-economic work, this is sufficient for the purposes of this study.

The concept important here is that of economic work, and by that is meant all work whose designated goal is part of the network concerned with the distribution of goods and services. Economic work comprises two forms, each generating its own measure of economic return: entrepreneurial work and contractual employment work. The entrepreneur owns enterprises outright or controls them financially and directs their operation. Entrepreneurial judgment and discretion are exercised in setting objectives and standards and producing and selling the goods or services in relation to the resources available. The prescribed content is given by law, company regulations, or other legal limitations that govern company practices. The risk is personal and the entrepreneur takes chances with his or her own capacity to direct the business enterprise. As explained earlier, most of the functions of the principal of the independent property-liability insurance agency are of this type.

Employment work is that of carrying out designated tasks and does not carry responsibility for setting goals or objectives. Although it may not be clear what an employee is to do, the results to be achieved in the work role are always set. Every member of an organization established to do work does employment work, including the chief executive, all managers, and all subordinates. This leads to the distinction between the legal owners of a company,

who do entrepreneurial work and the executive system of the company, established to do its work; or between the members of a company and the employees of the company. The concern of this study is employment work in which each employee of the business enterprise, in return for discharging the responsibilities of the role for which he or she was employed and has contracted to carry out, receives a wage or salary that generally increases with responsibility.

This type of activity is carried out in the independent property-liability insurance agency by employees and those principals who are involved in activities that are not merely entrepreneurial in nature. The techniques of decision making that lead to success in both groups need to be identified to describe the processes involved in the task.

There are at least two parameters that might be helpful in such a task, and they are indicated by two questions concerning decision making. Succinctly stated, the first is, How long is an individual willing and/or able to bear the uncertainty inherent in the decision-making process? This is referred to as the time parameter of the process and is measured in this study by the techniques of the time span of discretion model developed by Elliott Jaques in his studies detailed in Equitable Payment and Measurement of Responsibility. The second parameter of decision making relates to the questions, What types of uncertainty is an individual willing and/or able to bear and

in what amounts is the individual willing and/or able to bear the uncertainty? This question centers around the ability of an individual to cope with risk in role. There have been several techniques developed in the literature for assessing the notion of risk in individual behavior. Those of interest here involve 1) preference for intermediate probability, as indicated by John W. Atkinson in his studies involving motivation, achievement, and risk; 2) utility analysis of choices involving risk, as set forth by David B. Houston as well as Milton J. Friedman and L. J. Savage; and 3) the variance preference theory as explained by C. H. Coombs and D. G. Pruitt in their work concerning components of risk in decision making. These primary works are supplemented by the works of Herzberg and Richardson, Slovic, Lichtenstein, Rim, and other authors.

With the development of such tools and their implementation in a system designed to measure the effects of their relationships in the decision process, it is possible to correlate individual techniques for making decisions with other facets of the organizational behavior of these individuals. Such facets include satisfaction, success, salary level, length of time in position, types of decisions made in role, and other indicators of the results obtained or hoped for by the subjects of the study. It also is possible to make certain observations about the relationship

between the individual's occupational and personal life. This type of analysis should provide a clear picture of those particular decision-making techniques that relate to perceived levels of success and satisfaction in both roles.

As these indicators are identified through analysis, it should be possible to determine if one of them can be proved to be closely related to success either in personal or occupational roles. A determination will be made as to whether there is a pattern indicated upon which projections can be made concerning the prediction of whether an individual can be successful in the work role, given his personal measures of perceived time-span notions and ability to cope with the risk inherent in the decision-making process. It also should be possible to indicate what steps could be taken to increase the satisfaction derived by an individual from his respective roles, thus increasing the quantity and quality of his contribution to the organization as a whole and benefiting himself and the business enterprise as a whole.

As is to be expected in any dichotomous evaluation, one of the measures, time span or risk propensity, will be more highly correlated with success in exercising the discretionary requirements of the role. By ascertaining which is the more reliable predictor, a major step will have been taken in the direction of understanding the intricacies

of the decision-making process and a valuable tool will have been provided to determine an individual's ability to handle the occurrences he is likely to face in a given role. Before the techniques of measurement can be discussed, however, the process of decision making must be defined clearly.

### The Nature of Decision Making

Many times a day those individuals in multiple-task roles are faced with situations involving uncertainty. When the responsibility inherent in these situations is attributed to the organizational role of that individual, he or she must exercise discretion in some way to handle it. Since the responsibility is the individual's, the outcome of the situation involving uncertainty will reflect his or her ability to handle responsibility, either directly or indirectly. The process employed to handle these responsibilities involves making choices among the options perceived to exist for handling the situation. This process of selecting a course of action from among unlike alternatives is referred to as decision making.

### Risk Propensity and Organizational Structure

In terms more cogent to this study, the process of dealing with uncertainty, and therefore with the risk associated with each situation, could be called risk handling or risk coping. The facility with which the individual is

able to cope with these decisions relates to his propensity or ability to handle risk and uncertainty. Obviously, individual differences exist in the propensity to make good decisions. This is typified by the existence of the hierarchy or organizational design. In this hierarchy one can observe that those who are consistent in their decision-making ability and consistently good at it generally rise in the organization. Conversely, those who are not as good at handling the discretionary aspect of their role and as consistently good in their decision-making role generally rise to a point at which they are relatively satisfied and remain there. These two types of roles are functions of ability to cope with risk and give rise to the differences between the two samples used in this study, namely, principal and employee. In many instances, even when offered a higher level of discretion in role, whether through promotion to another position that involves larger magnitudes of outcomes or through change of discretionary situations in the same organizational role, incumbents will choose to remain at that level of employment they feel they can best handle. Their perceived level of employment is such that they are comfortable in performing their tasks because their abilities are closely matched to the demands of the role. This perception may be based on conscious or subconscious assessments of the role and their inherent abilities to cope in role, and this is a state of perceived equilibrium between ability

and required exercise of discretion.

In cases when there is a perceived disequilibrium between ability and required performance, the individual will seek to move toward equilibrium by shifting his job level to his ability, either through a change of jobs or a change of discretion within the current role. This can be accomplished through the executive system in the incumbent's organization or, if dynamism is not present in the organization, by changing to another organizational environment in which the opportunity for establishing the sought-after equilibrium state exists on the individual level.<sup>8</sup>

#### Individual Capacity to Cope with Risk

The ability to handle decisions is not necessarily static when typified on the individual level. As with any other human trait, this ability changes over time and it is possible to improve one's capacity with experience, coaching by someone who is more expert at the process, and more attention to the details of the given situation and its implied ramifications. Since uncertainty is involved in the decision-making process, and since more certainty (less uncertainty) leads to better decisions, the process enabling the decision maker to minimize uncertainty in the long run will lead to better knowledge of any given situation and, hence, better decisions. The identification of such a process would be invaluable to the individual



decision maker. Without at least a conceptual understanding of a valid process, one could expect little difference in risk-handling technique.

When faced with a situation involving uncertainty, which demands that a decision be made that will lead to some course of action, an individual has three general choices. The inherent value of each is obvious intuitively to the casual observer. An incumbent might choose to ignore the risk altogether and take no action. This might be caused by the attitude, I do not want to or cannot make a judgment about the situation; therefore, I will ignore it and suffer the consequences. This approach is unacceptable, especially in cases where the outcome of this inaction will be of any magnitude.

Another approach might be to try to shift the responsibility to someone else and let the outcome affect him or her rather than the original individual. This option has been discussed widely in the circle of decision theorists and eliminated as invalid since it is accepted generally that responsibility, as contrasted to authority, cannot be delegated legitimately to another. Responsibility remains with the principal decision maker and cannot be avoided unless his employment is shifted to another role or is terminated in some manner.

The third alternative that might be taken (ultimately it is the only one of the three that proves to be legitimate)

is to accept the risk of the decision and make an effort to resolve the situation first hand in the best conceivable manner. While this might involve using the skills of others in implementing the decision and even in making the decision, it implies only that some of the effort--not responsibility--is shifted from the principal role. This is the challenge to which the effective manager is called. In most cases it is accepted because the manager is confident of his or her ability to cope with the decision and is willing to take the responsibility for making it and handling the risk involved.

#### The Definition of Time Span of Discretion

One available instrument in measuring success of the exercise of discretion is the time span of discretion, as developed by Elliott Jaques in Measurement of Responsibility and Equitable Payment. The time-span concept is important in the decision-making process and has made it possible to consider the range of level of work in a person's job and the changes in that level of work as the employee progresses at his or her own rate of growth. Time span allows an estimate to be made as to how long an incumbent is willing or allowed to bear the risk associated with decision making in his given role. A direct relationship exists between time span of discretion and level of work attained in the business enterprise.<sup>9</sup> As the level of work increases,

so does the time span of the task. For example, the President of the United States performs his role in a longer time frame than does the shop steward.

The time-span theory is concerned with the exercise of discretion in discharging a contract to carry out tasks set by an employer within prescribed limits and policies that he fixes, including those of a timely nature. Typically, this work involves the paying of salaries or wages and can be measured by the maximum period during which the use of discretion is authorized and expected, without review of that discretion by a superior.<sup>10</sup> This leads to the definition of time span of discretion: the period during which marginally sub-standard discretion could be exercised in a role before information about the accumulation of sub-standard work would become available to the manager in charge of the role.<sup>11</sup>

Marginally sub-standard discretion is an important concept and requires explanation. If we assume that the superior has an idea of the minimum quality he will accept in the exercising of discretion in a given role under his supervision, we can set a minimum standard for the trade-off between quality of work and time required to do the work. Marginally sub-standard discretion would then be indicated by results below that minimum standard.

In the case of the self-employed, since there is no manager superior to him or her, the instrument is an indicator

of how long the individual is willing to bear risk in his or her decision-making process. The self-employed must evolve a time span in terms of his or her perception of the tasks that make up the role. Frequently, it is this type of incumbent who will have to answer to a board of directors or stockholders. Even if there is no one involved in the superior role, he or she still must respond to the time parameter of decision making, as the nature of the task itself, given time constraints, will dictate a time-span relationship that must be subjectively perceived by the incumbent.

The employee who has a superior or superiors to whom he or she must answer is involved in a more structured situation, since there is a distinct relationship with the person(s) ultimately responsible for the maintenance of his or her task and the quality of discretion that is employed in carrying out responsibilities, whether dictated or expected.

#### Individual Capacity for Work in the Enterprise

Jaques sets out certain assumptions about the nature of the relationship between the individuals in the business enterprise, whether they are in a managerial/subordinate role or in either of the two roles exclusively. Each individual possesses for work a unique capacity that follows a characteristic pattern of growth and decline over time.

This capacity is known to the individual, albeit unconsciously; the unconscious awareness of this perception is experienced in feelings about the job situation and exists despite the individual's concept of himself.<sup>12</sup>

The most casual observer of work capacity will note that there are differences in the level of work capacity among individuals. Each individual also exhibits a particular pace of work and intensity of application, which he will employ in his role as long as he is not inhibited in some manner. These differences lead ultimately to a hierarchy of assigned work tasks that are related to the individual's capacity and intensity. Thus for the most part we find that some people are more suited to particular tasks than are others. It would not be concurrent with the time span of discretion theory to find a person whose time span of discretion was potentially long in a role that required frequent review. The individual generally would advance to a task whose relative time span would be more in keeping with his or her perception of ability to cope with work in the business enterprise. This reasoning is supported by the structure of the business enterprise in which there is found a direct relationship between ability to cope in role and the time span allowed or perceived in role. This balance leads to satisfaction in a job that demands work consistent with one's capacity and allows progress within the role in a manner consistent with

progress in individual capacity.<sup>13</sup>

The search for work that is consistent with individual capacity leads toward a state of equilibrium in level of work when the perceived time span of discretion approaches the time-span capacity of the incumbent. This state of equilibrium is reached only when individuals are employed at that level of work consistent with their capacity and have the opportunity to progress in level of work consistent with their progress in capacity. If either of these is not perceived by the individual, a state of disequilibrium is reached and dissatisfaction results. This, in turn, leads to frustration, which, if allowed to persist, thwarts the goals of employment work. Perceived success is minimized; thus, the individual seeks to move toward the equilibrium point by a change of role or a change of job within the employing concern.<sup>14</sup>

#### Measurement of Time Span

In determining the nature of any relationship between level of work capacity, as indicated by time span of discretion, and success or satisfaction in the work role, there must be an objectively definable instrument that can be used in an objectively definable manner to measure the level of work. Jaques has provided this instrument in his measurement of time span of discretion. It is important to recognize that measuring something does not automatically tell all about the thing being measured. It is not

necessary in context to take all the properties of something into account in order to measure one of its aspects. It is not the intent of the time span of discretion technique to imply that either the time span of a role or its level of work is the most important component of the role. The time-span measure is useful in that it gives a measure of that characteristic of work involving level of work. It may not tell all about the level of work, but it presents evidence that leads one to conclude that it does give an objective and real measure.<sup>15</sup>

The measurement of time span of discretion involves an accurate approximation of the length of time that passes from the instigation of a discretionary task and the employee's awareness of the presence of the task, usually described by the manager with its limits of responsibility and discretion, and the time of review of that task by the manager involved. For example, a manager might utilize direct review techniques and actually scrutinize a subordinate's work, deciding whether or not it is what was wanted and expected and telling the subordinate whether the work is satisfactory. This evaluation concerns quality of the work and the time required to do it, requiring that the manager knows what the implied or stated objectives of the task are and the subordinate knows how to go about completing the task in a manner that will be satisfactory to the manager. Frequently, a manager allows a subordinate

to progress toward completion without direct review until he receives negative responses about the discretionary work involved. This course is in contrast to the direct review in which the manager exercises responsibility to review work at the earliest possible moment, frequently at completion of the task. This distinction is described by J. M. M. Hill in his paper, "Time Span of Discretion in Job Analysis."<sup>16</sup> A manager thus is rarely in a position to review directly the discretion exercised in roles delegated by him or her to subordinates. This allows the manager to carry out his or her work, and as long as the subordinate's work is adequate no action need be taken. Such an approach is effective because there is an automatic and assured feedback of information about sub-standard work arising from the interwoven character of work in executive systems. The feedback takes several forms, two of which are customer complaints and inordinate time to complete the tasks set out, indicating, respectively, too little care in exercising discretion and too much care.<sup>17</sup>

It appears that two questions must be answered in order to implement the time span of discretion process. First, how is sub-standard discretion detected and how is time span of discretion discovered? Sub-standard discretion is a nebulous term, but if we consider the results of the exercise of discretion as having a minimum quality, we can say that a movement just below the lower limit of



discretion is marginally sub-standard and a boundary effect comes into play. With the definition of marginally sub-standard discretion being discretion that produces results just outside the limits of the standards set, we can detect operationally the exercise of too much or too little care in discretion. Marginally sub-standard discretion usually is not immediately detectable but is cumulative and indicated by results of the exercise of discretion in role.<sup>18</sup>

Since the limits of quality and time generally are not explicitly known and available, a technique of successive approximation is used in the measurement technique. Successive approximation involves eliminating results as too high or too low, thus narrowing the limits of acceptable performance until an acceptable range or value is determined below which marginally sub-standard discretion is evident.

For example, when asking a manager how many units of an item are expected to be produced per week, he or she might answer that since the output varies determining a precise amount is difficult. When presented a series of choices, however, he or she should be able to say that some would be acceptable and others unacceptable. When asked if one unit per day is slow, the answer might be yes. One thousand per day? Fast. Thirty per day? Would not want less. Thirty-five per day? Could not expect more. And so on until an acceptable number is discerned. So, between

thirty and thirty-five would seem to be an acceptable range. Any more and the manager would begin to suspect corner-cutting and marginally sub-standard quality. Any less would be unacceptably slow. Using the successive approximation technique, the expected time span for a defined task can be measured; with subsequent information through feedback, this estimate can be adjusted if necessary.<sup>19</sup>

Successive approximation can be used with equal accuracy to measure relatively low time spans as well as relatively high time spans. Employment roles of high time spans are characteristic of work involving executive decisions and managerial responsibility. An example of this might be in the shifting of a firm to a new product or processing technique. The manager in charge might be asked to indicate how long he or she is allowed to complete the task. Although the budget might run from year to year, using successive approximation starting with, say, six months and five years, we might determine that the manager is not expected to complete the task within a year and a half, but that two years would be considered too long. If the instructions for completing the task and the discretion to be used are defined clearly, the operative standards and the discretion to be used are discovered readily by successive approximation. If the managerial instructions and level of discretion are not laid out sufficiently, difficulty

might be encountered owing to the fact that the perceived limits might differ from those intended.<sup>20</sup> In this case, the limits expected by the manager will become evident to the subordinate through feedback as time passes. In any event, the subordinate has an opinion of how long he has to do the assigned task as long as he or she continues to do satisfactory work. The indirect review technique eventually will indicate if the work being done is marginally sub-standard; if so, a more precise definition of the limits will be prescribed to him by the manager.

#### Single- and Multiple-task Roles

In measuring time span of discretion, it is important to distinguish between single-task and multiple-task roles. Single-task roles are those in which only one task at a time is performed, while multiple-task roles are those in which a number of tasks must be carried on simultaneously. Shop-floor-level manual roles are most often single-task roles. The manual operator is given a task to carry out; when that task is completed, he is given another task, and so on. In multiple-task roles, a person is given a number of tasks that run concurrently, each of which may have a different completion date. Some of the tasks will have almost immediate deadlines, while others may run for considerably longer times.

The essential difference is that the person faced with a multiple-task role will have to set priorities among

the tasks, borrowing time from one to act on another, a practice that cannot continue indefinitely as it will lead to getting behind in all tasks. Discretion in such matters must be exercised and decisions made concerning task priorities. This is not true in the case of single-task roles, since there is no other task from which to borrow time. Consequently, marginally sub-standard work will show up sooner in the single-task role. Getting behind in work also will show up sooner in single-task roles than will marginally sub-standard quality because of the direct-indirect review techniques. Getting behind in single-task roles is subject to direct review, while marginally sub-standard quality usually is detected in indirect review through complaints or returned work.

Conversely, in multiple-task roles marginally sub-standard quality tends to show up more quickly than does being behind in work. Manager review is more likely to detect marginally sub-standard discretion than being behind in work. The latter involves an assessment of the total role, since there are several tasks running concurrently. To measure time span, it therefore is important to consider marginally sub-standard quality in single-task roles and marginally sub-standard discretion on pace and organization of work in multiple-task roles.<sup>21</sup> This relationship is adhered to in this study, which is concerned with multiple-task roles.

The Multiple-task Role of Principals in  
Independent Property-Liability  
Insurance Agencies

Principals in independent property-liability insurance agencies have a multiple-task role, making the individuals acceptable as samples in this study. The principal is faced with a myriad of concurrent tasks, which may range over the entire spectrum of agency operation, depending largely on size of the agency. He or she must deal with company directors, if there are any; he or she must oversee or establish the decision-making processes of the agency; and, in many instances, he or she is responsible for the day-to-day operation of the agency. In larger agencies the role is more concerned with the executive and managerial processes and the small number of definable tasks, commonly referred to as long-term projects. They usually involve large-scale operations such as planning, new lines, recruiting and training personnel, and other tasks that may require two years or more to complete. These tasks require that the individual perform them over a longer time span.

Such a requirement is common throughout the executive process. Tasks, mostly in a decision-making context, span a year or more from inception to completion. The measurement of multiple-task roles, those requiring relatively long time spans, will be concerned with time from the beginning of each task to the completion time, which is marginally

sub-standard to its targeted completion time. In this context, the time span of discretion, used in the manner described by Jaques, constitutes a yardstick for measuring purposes. While other factors are important in work, time span can be said to give us a measure of level of work in role.<sup>22</sup>

#### The Relationship between Time Span and Role

Since time span is related closely to the types of decisions and work involved in a role, time span being greater as tasks become more managerially oriented, we can draw some conclusions about time span and other aspects of executive tasks. For example, we might be lead to conclude that indicators of managerial roles such as decisions involving capital outlay would increase in terms of return or investment as time span increases. Frequency of formal evaluation of financial matters by means of accounting procedures would seem to be related to time span as well as anticipation or evaluation of market projections or trends. There also may be a relationship between length of time in a certain position and time span. Certainly, the types of decisions faced in role would be related to time span.

With the objective techniques of time-span measurement available to us, it becomes a simple matter to examine these relationships. Additional information about time span could

be attained by implementing these concepts in a study of time span. Thus, some of the other factors relating to level-of-work measurement could be included in the analysis, lending more credibility to the results.

Within the level-of-work concept, a factor closely related to time span involves the uncertainty or ambiguity associated with discretionary positions. Ambiguity is related closely to this study because of its tight relationship to uncertainty and, therefore, to decision making.

It has been established that ambiguity increases as one moves to ever riskier roles while progressing in an organization. It is easy to justify the statement that a top-level manager faces more risk and uncertainty in role than does the shop-level manual operator. Therefore, the relationship between time span, which also increases from bottom to top in managerial roles, and ambiguity should be direct.

#### Measures of Risk Propensity

Although time-span analysis is very effective in measuring the level of work in role as demonstrated by Jaques, it is limited in scope only to one of the factors in decision making under scrutiny in this study. The question to which time span is attuned is, How long is an individual able, willing, and/or allowed to bear risk? Even this question varies from setting to setting; the time span is not constant for any individual because there are

varying levels of inherent risk from situation to situation. It follows, then, that there is another question that must be answered when considering decision making and work in role: How much risk is an individual willing to bear? This added concept is vital because uncertainty in decision making must be handled. Since uncertainty is related closely to risk, and the reduction of uncertainty to an acceptable level is part of the decision-making process, an analysis of risk characteristics of individuals might give an indication of ability to cope with risk and, therefore, make effective decisions.

#### Definitional Dichotomies of Risk

By examining the various types and definitions of risk, we can identify the particular concept of risk pervading the executive system in today's business enterprises. The current literature suggests three definitional dichotomies of risk. The first distinguishes between pure risk and speculative risk. Pure risk is defined as the uncertainty of the occurrence of an event that can cause loss only.<sup>23</sup> This type of risk frequently is handled by use of the insurance mechanism where the principle of indemnity allows reimbursement only up to the amount of loss; thus, theoretically there is no chance for a gain.

Speculative risk, on the other hand, is defined as the uncertainty concerning the outcome of an event that can produce either a profit or a loss.<sup>24</sup> Modern business



enterprise faces both types of risk in its day-to-day transactions. Since the enterprise is concerned with making a profit, speculative risk is present and must be handled. The chance of loss through occurrences involving only loss also must be handled. It can be argued that when these pure risks are managed effectively there is a general feeling of well-being experienced throughout the enterprise that contributes to profit through increased security and incentive. Were it not felt, a diminution of the gross accomplishment of the enterprise would ensue. Thus, in a way all risks in the business enterprise are speculative, since even risks thought of as pure risks can involve a gain, albeit intangible in nature and difficult to assess. Speculative risk encompasses the possibility of a loss or a gain. Since the terms pure and risk and speculative risk are very similar, the latter is of prime importance in any model of decision-making behavior involving risk.

The second dichotomy of risk defined by the current literature is objective risk and subjective risk. Objective risk is defined as the variation of actual loss from expected loss.<sup>25</sup> It is a concrete measure of statistical nature that is calculated by expressing the average deviation of a distribution in terms of its mean. It is very useful in the rate-making procedure of insurance companies and also is used to calculate risk-adjusted figures for situations involving both pure and speculative risk.

Subjective risk is defined as the psychological uncertainty stemming from an individual's mental attitude or state of mind.<sup>26</sup> It sometimes is defined as being equivalent to uncertainty, a fact that lends credence to this definition. It seems safe to say that the two are closely related, which provides a clear understanding of the term. Since subjective risk stems from mental attitudes, its measurement must be facilitated in the psychological realm. This can be difficult as it is not uncommon that objective evaluation of subjective concepts, owing to the nature of psychological matters, lends to barely significant or nonsignificant results.

The third dichotomy of risk is the categorization of fundamental and particular risks. C. A. Kulp writes:

Fundamental risks are essentially group risks; the conditions which cause them have no relation to any particular individual. Most fundamental risks are economic, political, or social; . . . Particular risks are those due to particular conditions which obtain in particular cases. They affect each individual separately.<sup>27</sup>

It is clear that fundamental risk and particular risk affect individuals and society as a whole according to the type of risk being considered. Fundamental risks are more related to societal uncertainties. These risks are not controlled by individuals; hence, individuals do not feel and cannot be held responsible for them. Examples of fundamental risks are governmental actions; extraordinary natural occurrences; policies of large business enterprises,

especially conglomerates; and, to a certain extent, the activities of any enterprise, business or otherwise, in which the individual feels he has no part in determining what goes on.

Particular risks, on the other hand, are the responsibility of the individual, and he or she is expected to control them in some manner. Examples are the personal risks of death and disability and loss due to personal negligence.<sup>28</sup> Both fundamental and particular risks are dynamic, frequently changing concepts. It appears that the current social trend is to move more and more risks out of the control of the individual and into the control of government and big business, indicating a shift across society from particular to fundamental risks. This does not mean that particular risks are not important in risk assessment in the decision-making process, nor does it imply that organizations are better at risks than are individuals. In the final analysis, responsibility for handling risks in the business enterprise is delegated to a person or a group of persons assigned the proper handling of risk as a part of their role. The group situation explored by Rim indicates that groups react differently from the individuals composing the group.<sup>29</sup> This "risky shift" phenomenon could cloud the results of this study for any focus other than individual.

Since there is no individual responsibility in handling

fundamental risks, and since this study is concerned with the individual and his subjective psychological attitude toward uncertainty, particular risks are more important; thus, the focus of this study will be on them, the manner in which they are perceived, and the attitudes of individuals regarding handling them.

The risks that an individual faces in the business enterprise are of two general types and are categorized by the manner in which the outcome of a risk-handling encounter affects the individual and the organization. It is clear that distinct relationships are difficult and in some cases impossible to delineate, since the employee is affected by what happens to the employing firm and the employing firm is affected by what happens to each of its employees. The difference is one of degree. In general, the employee faces risks that affect him or her directly and the enterprise indirectly, as well as risks that affect the enterprise directly and the employee indirectly. Current literature suggests that an individual reacts differently in the two situations; this, in turn, suggests that the perception of risk by an individual varies according to the manner in which the individual will be affected by his or her technique of handling risk and its ultimate outcome.<sup>30</sup>

### Measurement of Risk--Probability Preferences

The problem of measuring risk propensity, or the ability to handle risk, long has been of concern to the academic and professional worlds. It has been approached in several ways and some success has been realized. In their study on the auction value of uncertain outcomes, Preston and Baratta demonstrate that a relationship exists between probability and subjective risk (which they call psychological probability).<sup>31</sup> Before launching into an examination of the techniques that have been used, it is helpful to demonstrate the relationship between subjective risk and probability. Since we can equate subjective risk and mental uncertainty, and we can identify levels of uncertainty given the level of probability, the argument can be stated in terms of uncertainty and probability. It is evident that when probability is zero there is no uncertainty, since there absolutely is no chance that the event will occur. In either case, uncertainty is minimized and there is no risk. It follows that the point of maximum uncertainty must be where probability is one-half (0.5), because there is an equal probability of the event occurring or not occurring. This level of probability is the point of maximum uncertainty and, therefore, the point of maximum subjective risk. (See Figure 1.)

Having established the point of maximum risk, we can

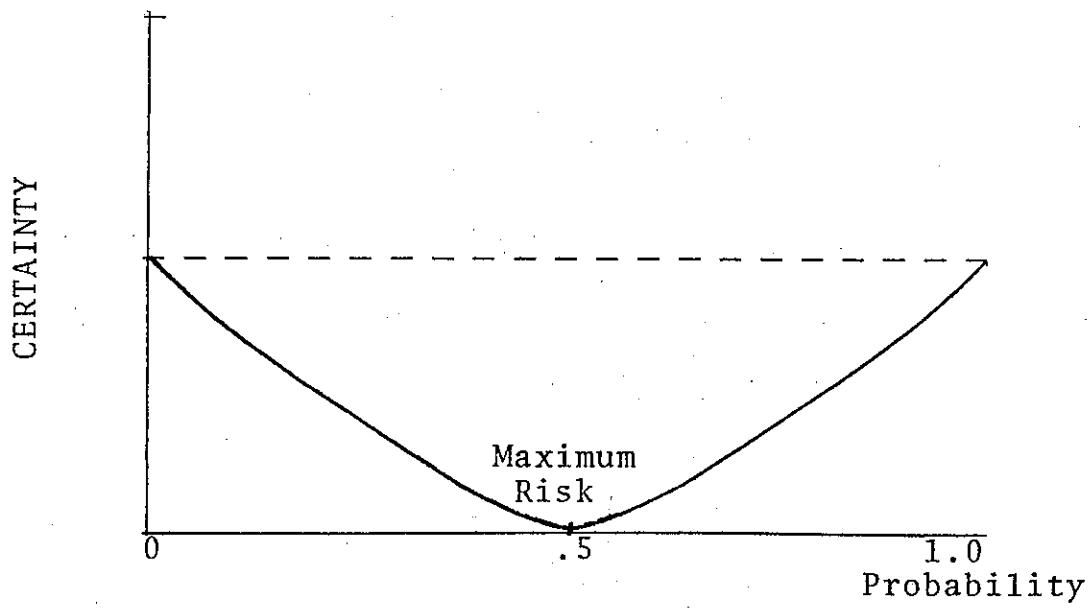
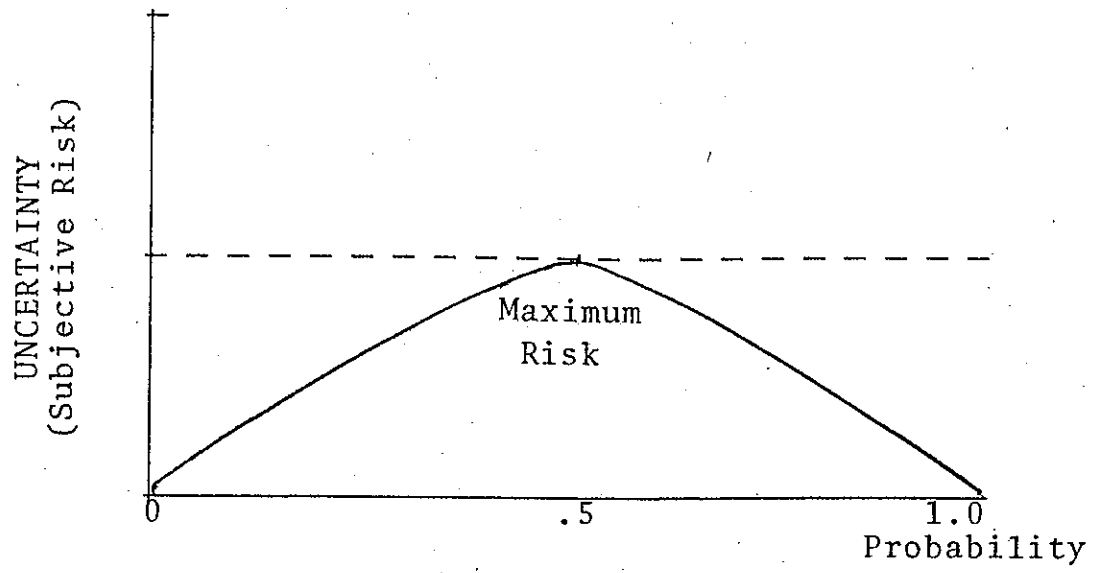


Fig. 1. The relationship between probability and subjective risk

reason that this also is the point of minimum certainty, since certainty and uncertainty are opposites and uncertainty is maximized at a probability of one-half (0.50). (See Figure 1.) Because there is absolute certainty at a probability of zero and one, and we can be absolutely sure that the event will not occur or will occur, respectively, risk must be at a minimum since there is no chance of variation from absolute probability of zero or one. Thus, risk must increase from a probability of zero to one-half and decrease from a probability of one-half to one as we move to the right on the horizontal axis of Figure 1.

The studies of Atkinson involving achievement, motivation, and risk handling, which he found to be highly correlated and typified on the individual level, indicate that motivation to achieve is strongest when uncertainty is greatest.<sup>32</sup> Since uncertainty is greatest when probability of success is at one-half (0.50), we would expect an individual to manifest greatest motivation at this level of probability. If presented with more or less ambiguity in role, strength of motivation would be less. The prevailing theory supports this premise by indicating that the relationship between strength of motivation (and, hence, risk-handling capacity) and expectancy of success at the task is distributed normally.<sup>33</sup>

This leads to the first technique of measuring

risk-handling capacity, which involves probability preferences. Atkinson determined that persons who scored high in achievement notions and risk-handling capacity preferred intermediate probabilities of success that, through their own characteristics, might be improved according to the skill of the risk handler.<sup>34</sup> The experiment used by Atkinson involved presenting alternative choices to subjects with varying risk-handling ability and asking them to choose the alternative most attractive to them. The alternatives varied in probability, but the expected value of the outcomes differed. For example, the following set of alternatives illustrates the process:

Choose the alternative that is most attractive to you:

1. 1/6 probability of winning \$1.80
2. 2/6 probability of winning \$0.90
3. 3/6 probability of winning \$0.60
4. 4/6 probability of winning \$0.45
5. 5/6 probability of winning \$0.36
6. 6/6 probability of winning \$0.30

Obviously, the expected values of the alternatives are the same, Estimated Value = \$.30, but the probabilities are different. The results of this experiment indicate that those persons high in risk-handling capacity preferred alternatives that exhibited intermediate probabilities (4/6, 3/6, 2/6) to extreme probabilities (6/6, 5/6, 1/6). This is supported by the fact that Atkinson found the same differential preference for intermediate risk by persons high in risk-handling capacity when the same subjects were



allowed to select distance from target for shots in a shuffleboard game.<sup>35</sup>

While these simple experiments do not take into account all the facets of risk-handling behavior, they certainly point to some interesting conclusions about which generalizations can be made. First, we cannot assume that persons high in the capacity to handle risk are necessarily risk takers or risk averters. However, they are good risk handlers. Risk taking implies that there is little aversion to risk, and it has been indicated that these persons are not apt to choose alternatives having payoffs of low probability. Also, these persons cannot be labeled risk averters; unlike risk averters, they dislike alternatives whose probabilities of success are relatively high.

This fact can cause some confusion, which the term risk handlers tends to eliminate. Hence, a distinction must be made between risk takers/risk averters and risk handlers. In the course of coping with risk, an individual must respond to his or her psychological assessment and preferences. Some risks must be taken and some must be averted; only the individual risk handler can decide which. From this relationship rise the differences between individuals in risk-handling capacity. Ascertaining these differences is accomplished by using Atkinson's techniques involving probability preferences. It is a useful first

step in determining the risk-handling capacity on the individual level. The relationships between intermediate probability preferences and achievement notions and between achievement and risk notions lead Jaques to the conclusion that persons high in risk-handling capacity should tend to prefer intermediate probabilities.

#### Measurement of Risk--Utility Analysis

Friedman and Savage state in the opening paragraph of "The Utility Analysis of Choices Involving Risk" that their purpose "is to suggest that an important class of reactions of individuals to risk can be rationalized by a rather simple extension of orthodox utility analysis."<sup>36</sup> They state further, "Individuals frequently must, or can, choose among alternatives that differ, among other things, in the degree of risk to which the individual will be subject."<sup>37</sup> As we have seen previously, individuals react to and handle risk differently. They choose occupations, securities, or lines of business activity based on the varying degree of risk involved, whether or not they realize it.<sup>38</sup>

By utilizing techniques of observable individual behavior and generalizing the available empirical evidence on the behavior of consumer units in choosing among alternatives, Friedman and Savage developed a theory involving the role of utility analysis involving risk. They found that a consumer unit, generally a family but sometimes

an individual, had a consistent set of preferences that could be described completely by attaching a numerical value, designated utility, to alternatives, each of which is regarded as certain. When asked to choose among alternatives not involving risk, they selected the one having the largest utility; for alternatives involving risk, they chose the one for which the expected utility is largest.<sup>39</sup> The conclusions reached by Friedman and Savage are supported and broadened by Ralph O. Swalm in his study on cardinal utility theory.<sup>40</sup> The term expected utility is important, for it is a combination of probability and possible return.

The concept is clarified by Slovic and Lichtenstein and termed subjective expected utility (SEU). They defined SEU in a two-outcome gamble example by the equation:

$$SEU = S(P_w) \cdot U(\$_w) + S(P_L) \cdot U(\$_L)$$

where  $S(P)$  and  $U(\$)$  represent subjective functions corresponding to stated probabilities and payoffs. The subscripts (w) and (L) denote winning and losing, respectively, so that the equation can be stated thus: Subjective Expected Utility is determined by psychological assessment of the combinations of the subjective probability of winning and the subjective utility to be gained in the event of a win versus the subjective probability of losing versus and the utility lost in the event of losing.

This points toward the conclusion that individuals might pay more attention to some risk dimensions than to others. A person with very little money might focus on the amount to lose (\$L), disregarding other information. This approach might be due to experience, logical analysis, or irrational fears or prejudices. In this analysis, subjective probability and utility functions can be viewed simply as transformations of the scale of stated probabilities and payoffs--transformations that are predictive of risk-handling decisions.<sup>41</sup>

Friedman and Savage constructed a graph of the function describing the utility of money income. (See Figure 2.) It indicated that utility rises with income, although not in a linear fashion, and that the marginal utility of money income is everywhere positive. Their description of the function is as follows:

It is convex from above below some income, concave between that income and some larger income, and convex for all higher incomes, that is, diminishing marginal utility of money income for incomes below some income, increasing marginal utility of money for incomes between that income and some larger income, and diminishing marginal utility of money income for all higher incomes.<sup>42</sup>

The function derived in the Friedman and Savage analysis describes an individual consumer unit and varies from unit to unit only in scale. The relative shape is therefore consistent from individual to individual. It is of prime importance to remember that the function is derived from both subjective probabilities and expected payoffs, since

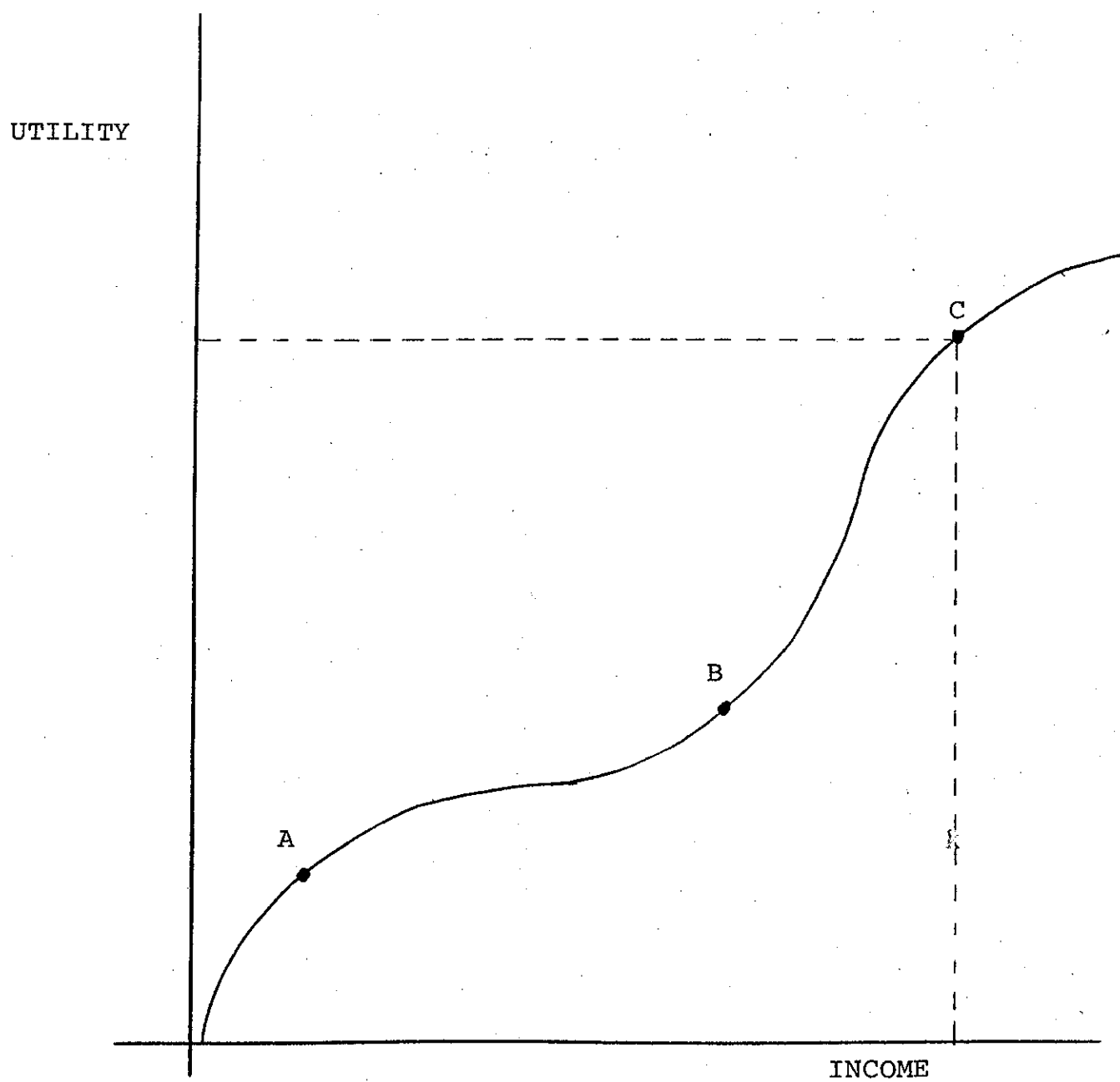


Fig. 2. Friedman and Savage individual utility schedule

SEU is the concept of importance when estimating or measuring utility.

Of interest to this study is the point on the function where the utility reaches the third point of inflection (Figure 2, point C). At this point, the utility of the gamble begins to increase at a decreasing rate with respect to income. This is indicated as being the last point at which the function behaves in this manner and when measured could give an important indicator of the last point on an individual utility curve that an individual would expect to receive as much utility as the added income would normally allow. The marginal utility is increasing but at a decreasing rate. Thus, the individual would not expect to gain in utility the equivalent value that would be associated with the marginal income gained from the origin of the curve to point A or from point B to point C.

It is logical to assume, then, that the individual would not be able to convince himself, through subjective assessment of the situation, to accept greater risk. Indeed, he or she would require that there be less risk involved, since SEU would be less. In practice, this can be stated in the following terms: There is some point on each individual's utility function at which the marginal utility of the venture increases in a decreasing manner with income; beyond that point the individual will not

accept more subjective risk for the return of the venture as indicated. He or she will require that less risk be involved to offset the loss of marginal utility or, if the decreased in marginal utility is of sufficient magnitude, will not accept any risk at all by choosing not to participate in the venture.

It seems that this point is indicative of a turning away from risk because the individual is unwilling to risk a lot for a little. Since this point exists for every individual and is determined by the SEU function, it can lead to a comparison among individuals as to the point at which they ultimately turn away from risk in regard to their utility function. When measured and compared with that of other individuals or correlated with his or her own determinants of risk-handling behavior measured by other techniques, an accurate picture of the individual's relationship with other individuals' risk-handling behavior and the relationship with his or her own attitudes toward risk and other related concepts can be determined. This point, which shall be named the turn-away-from-risk point (TAFR point) will be determined for each individual in the sample used in this study and will be one of the risk-handling behavior indicators.

#### Measurement of Risk--Variance Preference

The concept of variance preference studied by Coombs and Pruitt describes another technique of risk handling

closely related to utility.<sup>43</sup> However, instead of utility for money, the concept of utility for risk is of paramount importance. Indeed, the concept of variance preference commonly is interpreted psychologically, as utility for risk.<sup>44</sup>

The results of the Coombs and Pruitt experiment support the hypothesis that variance preferences exist, indicating that in a generic sense there is a preference for dispersion. The notion of variance preferences suggests that individuals base their decisions not only on SEU but also on the dispersion of the possible outcomes, that is, an individual may prefer certain amounts of variance over others.<sup>45</sup> In psychological terms, this preference for variance is distinguished from preference for skewness, which captures the idea of a preference for odds where a distribution skewed to the right might indicate a "long shot" and a distribution skewed to the left would indicate an "almost sure thing." Therefore, any concept of variance preference assumes that expectation and skewness are the same between choices; only variance differs between alternatives.

The technique used by Coombs and Pruitt to make variance differ from alternative to alternative for the subjects in their study was to vary the absolute amounts of the ventures from trial to trial, while maintaining equal value for each set of alternatives.



Although the results indicated a preference for variance, it was noted that for each variance preference ordering a nonlinear utility function for money could be found that explained the orderings equally well. Nonetheless, using variance preferences as an alternative to the maximization of utility model is suggested, noting that a gamble can be characterized by variance preference as well as by expectation and preference for skewness. While an individual always will prefer more expectation, he or she may have a utility for risk that will exhibit itself as a preference for certain amounts of variance.<sup>46</sup>

This preference for variance seems to be indicative of another tool for measuring risk-handling behavior. It is related closely to utility for risk, which is a component of decision-making behavior. While it might not be the best indicator of this behavior, it certainly suggests that some detectable relationship might be found.

#### Convergent Validation of Risk Handling Measures -- Slovic

Much of the literature stemming from recent research concerning risk-handling measures has indicated definite, quantifiable relationships between certain psychological traits and risk-handling propensity, notably those mentioned previously. But there also is evidence that intercorrelations among these measures generally are not significant, indicating a lack of convergent validity.<sup>47</sup> Slovic points

out, however, that his study of convergent validation implied that it is possible that none or only a few of the variables analyzed actually measured risk, or that perhaps the willingness to take risks might not be a general trait at all, but rather one that varies within the same individual from situation to situation.<sup>48</sup> He also points to the necessity of considering the problem of adequately defining and assessing risk-taking behavior.

While the findings of Slovic at first cause concern about the validity of risk-taking measures--especially probability and variance preferences, which he attempted to measure in the study--it must be remembered that no one technique can hope to assess risk-handling behavior. There are many factors influencing any given individual on any given day for any given situation. It is important to evaluate every possible explanation for any given choice, without trying to explain the choice in terms of any one measure of risk-handling behavior.

Since these measures do not measure the same thing, but only are individual measures of one or more--but not all--facets of risk handling and decision making, there is no reason to believe that they would be convergently valid. They are useful only when measuring the facet of risk-handling behavior that is particular to their nature. They must be assessed subjectively, not only as they stand alone, but also as they relate to each other before they are

of any value in measuring psychological attitudes toward risk. In this context, as indicated by many leading theoreticians, they can be used to indicate the qualities of the various aspects of risk-handling behavior.

#### Summary

Applying these concepts of time span of discretion and risk propensity in a decision-making model, it should be possible to distinguish the inherent differences and similarities between the samples and indicate those characteristics that enable an individual to become a principal decision maker in his or her respective agency rather than reach a terminal position in the employee ranks. Using the techniques described herein, quantification is possible, and it enables the computer to be used for statistical analysis. It will be possible to show those relationships that can be used as predictors of success by correlation. Moreover, the results should provide information as to personal preferences in decision making that indicate an inherent ability to reach a perceived success level through organizational roles that are highly suited to the needs of an individual.

### Footnotes

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<sup>3</sup>Ibid., pp. 128-139.

<sup>4</sup>David Moment and Dalmar Fisher, Autonomy in Organizational Life (Cambridge, Massachusetts: Schenkman Publishing Co., Inc., 1975).

<sup>5</sup>Ibid., p. 7.

<sup>6</sup>Elliott Jaques, Equitable Payment (London: Heinemann Educational Books, Ltd., 1963), pp. 45-47.

<sup>7</sup>Elliott Jaques, Measurement of Responsibility (London: Tavistock Publications, Ltd.; Cambridge, Massachusetts: Harvard University Press, 1956).

<sup>8</sup>Elliott Jaques, Equitable Payment, pp. 176-178.

<sup>9</sup>Ibid., pp. 11-12.

<sup>10</sup>Ibid., p. 17.

<sup>11</sup>Ibid., p. 99.

<sup>12</sup>Ibid., p. 18.

<sup>13</sup>Ibid., p. 176.

<sup>14</sup>Frederick Herzberg, Bernard Mausner, and Barbara Block Snyderman, The Motivation to Work, pp. 69-70.

<sup>15</sup>Jaques, Equitable Payment, pp. 69-70.

<sup>16</sup>J. M. M. Hill, "Time Span of Discretion in Job Analysis," 1956. (Pamphlet.)

<sup>17</sup>Jaques, Equitable Payment, p. 90.

<sup>18</sup>Ibid., pp. 90-91.

- <sup>19</sup> Ibid., pp. 92-94.
- <sup>20</sup> Ibid., p. 94.
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<sup>38</sup>Ibid., p. 280.

<sup>39</sup>Ibid., pp. 291-292.

<sup>40</sup>Ralph O. Swalm, "Utility Theory: Insights into Risk-Taking," Harvard Business Review, XLVII, No. 6 (November-December 1966), 123-136.

<sup>41</sup>Paul Slovic and Sarah Lichtenstein, "Relative Importance of Probabilities and Payoffs in Risk Taking," Journal of Experimental Psychology, Monograph, LXXVIII, No. 3 (November 1968), 3.

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<sup>44</sup>Ibid., p. 267.

<sup>45</sup>Ibid., p. 266.

<sup>46</sup>Ibid., p. 276.

<sup>47</sup>Paul Slovic, "Convergent Validation of Risk Taking Measures," Journal of Abnormal and Social Psychology, LXV, No. 1 (1962), 67-71.

<sup>48</sup>Ibid., p. 70.