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A STUDY OF PROGRAM MANAGER
EFFECTIVENESS AND RISK TAKING
PROPENSITY

THESIS

Timothy P. McIntyre
Captain, USAF

AFIT/GSM/LSY/88S-19

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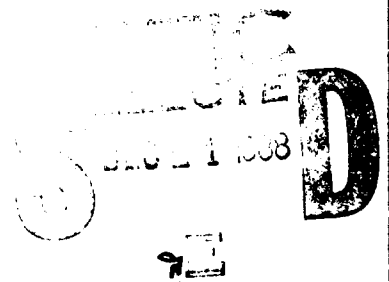Wright-Patterson Air Force Base, Ohio

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A STUDY OF PROGRAM MANAGER

EFFECTIVENESS AND RISK TAKING PROPENSITY

THESIS

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the

Requirements for the Degree of

Master of Science in Systems Management

Timothy P. McIntyre

Captain, USAF

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Abstract

The purpose of the study was to determine if there was a relationship between program management effectiveness and risk taking propensity. Air Force supervisors classified the program managers as more effective and less effective. Using a number of risk measures and non-parametric statistical techniques, the study concluded that more effective program managers consistently rated higher on the risk measures than their less effective colleagues. Additionally, using a risk behavior model developed in previous research, the more effective program managers were labeled as exhibiting risk taking behavior by their supporting functional personnel and the less effective program managers were rated by their supporting functional personnel as exhibiting risk neutral behavior.

A STUDY OF PROGRAM MANAGER EFFECTIVENESS
AND RISK TAKING PROPENSITY

I. Introduction

Background

In July 1985, President Reagan commissioned a blue ribbon panel to investigate the United States defense acquisition system. One of the recommendations made by the President's Blue Ribbon Commission on Defense Management (often referred to as the Packard Commission) was to enhance the quality of Department of Defense (DOD) acquisition personnel (16:27). Along with the Packard Commission, Congress has become more interested in the qualifications of DOD program managers. In 1984, Congress mandated minimum four-year tenures for program management assignments, and in 1986, required that program managers of major DOD systems have prerequisite qualifications and training as well as at least eight years of acquisition-related experience (16:28). Consequently, the increased emphasis on the qualifications of DOD acquisition personnel focuses a great deal of attention on the program manager selection process.

In the Air Force, Air Force Systems Command Regulation 36-5 (AFSCR 36-5) is being developed to aid in the selection process of major System Program Office (SPO) directors. An individual must be classified as having Level IV weapons system acquisition experience in order to be selected for the

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Senior Acquisition Managers List (SAML) (4:19). The requirements necessary to be certified as a Level IV acquisition officer are:

a. Senior Service School.
b. Eight years acquisition experience.
c. Defense Systems Management College (DSMC) or equivalent.
d. Two years experience as SPO project manager.
e. Air Force Systems Command Commander (AFSC/CC) approval [4:10].

The Air Force's objective is to place the most qualified personnel in SPO director positions in order for more effective program management.

Manners and Steger developed a methodology for improving the process of selection of Research and Development (R & D) managers (13:85). This process consists of the following three steps:

1. Specifying the R & D management role in terms of both behavior and style.
2. Utilizing such a specification to estimate probabilities of trainability.
3. Employing the probabilities as criteria for the allocation of resources among managerial selection efforts versus training and development [13:85].

In other words, step three of this process says that "many elements of a manager's role cannot be 'taught' without an unreasonable investment in training (13:91)."

A number of studies have been done examining the subject of the role of the manager. One of the more popular studies on this topic was accomplished by Mintzberg in 1975. Mintzberg stated that a manager does more than just plan, organize, coordinate, and control (a concept introduced by Fayol in the early 1900s) (15:63). Mintzberg conducted an

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observational study and found that managers perform ten basic

tasks which can be broken into three categories. The

categories and tasks are:

Interpersonal Roles

1. Figurehead
2. Leader
3. Liason

Informational Roles

4. Monitor
5. Disseminator
6. Spokesperson

Decisional Roles

7. Entrepeneur
8. Disturbance Handler
9. Resource Allocator
10. Negotiator [15:71]

Mintzberg went on to conclude that for managers to be

effective at these ten tasks they must 1) find systematic

ways to share their privileged information, 2) see the big

picture with only bits of information, and 3) gain control of

their time (15:81).

Thornberry and Weintraub also studied what it takes to

be an effective manager. They highlighted five dimensions

for effective management performance. The dimensions were:

1. Oral Communications
2. Influencing Skills (Leadership)
3. Intellectual Capabilities
4. Ability to Handle Stress
5. Work Skills
    a. Planning and Organizing
    b. Follow-up
    c. Delegation
    d. Decision Making [18:73]

A number of researchers have developed these lists of roles and functions of effective managers, and they are not all exactly the same. However, most of these lists do have many similarities. One similarity, as displayed by the Mintzberg and Thornbery lists, is that decision making is important to effective program management. Mintzberg categorized this as "decisional roles" and Thornberry placed decision making under the "work skills" category.

Manners and Steger stated that how a manager handles or "delivers" these management roles is also of critical importance (13:87). They referred to this "delivery" as management style (13:87). Manners and Steger summarized the make-up of management style with the following list:

1. Objectivity
2. Presence
3. Humor
4. Power mode
5. Consideration
6. Tenacity
7. Work pace
8. Risk taking
9. Time orientation
10. Optimism/pessimism
11. Openness
12. Endurance [13:88]

General Issue

This study focuses on the management style of risk taking. Risk taking is a management style most closely associated with the management role or behavior of decision making. The literature implies that effective managers are good decision makers and risk takers (18:75). Furthermore, while the management role of decision making can be improved

through training and education, most style dimensions of management have a low training probability (13:89). Therefore, Manners and Steger suggest that those management style characteristics which are highly related to management effectiveness are the best candidates as selection criteria for higher management positions (13:89).

Specific Issue

The Air Force has started to implement a process of selection for senior R & D managers. The emphasis in this selection process is on experience and training. Disregarding the findings of Manners and Steger, however, there is no emphasis on selection based on management skills which are difficult to teach, such as risk taking. This study investigates the management style of risk taking in Air Force program managers. The purpose of the study is to determine if more effective Air Force program managers differ in risk taking style from less effective Air Force program managers. The results of this study may be helpful in future efforts by the Air Force in developing management selection plans and policies.

Research Objectives

There were three primary research objectives in this study. The first research objective of this study was to determine if there was a difference in risk taking propensity between more effective Air Force program managers and less effective Air Force program managers. In order to fulfill

the research objective, a sample of Air Force program managers in Air Force Systems Command (AFSC) was surveyed (as well as their supervisors and their supporting functional personnel). These program managers were identified by their supervisors as more effective and less effective. Using measures of risk taking propensity from previous research, statistical techniques were used to determine if there were differences between the more effective group and the less effective group.

The second research objective of this study was to verify the supervisors' classification of more effective and less effective. To do this, the supporting functional personnel were asked to answer questions on their program managers' effectiveness based on management processes and management outcomes. Statistical techniques were used to determine if there were differences between the more effective group and the less effective group with regard to the process and outcomes questions. Also, the functional personnel were asked directly about the job effectiveness of the program manager. This question (which was grouped with the outcomes questions) was also statistically analyzed to determine if there was a significant difference between the two groups. Consequently, using these three measures of effectiveness, a qualitative analysis was conducted to determine if the supervisors' classification of more effective and less effective corresponded with the classification of the functional personnel. This qualitative

analysis was governed by a set of decision rules which enabled the researcher to classify the program managers as less effective, neutral, or more effective based on these effectiveness ratings by the functional personnel.

The third, and final, research objective of this study was to analyze the risk taking propensity of Air Force program managers in terms of the risk behavior model presented in Figure 1 on the next page. This model uses the variables of decision time, information gathering, and control in defining risk behavior. A lack of time, a lack of information, and a lack of control all contribute to increasing the exposure to a chance of loss (11:14). MacCrimmon and Wehrung state:

> If we had complete control over the situation, we could determine the best outcome and there would be no risk. If we had complete information about which event would occur, we could select the best alternative based on this knowledge and again there would be no risk. If we had unlimited time in which to decide which alternative to choose, we could wait until the outcome of the uncertain event was resolved and then choose the best alternative after the fact. This scenario also involves no risk [11:14-15].

The functional personnel were asked to rate the program managers in each of these three areas; decision making time, information gathering, and control over the environment. Using a set of decision rules, the ratings of the functional personnel were used to classify the program managers as risk averse, risk neutral, or risk taking. Again, the purpose of the analysis was to determine if there was a difference between the more effective program managers and the less effective program managers.
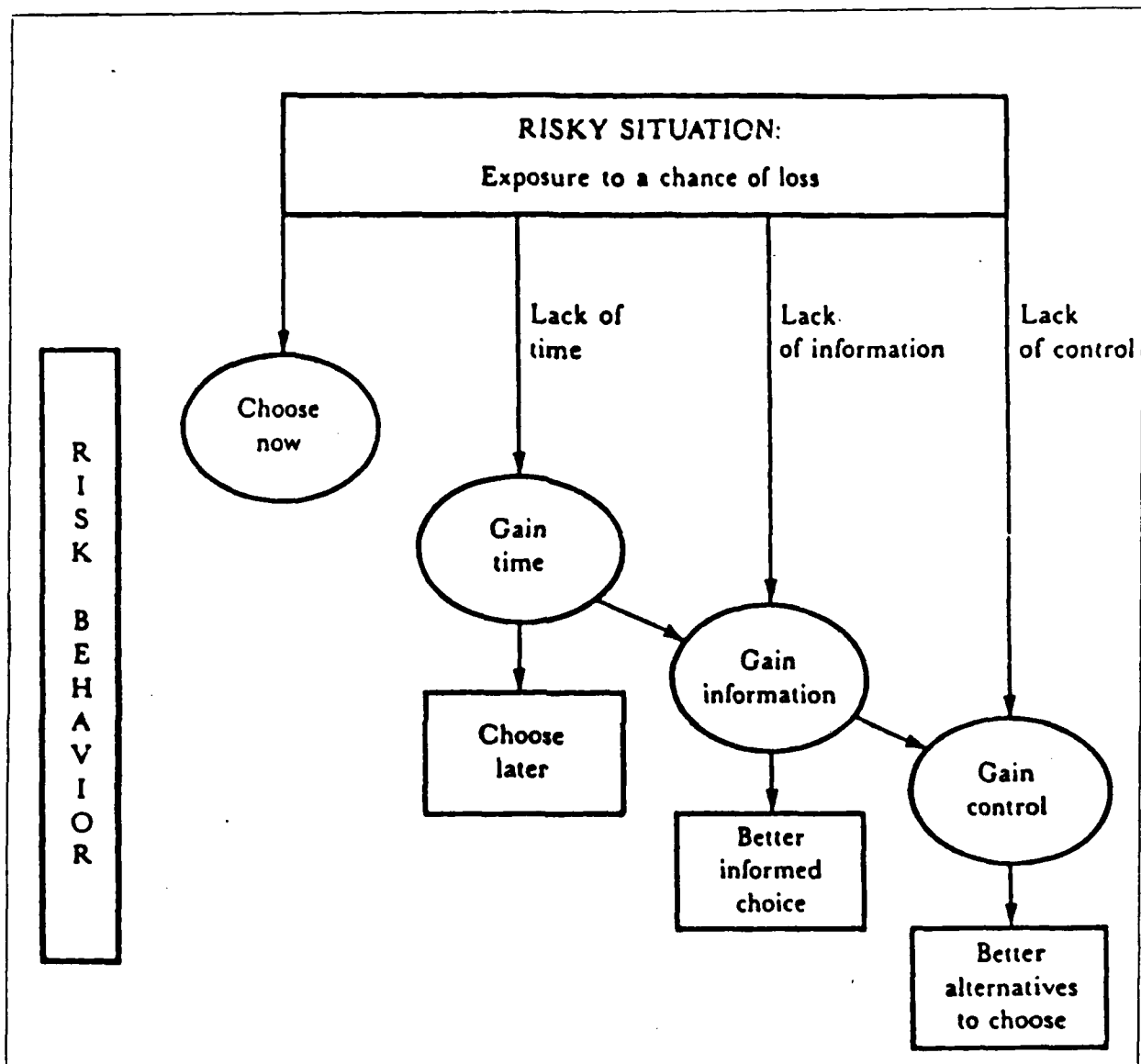
Figure 1:   Risk Behavior Model
                    (Reprinted from 11:17)

Research Questions

The following research questions were formulated in order to satisfy the first research objective of this study:

1. As reported by the program managers themselves, is there a difference between more effective and less effective Air Force program managers in regard to:

    a. a general rating of their risk taking propensity?
    b. the amount of information they gather to make decisions?
    c. the amount of time they take to make decisions?
    d. the amount of control they feel they have over their environment?
    e. the amount of personal sensation seeking in their lives?

2. As reported by their supervisors, is there a difference between more effective and less effective Air Force program managers in regard to:

    a. a general rating of program manager risk taking propensity?
    b. the amount of information the program manager gathers to make decisions?
    c. the amount of time the program manager takes to make a decision?

3. As reported by their supporting functional personnel, is there a difference between more effective and less effective Air Force program managers in regard to :

    a. a general rating of program manager risk taking propensity?
    b. the amount of information the program manager gathers to make decisions?
    c. the amount of time the program manager takes to make a decision?
    d. the amount of control the program manager appears to have over the environment?
    e. the amount of sensation seeking the program manager appears to exhibit in life?

4. As reported by the program managers themselves, is there a difference between more effective and less effective Air Force program managers in regard to:

    a. their percentage of assets held in risky investments?
    b. their life insurance to annual salary ratio?

    c.   their percentage of gross personal assets held
         as liabilities?
    d.   their gambling activities?
    e.   their personal investment choice with a 50%
         chance of loss of net wealth?
    f.   their personal investment choice with a 10%
         chance of loss of net wealth?

The following research questions were formulated in

order to satisfy the second research objective:

5. As reported by their supporting functional
   personnel, is there a difference between more
   effective and less effective Air Force program
   managers in regard to effectiveness based on
   management processes?

6. As reported by their supporting functional
   personnel, is there a difference between more
   effective and less effective Air Force program
   managers in regard to effectiveness based on
   management outcomes?

7. As reported by their supporting functional
   personnel, is there a difference between more
   effective and less effective Air Force program
   managers in regard to overall job effectiveness?

8. Based on the three measures of effectiveness as
   reported by the functional personnel, do the
   classifications of more effective and less effective
   by the supervisors correspond to the results of
   these effectiveness measures?

The following research questions were formulated in

order to satisfy the third research objective:

9. Using the model describing risk behavior in Figure
   1, do the functional personnel rate the more effective
   program managers as risk averse, risk neutral, or risk
   taking?

10. Using the model describing risk behavior in Figure 1,
    do the functional personnel rate the less effective
    program managers as risk averse, risk neutral, or risk
    taking?

11. Once questions 9 and 10 have been answered, are there
    identifiable differences between the more effective
    program managers and the less effective managers?

Hypotheses

Using the previous research questions and information
presented in the review of the literature (chapter two of this
report), the following hypotheses were postulated:

Hypothesis 1: More effective Air Force program managers
(as rated by their supervisors) will report themselves
as taking significantly more risks than less effective
Air Force program managers.

Hypothesis 2: More effective Air Force program managers
will report themselves as gathering significantly more
information to make decisions than less effective Air Force
program managers.

Hypothesis 3: More effective Air Force program managers
will report themselves as spending significantly less
time to make decisions than less effective Air Force
program managers.

Hypothesis 4: More effective Air Force program managers
will report themselves as having significantly more
control over their environment than less effective Air
Force program managers.

Hypothesis 5: More effective Air Force program managers
will report themselves as seeking significantly more
sensation in their lives than less effective Air Force
program managers.

Hypothesis 6: Supervisors will report that more
effective Air Force program managers take significantly
more risks than less effective Air Force program managers.

Hypothesis 7: Supervisors will report that more
effective Air Force program managers gather significantly
more information to make decisions than less effective Air
Force program managers.

Hypothesis 8: Supervisors will report that more
effective Air Force program managers spend significantly
less time making decisions than less effective Air Force
program managers.

Hypothesis 9: Functional personnel will report that
more effective Air Force program managers take
significantly more risks than less effective Air Force
program managers.

Hypothesis 10: Functional personnel will report that more effective Air Force program managers gather significantly more information to make decisions than less effective Air Force program managers.

Hypothesis 11: Functional personnel will report that more effective Air Force program managers spend significantly less time making decisions than less effective Air Force program managers.

Hypothesis 12: Functional personnel will report that more effective Air Force program managers have significantly more control over their environment than less effective Air Force program managers.

Hypothesis 13: Functional personnel will report that more effective Air Force program managers seek significantly more sensation than less effective Air Force program managers.

Hypothesis 14: More effective Air Force program managers will hold a significantly higher percentage of their gross personal assets in risky investment categories than less effective Air Force program managers.

Hypothesis 15: More effective Air Force program managers will have a significantly lower ratio of life insurance to annual salary than less effective Air Force program managers.

Hypothesis 16: More effective Air Force program managers will have a significantly higher percentage of assets held as liabilities than less effective Air Force program managers.

Hypothesis 17: More effective Air Force program managers will wager (gamble) a significantly higher percentage of their net wealth per year than less effective Air Force program managers.

Hypothesis 18: More effective Air Force program managers will state that they would risk one-half of their net wealth (with a 50% chance of loss) for a significantly lower return than less effective Air Force program managers.

Hypothesis 19: More effective Air Force program managers will state that they would risk one-half of their net wealth (with a 10% chance of loss) for a significantly lower return than less effective Air Force program managers.

Hypothesis 20: Functional personnel will report that more effective Air Force program managers will be rated significantly greater than less effective Air Force program managers in terms of management processes.

Hypothesis 21: Functional personnel will report that more effective Air Force program managers will be rated significantly greater than less effective Air Force program managers in terms of management outcomes.

Hypothesis 22: Functional personnel will report that more effective Air Force program managers will be rated significantly greater than less effective Air Force program managers in terms of overall job effectiveness.

Hypothesis 23: Using the model of risk behavior in Figure 1, more effective Air Force program managers will be rated by their functional personnel as exhibiting risk taking behavior.

Hypothesis 24: Using the model of risk behavior in Figure 1, less effective Air Force program managers will be rated by their functional personnel as exhibiting risk averse behavior.

Scope

The scope of this study was limited to program managers in one Deputate at Aeronautical Systems Division (ASD), Wright-Patterson AFB, OH. Results of the research have implications to the whole DOD R & D community. But, the actual conclusions of the study should not be extended beyond the ASD/AE community.

II. Literature Review

Overview

This chapter summarizes the literature concerning risk taking and program management effectiveness. Topics which are covered in detail in this chapter are 1) a discussion of risk, 2) risk in the managerial decision making process, 3) measuring risk, 4) risk in DOD acquisition management, and 5) program management effectiveness.

Discussion of Risk

Definition of Risk. Risk is defined by MacCrimmon and Wehrung as "the exposure to the chance of injury or loss (11:9)." This definition includes the three primary elements of risk which are:

1. potential loss (magnitude of loss).
2. chance of loss (implies probability).
3. exposure, i.e. the decision maker can take actions that can increase (or decrease) the magnitude or chance of loss [11:9].

It is important to note that the action of risk taking, or "to risk", implies the availability of choice (11:9). An individual who makes no decision, or who has no alternatives to choose from, by definition, is not engaging in risk taking. The "do nothing" alternative is a decision option and should not be confused with decision avoidance. Also, if future events are known with absolute certainty, then chance is not involved and risk taking is absent.

Risk Versus Uncertainty. Risk must be distinguished from uncertainty to understand the concept fully. A risk situation is one in which a probability distribution for outcomes is made on a meaningful basis, agreed upon by the set of relevant experts, and is, therefore, known (7:3). Uncertainty, on the other hand, arises when a consensus agreement among the set of experts cannot be achieved and therefore, there is an undefined or unknown probability distribution of the set of outcomes (7:3). Another way to state this concept is that the level of knowledge of outcomes may be broken into three categories; 1) certainty, 2) risk, and 3) uncertainty (2:167). Certainty means that there is complete and accurate knowledge of each alternative, and there is only one outcome associated with each alternative (2:167). Risk involves multiple outcomes associated with each alternative, and a probability of occurrence is attached to each outcome (2:167). And finally, uncertainty refers to a situation where there are multiple outcomes for each alternative, but there is no knowledge of the probabilities of the outcomes (2:167). As noted earlier, a decision made under certainty involves no risk taking. And alternatively, a decision made under total uncertainty as to the outcomes also does not constitute risk taking.

Basic Risk Paradigm. In their research, MacCrimmon and Wehrung introduced the "basic risk paradigm" by which their

study of risk was guided. Figure 2 on the nex⁺ page depicts
this model of risk. The square in Figure 2 implies a choice
the decision maker takes and the circle implies an event that
is outside the control of the decision maker (11:12).
MacCrimmon and Wehrung also state that "Adopting a Bayesian
point of view, we assert that in virtually all situations, a
person has some information from which to estimate the
chances of the potential gains and losses if they are not
given (11:11)." In other words, MacCrimmon and Wehrung are
saying that the situation of uncertainty rarely occurs. But,
Hertz points out that there is usually considerable
uncertainty about the formulation of the probability
distribution of the outcomes, and therefore, a workable model
of risk (from a managerial perspective) would include both
the lack of predictability about outcomes as well as the
uncertainty of the problem structure itself (7:4).

Risk Behavior Model. MacCrimmon and Wehrung list three
determinants of risk. These determinants of risk are 1) lack
of time, 2) lack of information, and 3) lack of control
(11:14). In other words, risk as the exposure to a chance of
loss is proportional to the lack of time, the lack of
information, and the lack of control (11:18). A model of
risk behavior based on these three determinants of risk was
introduced in Figure 1 in chapter one.
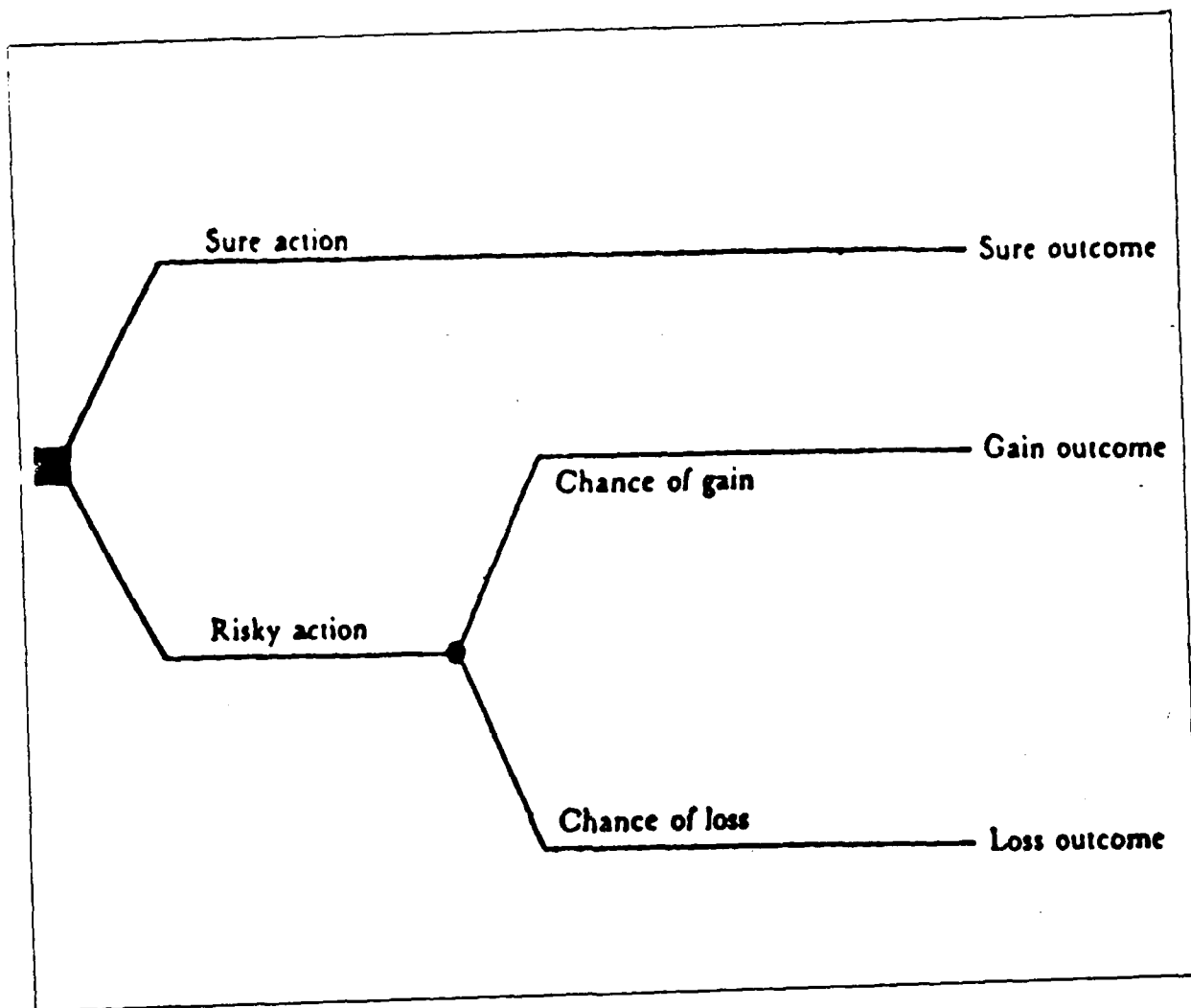
Figure 2: Basic Risk Paradigm
(Reprinted from 11:12)

Lack of Time. The lack of time in decision making causes inherently risky situations (11:16). The decision maker must choose an option before an uncertain event occurs (11:19). This is not an unusual situation, as everyone is faced with this predicament in life. The lack of time in the risk behavior model of Figure 1 affects all three of the components of risk described previously. Insufficient time causes a misunderstanding of the magnitude of potential loss, a misunderstanding of the chances of a potential loss, and a misunderstanding of the exposure to potential loss (11:19). MacCrimmon and Wehrung state:

> When the time is insufficient, people cannot understand fully or reduce the magnitude or chances of potential losses to which they are exposed. With insufficient time, new control options that could affect exposure to a chance of potential loss cannot be developed [11:16].

It should be noted that the literature indicates that a risk taker is characterized by spending less time to make decisions (11:231).

Lack of Information. A lack of information in decision making also affects the three components of a risky situation (11:19). With a lack of information, the decision maker does not know the size of potential loss, the chances of potential loss, or the exposure to potential loss (11:19). Lack of information may be caused by inadequate data, unreliable data, unfamiliarity with the data, or insufficient time to collect the needed data (11:19). The literature

states that "high risk taking propensity is related to more information search activity than low risk taking propensity (2:258). On the surface, this finding seems to be at odds with the perception that risk taking is related to making quick decisions (11:230). However, as indicated, previous research in the area of risk points out that risk takers seek more information in order to better define the probablity distribution of potential outcomes (11:231).

Lack of Control. The lack of control over the environment in decision making affects the three components of risk because the decision maker cannot control the size, the chance, or the exposure to potential loss (11:19). This phenomenon of control may also be labeled internal locus of control; the extent to which events are perceived to be controlled by internal processes (2:257). Lack of control may be caused by natural forces, human forces, insufficient resources, insufficient information, or insufficient time (11:19). The literature indicates that risk taking is associated with a perception of having greater control over

's environment (11:225). A relationship has been found to exist between internal locus of control and more information search activity (2:257). Therefore, internal locus of control and gathering more information to make decisions appear to be linked to greater risk taking propensity.

Risk In The Managerial Decision Making Process

There is an abundance of literature on risk and risk analysis based on classical decision theory. MacCrimmon and Wehrung state:

> The most widely accepted approach to studying risk is expected utility theory. Bernoulli (1738), von Neumann and Morgenstern (1947), and Savage (1954) developed the foundations of the theory. From a set of axioms, a representation theorem is developed that requires the choice of the action having the highest expected utility [11:104].

The theory of rational choice (based on expected utility) describes the rational manager as one who approaches decision making from a rational and completely informed viewpoint (2:168). The rational manager uses a highly normative approach and focuses on the optimal choices available (2:168). The rational manager model assumes (as did MacCrimmon and Wehrung) that all alternatives (or outcomes) are known or can be assigned a probability (2:168). Based on these criteria, the rational choice process is:

1. An individual is confronted with a number of different, specified courses of action.
2. To each alternative is attached a set of consequences.
3. The individual has a system of preferences that permit ranking the consequences.
4. The individual selects the optimal (highest rank) [2:171].

March and Shapira studied the relationship between the decision theoretic conception of risk (as presented in the rational manager model) and the views held by executives concerning decision making. They summarized that:

> Managers are quite insensitive to estimates of the probabilities of possible outcomes; their decisions are particularly affected by the way their attention is

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focused on critical performance targets; and they make a sharp distinction between taking risks and gambling... These differences along with closely related observations drawn from other studies of individual and organizational choice indicate that the behavioral phenomenon of risk taking will be imperfectly understood within a classical conception of risk [14:1404].

Tversky and Kahneman found that "the psychological principles that govern the perception of decision problems and the evaluation of probabilities and outcomes produce predictable shifts of preference when the same problem is framed in different ways (20:453)." In other words, Tversky and Kahneman showed that the theory of rational choice did not always hold true in regards to decision making. Therefore, while expected utility is the conventional tool for studying risk, it may not be sufficient in studying managerial decision making.

Measuring Risk

From their study of risk, MacCrimmon and Wehrung came up with the following conclusions regarding risk measurement:

1. The data provide support for a concept of risk propensity. In other words, assessing an individual's willingness to take risk can be measured.

2. There are many different ways to measure risk propensity which may lead to widely different results (including expected utility or preference curve measures). The researchers suggest that future studies should utilize several theoretically sound measures.

3. A risk "portfolio" can be developed for an individual which would consist of:

   a. risk measures in standardized situations (expected utility measures).

   b. risk measures in naturalized situations (such as the holding of personal assets, life insurance, etc.).

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c. attitudinal risk measures.

4. When measuring risk propensity, one must be
    conscious of the domain effect (e.g. personal versus
    business risk). Using the risk "portfolio" described
    above, the researchers found strong relationships
    between similiar types of measures (e.g. standardized
    with standardized), but only weak relationships between
    disimiliar types of measures (e.g. standardized with
    naturalized) [11:205-206].

Using the risk "portfolio" concept described in three

above, MacCrimmon and Wehrung considered the standardized

situations to be their primary measures of risk, and the

naturalized situations and the attitudinal risk measures to

be secondary measures of risk (11:206). Measuring risk in

standardized situations, while considered a primary measure

of risk by MacCrimmon and Wehrung, requires a concerted

effort involving much more time than naturalized or

attitudinal measures. When examing attitudinal measures, one

should be cautious because these measures may tend to provide

a bias toward risk taking because of the cultural value

attributed to people who take risks (11:102).

Risk In DOD Acquisition Management

The DOD defines risk as "a potential occurrence that

would be detrimental to plans or programs. Risk is measured

as the combined effect of the likelihood of the occurrence

and a measured or assessed consequence given that occurrence

(3:15-1)." The DOD recommends a program of risk management

which includes risk assessment, risk analysis, and risk

handling (3:15-1). Tools, techniques, and mathematical

models aid in the risk assessment and risk analysis tasks.

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The third portion of risk management, risk handling, is where the individual management style of the DOD program manager comes into play. In a speech to the Defense Systems Management College, former Aeronautical Systems Division Commander General William Thurman stated that one of the major tasks of the program manager is the management of the program risk and uncertainty (19:12). General Thurman summarized his speech by saying:

> A lot of work remains in the areas of management of risk assessment and uncertainty forecasting. The tools and techniques, however, cannot take the place of the analyst and manager who is emotionally capable of managing uncertainty in an uncertain environment; who thinks logically and in terms of alternatives, identification of problems, and back-up strategies; and lastly, who has the capability in making decisions with only limited or, sometimes, suspect data [19:24].

As General Thurman mentioned, the DOD R & D environment is characterized by uncertain information which therefore, necessitates aggressive risk management plans and policies. Consequently, an investigation of Air Force program manager risk taking propensity seems warranted.

Program Management Effectiveness

As mentioned in chapter one, effectiveness of program managers has been studied by many researchers. One study done by researchers at the University of Minnesota in 1961 attempted to identify personal characteristics with effective management (12:13). In order to compare characteristics, the researchers had to separate managers into "more effective"

groups and "less effective" groups (12:23). The Minnesota researchers said:

> The criterion of effectiveness employed in studies such as this is a critical element of the study design. Such a criterion should be relevant, acceptable to the users, reliable, and free from bias. Two commonly employed criteria of managerial effectiveness are level of assignment in the management hierarchy and effectiveness appraisals by superior managers. Both of these measures possess strong points and shortcomings as criteria of managerial effectiveness [12:23].

The Minnesota researchers concluded:

1. There is a phenomenon of general "managerial effectiveness" which can be identified and measured regardless of the specific assignment of the manager.

2. Measured personal characteristics are predictors of managerial effectiveness in a wide variety of situations [12:46-47].

They also recommended that the study offers a basis for considerable improvement of managerial staffing decisions (12:47). "The predictor system could be used as a screening device to be supplemented by other predictors found useful within the specific staffing situation (12:47)." This study of Air Force program manager effectiveness is of similiar design as the Minnesota study. In this study, the management style of risk taking tendency is the key variable of interest.

Cameron and Whetten described organizational effectiveness as:

> An unmapped terrain, where the reponsibility lies with investigators to chart it. There are multiple landmarks, but no overall viewpoint can be reached where the whole terrain is visible at once [1:20].

In other words, organizational effectiveness is complex and cannot be captured with just one model (1:20). Cameron

and Whetten advocated the use of multiple models when studying organizational effectiveness (1:20).

Lewin and Minton summarized the plethora of organizational effectiveness models in their research (9:516). The following is a historical summary of the search for organizational effectiveness:

a. Scientific Management - Taylor (1911).

b. Principles of Management - Fayol (1916/1925).

c. Human Relations - Mayo (1933).

d. Decision Making and Information Management - Simon (1947).

e. Socio-technical - Trist and Bamforth (1951).

f. Strategic Management and Design - Chandler (1962).

g. Human Resources - McGregor (1961) and Likert (1967).

h. Contingency Theory - Lawrence and Lorsch (1967).

i. Population Ecology - Hannan and Freeman (1977) [9:516-517].

Steers developed a process approach to understanding effectiveness in an organization. The process model he developed consisted of the following three components:

1. Goal optimization.

2. Systems perspective.

3. Behavioral emphasis [17:57]

Goal optimization focuses on the outcomes or accomplishments of an organization or project team, and the behavioral emphasis keys on the interactions among the team members (17:5760). The second component of the model, a

systems perspective, ties the other two components together from an analysis viewpoint (17:59).

When a program manager is successful, he is not necessarily effective (10:10). Luthans studied this phenomenon by examining the managerial acivities of routine communication, traditional management activities (planning, decision making, and controlling), human resource management activities, and networking (10:9). Luthans found only a significant correlation between success and the management activity of networking (sometimes referred to as politicking) (10:9).

In this study, the effectiveness of the program manager is broken into two parts; effectiveness based on management processes and effectiveness based on management outcomes. Management processes include planning, organizing, communication, administration, human relations, and leadership. Management outcomes refer to the accomplishments of the organization or project team. This methodology is similiar to the model developed by Steers.

III. Methodology

Overview

This chapter discusses the methodology used to satisfy the research objectives and to answer the research questions. The chapter describes the population and sample from which the data were obtained, the survey questionnaires used to generate the data, and the procedures used in the analysis of the data.

Population

The Deputy for Aeronautical Equipment (AE) at Aeronautical Systems Division (ASD), Wright-Patterson AFB, OH was the source of the data collected. ASD/AE is one of fifteen deputates in the ASD organization (21:71). The stated mission of ASD/AE is to develop and acquire aeronautical equipment supporting a wide variety of Air Force programs including common avionics, combat identification systems, life support equipment, chemical defense, common support equipment, Modular Automatic Test Equipment (MATE), Air Force uniforms, air base survivability, Productivity, Reliability, Availability and Maintainability (PRAM) initiatives, and Reliability and Maintainability Technology Insertion Program (RAMTIP) initiatives (5:12). ASD/AE is organized into five SPOs and six functional support groups with a Fiscal Year 1988 budget of $416 million (5:1). Figure 3 on the next page is the ASD/AE organizational chart.

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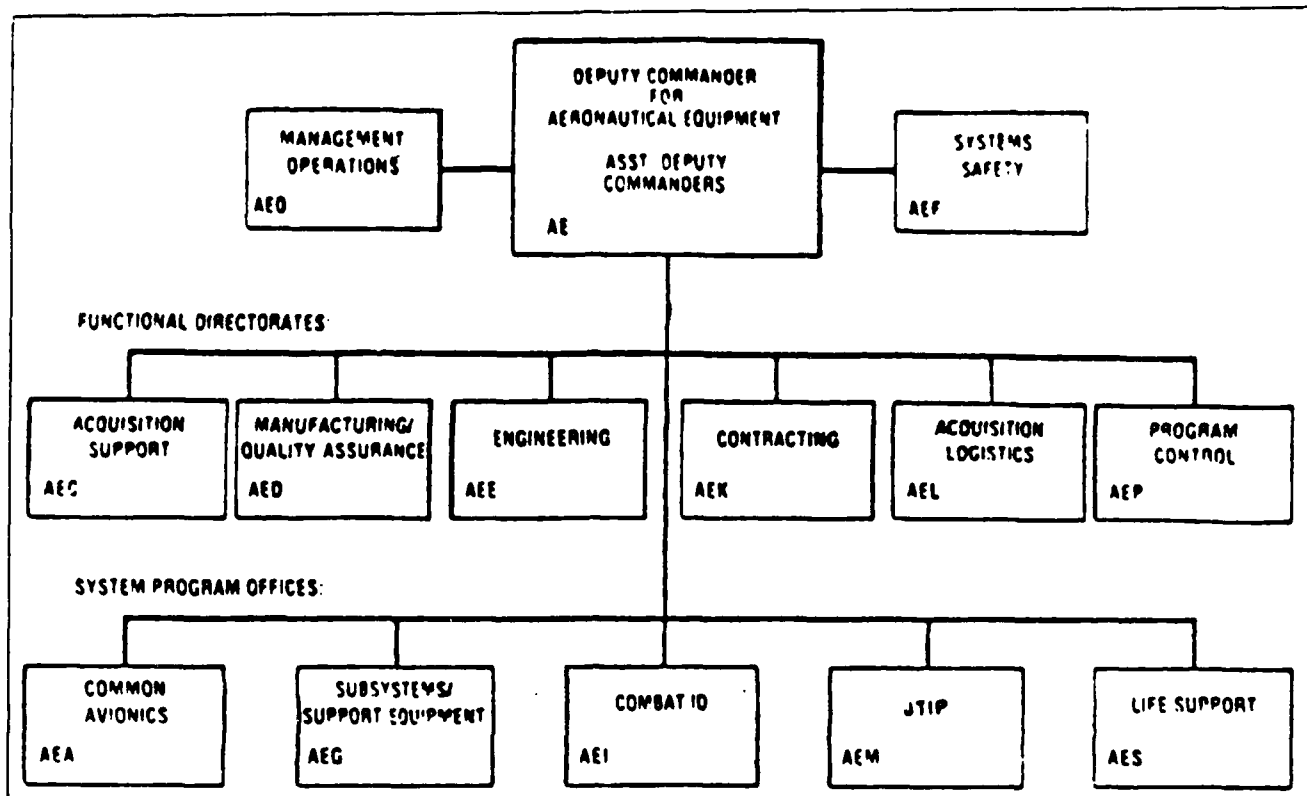
Figure 3:   ASD/AE Organization Chart
(Reprinted from 5:7)
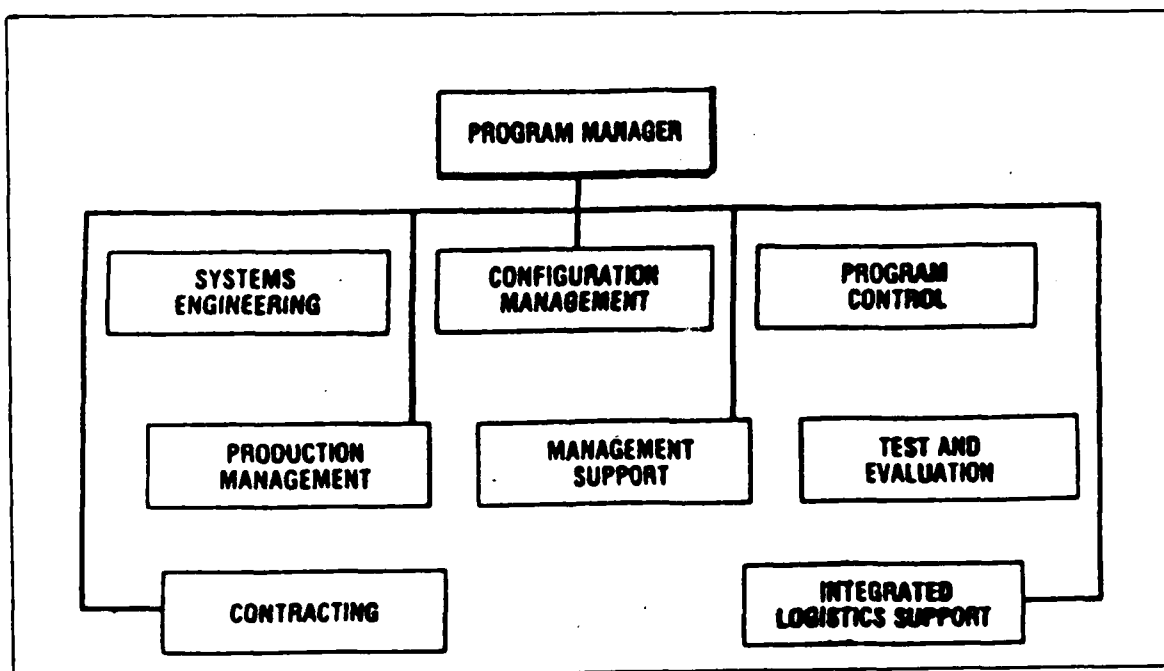
Figure 4:   Typical ASD Program Management Team
(Reprinted from 5:9)

The population consisted of all program managers in ASD/AE. ASD/AE is currently responsible for over 80 programs ranging in dollar value from $.9 million to $6.4 billion (5:1). The large number of programs in ASD/AE make it an organization which requires a high number of program managers, and therefore, an ideal organization for the purposes of this study. It is estimated that there are approximately 80 individuals within ASD/AE with varying degrees of program management responsibilities. ASD/AE uses a matrix management approach in its daily operations. As stated in the ASD/AE Newcomer's Guide:

> The ultimate responsibility of this matrix management process is effective program management, and that is accomplished at the SPO level by an acquisition team. It is headed by a Program Manager and made up of both straight-line and matrix personnel working toward the mutual goal of obtaining for the Air Force the required weapons systems on time and within cost [5:8].

A typical ASD Program Management team is depicted in Figure 4 on the previous page (5:9).

Sample

The Deputy for ASD/AE and the five SPO Directors were briefed as to the purpose and nature of the research. They were then asked to identify four program managers from each of their SPOs; two more effective program managers and two less effective program managers (for a total of twenty program managers). In order to assure anonymity of the classification by the SPO Director, the researcher was not told what category the program managers were placed.

Next, the researcher asked each of the twenty program managers for the names of functional personnel who supported them on their programs. The researcher asked for the names of support personnel from the functional areas of Configuration Management, Program Control, Contracting, Engineering, and Logistics. Only the Contracting, Engineering, and Logistics functional personnel were used to collect data (for a total of three functional personnel per program manager).

Data Collection Technique

The data collection method used for this study was a survey questionnaire. Three different surveys were used; one for the program managers (survey A), one for the SPO Directors (survey B), and one for the functional personnel (survey C). Data was collected with another researcher who was studying the relationship between program manager effectiveness and conflict handling style. The three surveys can be found in Appendix B. Therefore, this data collection method allowed for the gathering of information from three different organizational levels; the program management level, the supervisory (SPO Director) level, and the supporting functional personnel level. This technique allowed the researcher to validate the research data across the different organization levels. A discussion of the consistency of the data is found in chapter five of this report.

The SPO Directors were asked to answer questions on each
of the four program managers they identified. Each of the
three functional personnel were given a questionnaire to
answer on their program manager, and each program manager was
given a questionnaire. Therefore, a total number of five
surveys per program manager was distributed. Table 1 gives
an overview of the individuals surveyed and the survey return
rate.

Table 1

Overview of Individuals Surveyed

	Surveys Distributed	Surveys Returned	Return Rate
SPO Director	5	5	100%
Program Manager	20	18	90%
Functional Personnel	52*	48	92%
Totals	77	71	92%

*The optimum number should have been 60 (e.g. three functional
personnel for every program manager). But, three program
managers had no functional support for their programs.

The program manager's name was on each survey in order
to collate the data. Once all the data was collected, the
surveys were grouped by program manager name. The grouped
surveys were taken back to the SPO Directors who removed the
names and separated the surveys into more effective and less
effective stacks. Again, anonymity of the SPO Director's
classification of more effective and less effective was of

utmost importance to the researcher and ASD/AE management. Therefore, the researcher never knew by name which program managers were classified as more effective and less effective. The SPO Directors were the only ones with this knowledge.

Surveys have some inherent advantages and disadvantages. Two advantages of a survey are 1) the respondent can take adequate time to collect facts and answer the questions, and 2) surveys are perceived as being more impersonal than other collection techniques (6:172). Some disadvantages of a survey are 1) nonresponse, and 2) limitations on the type and amount of information that can be obtained (6:172).

Survey Measures

This section describes the risk taking measures and the effectiveness measures which were designed into the survey questionnaires.

Risk Taking Measures. There were nineteen measures of risk taking propensity designed into the survey questionnaires. These measures were taken from previous research by MacCrimmon on measuring risk taking propensity (11:298-325). Table 2 on the next page summarizes the nineteen measures. Due to an error of ommission on survey A, measures 16, 17, 18, and 19 were dismissed from the study. Therefore, the researcher analyzed fifteen measures of risk taking propensity instead of the planned nineteen measures. The fifteen measures which were used in this study and

Table 2

Summary of Risk Taking Measures

Risk Taking Measure	Survey	Question(s)
1. Program Manager's Self-Rating of Risk Taking Propensity (SR)	A	Part II, #1
2. Program Manager's Self-Rating of Information Gathering (IG)	A	Part II, #2
3. Program Manager's Self-Rating of Decision Making Time (DT)	A	Part II, #3
4. Program Manager's Self-Rating of Control Over Environment (CTL)	A	Part II, #10, 13,14,17,18, 21,23
5. Program Manager's Self-Rating of Sensation Seeking (SS)	A	Part II, #11, 12,15,16,19, 20,22
6. Director's Rating of PM Risk Taking Propensity (DSR)	B	Part III, #1
7. Director's Rating of PM Information Gathering (DIG)	B	Part III, #2
8. Director's Rating of Decision Making Time (DDT)	B	Part III, #3
9. Functional Personnel Rating of PM Risk Taking Propensity (SSR)	C	Part III, #1
10. Functional Personnel Rating of PM Information Gathering (SIG)	C	Part III, #2
11. Functional Personnel Rating of PM Decision Making Time (SDT)	C	Part III, #3
12. Functional Personnel Rating of PM Control Over Environment (SCTL)	C	Part III, #4, 7,8,11,12,15, 17
13. Functional Personnel Rating of PM Sensation Seeking (SSS)	C	Part III, #5, 6,9,10,13,14, 16
14. Program Manager Risky Assets (RSKY)	A	Part II, #8
15. Program Manager Life Insurance to Annual Salary Ratio (INSRAT)	A	Part II, #4
16. Program Manager Assets Held as Debt (DEBT)	A	Part II, #5
17. Program Manager Gambling Activities (GAMBL)	A	Part II, #9
18. Program Manager Personal Investment Choice (50% Chance of Loss) (PI50)	A	Part II, #6
19. Program Manager Personal Investment Choice (10% Chance of Loss) (PI10)	A	Part II, #7

analyzed are discussed in more detail below and on the following pages.

Measure 1: Self-Rating of Risk Taking Propensity (SR)

The program managers were asked to rate themselves on a seven point scale based on the following question:

> How would you rate your willingness to undertake
> risky propositions as compared to other managers at
> or near your position/level?

The low end of the scale was "much less willing to accept risks" and the high end of the seven point scale was "much more willing to accept risks."

Measure 2: Self-Rating of Information Gathering (IG)

The program managers were asked to rate themselves on a seven point scale based on the following question:

> When making decisions, do you gather more or less
> information as compared to other managers at or near
> your position/level?

The low end of the scale was "gather much less information to make decisions" and the high end of the seven point scale was "gather much more information to make decisions."

Measure 3: Self-Rating of Decision Making Time (DT)

The program managers were asked to rate themselves on a seven point scale based on the following question:

> When making decisions, do you spend more or less
> time deliberating as compared to other managers at
> or near your position/level?

The low end of the scale was "spend much less time deliberating making decisions" and the high end of the seven

point scale was "spend much more time deliberating making decisions."

Measure 4: Self-Rating of Control Over Environment (CTL)

The program managers were asked seven pair-wise questions concerning control over their environment. These questions can be found in Appendix B, survey A (Part II, questions 10, 13, 14, 17, 18, 21, and 23). The risk measure was the number of positive control choices the program manager made out of the seven questions.

Measure 5: Self-Rating of Sensation Seeking (SS)

The program managers were asked seven pair-wise questions concerning their sensation seeking in their lives. These questions can be found in Appendix B, survey A (PartII, questions 11, 12, 15, 16, 19, 20, and 22). The risk measure was the number of positive sensation seeking choices the program manager made out of the seven questions.

Measure 6: Director's (Supervisor's) Rating of Program Manager Risk Taking Propensity (DSR)

The SPO Directors were asked to rate the program managers on a seven point scale based on the following question:

> How would you rate Program Manager X's willingness to undertake risky propositions as compared to other managers at or near his/her position/level?

The low end of the scale was "much less willing to accept risks" and the high end of the seven point scale was "much more willing to accept risks."

Measure 7:   Director's (Supervisor's) Rating of Program
             Manager Information Gathering (DIG)

The SPO Directors were asked to rate the program managers on a seven point scale based on the following question:

> When making decisions, does Program Manager X
> gather more or less information as compared to
> other managers at or near his/her position/level?

The low end of the scale was "gathers much less information to make decisions" and the high end of the seven point scale was "gathers much more information to make decisions."

Measure 8:   Director's (Supervisor's) Rating of Program
             Manager Decision Making Time (DDT)

The SPO Directors were asked to rate the program managers on a seven point scale based on the following question:

> When making decisions, does Program Manager X spend
> more or less time deliberating as compared to other
> managers at or near his/her position/level?

The low end of the scale was "spends much less time deliberating making decisions" and the high end of the seven point scale was "spends much more time deliberating making decisions."

Measure 9:   Functional Personnel Rating of Program
             Manager Risk Taking Propensity (SSR)

The functional personnel were asked to rate the program managers on a seven point scale based on the following question:

> How would you rate Program Manager X's willingness
> to undertake risky propositions as compared to
> other managers at or near his/her position/level?

The low end of the scale was "much less willing to accept risks" and the high end of the seven point scale was "much more willing to accept risks."

Measure 10:   Functional Personnel Rating of Program
                 Manager Information Gathering (SIG)

The functional personnel were asked to rate the program managers on a seven point scale based on the following question:

> When making decisions, does Program Manager X
> gather more or less information as compared to
> other managers at or near his/her position/level?

The low end of the scale was "gathers much less information to make decisions" and the high end of the seven point scale was "gathers much more information to make decisions."

Measure 11:   Functional Personnel Rating of Program
                 Manager Decision Making Time (SDT)

The functional personnel were asked to rate the program managers on a seven point scale based on the following question:

> When making decisions, does Program Manager X spend
> more or less time deliberating as compared to other
> managers at or near his/her position/level?

The low end of the scale was "spends much less time deliberating making decisions" and the high end of the seven point scale was "spends much more time deliberating making decisions."

Measure 12:   Functional Personnel Rating of Program
               Manager Control Over Environment (SCTL)

The functional personnel were asked seven pair-wise
questions concerning the program manager's control over the
environment.   These questions can be found in Appendix B,
survey C (Part III, questions 4, 7, 8, 11, 12, 15, and 17).
The risk measure was the number of positive control choices
out of the seven questions.

Measure 13:   Functional Personnel Rating of Program
               Manager Sensation Seeking (SSS)

The functional personnel were asked seven pair-wise
questions concerning the program manager's sensation seeking.
These questions can be found in Appendix B, survey C (Part
III, questions 5, 6, 9, 10, 13, 14, and 18).   The risk
measure was the number of positive sensation seeking choices
out of the seven questions.

Measure 14:   Percentage of Total Assets Held in Risky
               Investment Categories (RSKY)

The program managers were asked to estimate the
percentage of their gross assets which were held in the
following categories:

    1.   Common Stocks
    2.   Real Estate
    3.   Business Ventures or Partnerships
    4.   Savings Accounts
    5.   Commodity Futures Contracts
    6.   Long or Short Stock Positions
    7.   Mutual Funds
    8.   Other (bonds, pension funds, bank deposits, etc.)

The risk measure was the percentage of gross personal
assets which were in held in the five riskiest categories.
The five riskiest categories are common stocks, business

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ventures or partnerships, commodity futures contracts, long
or short stock positions, and mutual funds.

Measure 15: Life Insurance to Annual Salary Ratio (INSRAT)

The program managers were asked to estimate the total
face value of their life insurance policies, only including
the, policies in which the premiums were paid solely by
themselves. The risk measure was the ratio of total life
insurance to annual salary.

Effectiveness Measures. The primary measure of
effectiveness in this study was the categorization of more
effective and less effective by the SPO Directors. However,
in order to substantiate these ratings by the SPO Directors,
the supporting functional personnel were asked questions
about the effectiveness of the program managers. Three
measures of effectiveness were developed from these
questions.

Measure 1: Effectiveness Based On Management Process (PROC)

The functional personnel were asked ten questions which
dealt with the program manager's management abilities. The
management areas of planning, organizing, communication,
administration, human relations, and leadership were covered
in the ten questions. These questions can be found in
Appendix B, survey C (Part IV). For each of the ten
questions, the functional personnel rated the program
managers on a seven point scale. Therefore, the
effectiveness measure was the average rating of the ten
questions.

Measure 2:   Effectiveness Based On Management Outcomes (OUT)

The functional personnel were asked ten questions which dealt with the accomplishments of the project team. In other words, these questions were geared at how well the project team was achieving their group goals. These questions can be found in Appendix B, survey C (PartV). For each of the ten questions, the functional personnel rated the project team on a seven point scale. Therefore, the effectiveness measure was the average rating of the ten questions.

Measure 3:   Overall Job Effectiveness (INJOB)

The final measure of effectiveness, as rated by the functional personnel, was the following direct question:

> To what extent do you agree or disagree with the following statement about your program manager: Program Manager X is effective in his/her job.

The low end of the scale was "disagree strongly" and the high end of the seven point scale was "agree strongly." In fact, this question was one of the ten questions included in the "process effectiveness" questions of measure 1 above. Since the question was so direct about the program manager's effectiveness, it was used as a third, distinct effectiveness measure.

Analysis Procedures

Comparison of Risk Taking Measures. The first area of analysis in this study was to compare the more effective program manager group with the less effective program manager group in terms of the risk taking measures. The primary statistical technique used to analyze the data was the

non-parametric Kruskal-Wallis Analysis of Variance (ANOVA)
technique. Broadly speaking, ANOVA is a technique for
identifying and measuring the various sources of variation
within a collection of data (8:273). The reason for using
the Kruskal-Wallis non-parametric ANOVA was that this
technique involves no assumptions about the defining
characteristics of the sampled population distribution
(8:452). In other words, it is a distribution-free
technique, and therefore, a more conservative technique than
a parametric ANOVA. For each of the fifteen risk taking
measures, Kruskal-Wallis ANOVA was used to test the following
null hypothesis:

$$H_o: \mu_{More\ Effective} = \mu_{Less\ Effective}$$

In other words, for each risk measure, the researcher was
trying to determine if there was a statistical difference between
the sample means of the more effective program managers and the
less effective program managers. The significance level chosen
for this study was a p value of 0.1. Emory states:

> The choice of the level of significance should be made
> before the data is collected. The most common level is
> 0.05, although 0.01 is also widely used. Other
> significance levels such as 0.1, 0.025, and 0.001 are
> sometimes chosen [6:358].

Therefore, with this decision rule, only risk measures
which had a difference of group means at a confidence level
of 0.1 were accepted to be true differences.

The statistical software package STATISTIX was used to
facilitate the data analysis process. STATISTIX is an

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interactive statistical analysis program which can be run on any IBM compatible microcomputer.

Comparison of Effectiveness Measures. The second area of analysis in this study was to compare the group means of the more effective program managers and the less effective program managers in terms of the three effectiveness measures. The same Kruskal-Wallis ANOVA technique was used for the three effectiveness measures. Once the Kruskal-Wallis ANOVA technique was accomplished, a qualitative analysis was done to see if the functional personnel ratings of program manager effectiveness agreed with the SPO Directors' classification of more effective and less effective. Each program manager was labeled as less effective, neutral, or more effective based on the three effectiveness measures. This qualitative analysis was done using the following decision rules:

1. If the program manager is labeled as less effective in two of the three effectiveness measures (PROC, OUT, and INJOB), then the program manager will be categorized as less effective.

2. If the program manager is labeled as neutral in two of the three effectiveness measures, then the program manager will be categorized as neutral. Also, if the program manager is labeled differently for all three effectiveness measures, then the program manager will be categorized as neutral.

3. If the program manager is labeled as more effective in two of the three effectiveness measures, then the program manager will be categorized as more effective.

The scale in Figure 5 on the next page was used to label the program manager for each of the three effectiveness

measures. For consistency, if there was a rating of either 3 or 5, this was considered to be effectively neutral.

```
|-------|-------|-------|-------|-------|-------|
1       2       3       4       5       6       7
|               |               |               |
|LESS EFFECTIVE |    NEUTRAL    |MORE EFFECTIVE |
|               |               |               |
```
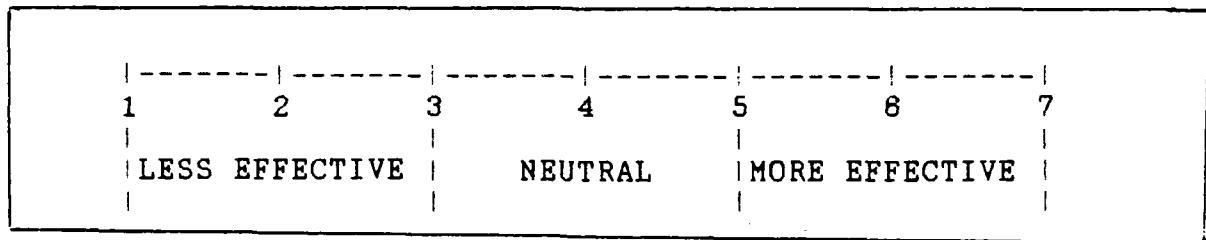
Figure 5:   Effectiveness Scale

Risk Behavior Model Analysis. The final area of analysis in this study was to examine the sample of program managers in terms of the risk behavior model presented in Figure 1 of chapter one. The functional subordinates' ratings of decision making time, information gathering, and control over the environment were used to label each program manager as risk averse, risk neutral, or risk taking in these three areas. Then each program manager was labeled as overall risk averse, risk neutral, or risk taking using the following decision rules:

1. If the program manager is labeled as risk averse in two of the three categories (decision making time, information gathering, and control over the environment), then the program manager will be labeled as a risk averter.

2. If the program manager is labeled as risk neutral in two of the three categories, then the program manager will be labeled as risk neutral. Also, if the program manager is labeled differently in all three categories, then the program manager will be labeled as risk neutral.

3. If the program manager is labeled as risk taking in two of the three categories, then the program manager will be labeled as a risk taker.

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The scale in Figure 6 was used to label the program manager in each of the three areas. For consistency, if there was a rating of either 3 or 5, this was considered to be risk neutral.

```
|-------|-------|------|------|------|------|
1       2       3      4      5      6      7
|                |            |             |
| RISK AVERSE    |RISK NEUTRAL | RISK TAKING |
|                |            |             |
```

Figure 6: Risk Behavior Scale

IV. Findings

Overview

This chapter includes the findings from this study of program manager effectiveness and risk taking propensity. The research questions which were formulated in chapter one of this report are addressed. Appendix A includes a graphical comparison of the more effective group mean and the less effective group mean for each of the risk taking measures. It also includes the Kruskal-Wallis ANOVA results. Recall that only fifteen of the proposed nineteen risk taking measures were analyzed in this study. The three effectiveness measures are also discussed in this chapter, and results are included in Appendix A. Table 3 on the next page summarizes the Kruskal-Wallis results for the risk taking measures and the three effectiveness measures.

Discussion of Risk Taking Measures

Research Question 1.

As reported by the program managers themselves, is there a difference between more effective and less effective Air Force program managers in regard to:

a. a general rating of their risk taking propensity?

Discussion: Using risk measure SR in survey A, the Kruskal-Wallis ANOVA procedure found no significant difference between the more effective group and the less effective group.

Table 3
Kruskal–Wallis ANOVA Summary

RISK TAKING MEASURES

MEASURE	M.E GROUP MEAN	L.E. GROUP MEAN	P VALUE
1. SR	5.2	4.875	.4635
✔ 2. IG	5.7	5.0	.0708
✔ 3. DT	3.8	4.625	.1033
✔ 4. CTL	6.0	4.375	.0319
5. SS	4.0	3.0	.2406
✔ 6. DSR	5.9	3.3	.0012
✔ 7. DIG	6.1	2.9	.0003
8. DDT	5.0	4.2	.2031
✔ 9. SSR	5.127	3.809	.0254
✔ 10. SIG	5.424	4.559	.0225
11. SDT	4.292	3.956	.4974
✔ 12. SCTL	6.071	4.497	.0201
✔ 13. SSS	3.979	2.787	.0371
14. RSKY	0.145	0.097	.6326
15. INSRAT	2.667	2.397	.4081

EFFECTIVENESS MEASURES

MEASURE	M.E GROUP MEAN	L.E. GROUP MEAN	P VALUE
✔ 1. PROC	5.426	4.5	.0269
2. OUT	5.488	5.023	.4414
✔ 3. INJOB	5.833	4.862	.0360

✔ MEASURES WHICH WERE SIGNIFICANT IN THIS STUDY.
SIGNIFICANCE LEVEL IS P VALUE OF .1 OR LESS.
NOTE: RISK MEASURE 3 (DT) WAS CONSIDERED SIGNIFICANT
WITH P VALUE OF .1033.

b. the amount of information they gather to make
    decisions?

Discussion: Using risk measure IG in survey A, the
Kruskal-Wallis ANOVA procedure determined there was a
significant difference between the more effective group and
the less effective group. As rated by the program managers
themselves, the more effective group gathered more
information than the less effective group when it came to
making decisions.

c. the amount of time they take to make decisions?

Discussion: Using risk measure DT in survey A, the
Kruskal-Wallis ANOVA procedure determined there was a
significant difference between the more effective group and
the less effective group. As rated by the program manager
themselves, the more effective group reported that they spent
less time than the less effective group when making
decisions.

d. the amount of control they feel they have over
    their environment?

Discussion: Using risk measure CTL in survey A, the
Kruskal-Wallis ANOVA procedure determined there was a
significant difference between the more effective group and
the less effective group. As rated by the program managers
themselves, the more effective group felt they had more
control over their environment than the less effective group.

e. the amount of personal sensation seeking in their
    lives?

Discussion: Using risk measure SS in survey A, the
Kruskal-Wallis procedure found no significant difference

between the more effective group and the less effective group.

Research Question 2.

As reported by their supervisors, is there a difference between more effective and less effective Air Force program managers in regard to:

a. a general rating of program manager risk taking propensity?

Discussion: Using risk measure DSR in survey B, the Kruskal-Wallis ANOVA procedure determined there was a significant difference between the more effective group and the less effective group. The supervisors reported that the more effective group took more risks than the less effective group.

b. the amount of information the program manager gathers to make decisions?

Discussion: Using risk measure DIG in survey B, the Kruskal-Wallis ANOVA procedure determined there was a significant difference between the more effective group and the less effective group. The supervisors reported that the more effective group gathered more information than the less effective group when it came to making decisions.

c. the amount of time the program manager takes to make decisions?

Discussion: Using risk measure DDT in survey B, the Kruskal-Wallis ANOVA procedure found no significant difference between the more effective group and the less effective group.

Research Question 3.

As reported by their functional personnel, is there a difference between more effective and less effective Air Force program managers in regard to:

a. a general rating of program manager risk taking propensity?

Discussion: Using risk measure SSR in survey C, the Kruskal-Wallis ANOVA procedure determined there was a significant difference between the more effective group and the less effective group. As reported by the functional personnel, the more effective group took more risks than the less effective group.

b. the amount of information the program manager gathers to make decisions?

Discussion: Using risk measure SIG in survey C, the Kruskal-Wallis ANOVA procedure determined there was a significant difference between the more effective group and the less effective group. As reported by the functional personnel, the more effective group gathered more information than the less effective group when it came to making decisions.

c. the amount of time the program manager takes to make a decision?

Discussion: Using risk measure SDT in survey C, the Kruskal-Wallis ANOVA procedure found no significant difference between the more effective group and the less effective group.

d. the amount of control the program manager appears to have over the environment?

Discussion: Using risk measure SCTL in survey C, the Kruskal-Wallis ANOVA procedure determined there was a significant difference between the more effective group and the less effective group. As reported by the functional personnel, the more effective group appeared to have more control over their environment than the less effective group.

  e. the amount of sensation seeking the program manager appears to exhibit in life?

Discussion: Using risk measure SSS in survey C, the Kruskal-Wallis ANOVA procedure determined there was a significant difference between the more effective group and the less effective group. As reported by the functional personnel, the more effective group exhibited more sensation seeking than the less effective group.

Research Question 4.

  As reported by the program managers themselves, is there a difference between more effective and less effective Air Force program managers in regard to:

  a. their percentage of assets held in risky investments?

Discussion: Using risk measure RSKY in survey A, the Kruskal-Wallis ANOVA procedure found no significant difference between the more effective group and the less effective group.

  b. their life insurance to annual salary ratio?

Discussion: Using risk measure INSRAT in survey A, the Kruskal-Wallis ANOVA procedure found no significant difference between the more effective group and less effective group.

Discussion of Effectiveness Measures

Research Question 5.

> As reported by the functional personnel, is there a difference between more effective and less effective Air Force program managers in regard to effectiveness based on management processes?

Discussion: Using the process effectiveness measure PROC in survey C, the Kruskal-Wallis ANOVA procedure determined there was a significant difference between the more effective group and the less effective group. As reported by the functional personnel, the more effective group was rated as significantly more effective than the less effective group as far as management process effectiveness was concerned.

Research Question 6.

> As reported by the functional personnel, is there a difference between more effective and less effective Air Force program managers in regard to effectiveness based on management outcomes?

Discussion: Using the outcomes effectiveness measure OUT in survey C, the Kruskal-Wallis ANOVA procedure found no significant difference between the more effective group and the less effective group.

Research Question 7.

> As reported by the functional personnel, is there a difference between more effective and less effective Air Force program managers in regard to overall job effectiveness?

Discussion: Using the overall job effectiveness measure INJOB in survey C, the Kruskal-Wallis ANOVA procedure determined there was a significant difference between the more effective group and the less effective group. As

reported by the functional personnel, the more effective

group was rated as significantly more effective in their job

than the less effective group.

Research Question 8.

> Based on the three measures of effectiveness as
> rated by the functional personnel, do the
> classifications of more effective and less
> effective by the supervisors correspond to the
> results of the effectiveness measures?

Discussion: Table 4 on the next page summarizes the

analysis of program manager effectiveness based on the three

effectiveness measures. Program Manager (PM) 1 through PM 10

were initially classified by the SPO Directors as less

effective. PM 11 through PM 20 were classified as more

effective by the SPO Directors. Using the decision rules

defined in chapter three of this report, the program managers

were labeled as less effective, neutral, and more effective

based on the three effectiveness measures. This label is the

Analysis column of Table 4. Using the decision rules, no

program manger was labeled as less effective. However,

closer examination of Table 4 shows that the program managers

classified as less effective by the SPO Directors were

labeled neutral (except PM 6 and PM 9) based on the three

effectiveness measures. As for the program managers

classified as more effective by the SPO Directors, all except

two (PM12 and PM13) were labeled as more effective based on

the three effectiveness measures. It should be noted that

data was not available for PM7, PM8, and PM17. Conclusions

Table 4

Analysis of Program Manager Effectiveness

PM	DIRECTOR RATING	PROC	OUT	INJOB	ANALYSIS
PM1	LESS EFFECTIVE	NTRL	M.E.	NTRL	NEUTRAL
PM2	LESS EFFECTIVE	NTRL	M.E.	NTRL	NEUTRAL
PM3	LESS EFFECTIVE	NTRL	NTRL	NTRL	NEUTRAL
PM4	LESS EFFECTIVE	NTRL	NTRL	M.E.	NEUTRAL
PM5	LESS EFFECTIVE	NTRL	M.E.	M.E.	MORE EFF
PM6	LESS EFFECTIVE	NTRL	NTRL	L.E.	NEUTRAL
PM7	LESS EFFECTIVE	N/A	N/A	N/A	N/A
PM8	LESS EFFECTIVE	N/A	N/A	N/A	N/A
PM9	LESS EFFECTIVE	M.E.	M.E.	M.E.	MORE EFF
PM10	LESS EFFECTIVE	NTRL	NTRL	M.E	NEUTRAL
PM11	MORE EFFECTIVE	M.E.	M.E.	M.E.	MORE EFF
PM12	MORE EFFECTIVE	L.E.	NTRL	NTRL	NEUTRAL
PM13	MORE EFFECTIVE	NTRL	NTRL	M.E.	NEUTRAL
PM14	MORE EFFECTIVE	M.E	NTRL	M.E	MORE EFF
PM15	MORE EFFECTIVE	M.E.	M.E.	M.E.	MORE EFF
PM16	MORE EFFECTIVE	M.E.	M.E.	M.E.	MORE EFF
PM17	MORE EFFECTIVE	N/A	N/A	N/A	N/A
PM18	MORE EFFECTIVE	M.E.	M.E.	M.E.	MORE EFF
PM19	MORE EFFECTIVE	M.E.	M.E.	M.E.	MORE EFF
PM20	MORE EFFECTIVE	M.E	NTRL	M.E	MORE EFF

NTRL=NEUTRAL

M.E.=MORE EFFECTIVE

L.E.=LESS EFFECTIVE

Data missing on PM7, PM8, and PM17.

concerning program manager effectiveness are included in chapter five of this report.

Discussion of Risk Behavior Model

Research Question 9.

Using the model describing risk behavior in Figure 1 of chapter one, do the functional personnel rate the more effective program managers as risk averse, risk neutral, or risk taking?

Discussion: Table 5 on the next page summarizes the analysis of program manager risk behavior using the risk behavior model in Figure 1. The program managers classified as more effective by the SPO Directors were PM 11 through PM 20. All of these program managers except two (PM 12 and PM 20) were labeled as exhibiting risk taking behavior. Recall that these were the observations of the functional personnel. Also, note that data was unavailable for PM 17. Conclusions concerning program manager risk behavior are included in chapter five of this report.

Research Question 10.

Using the model describing risk behavior in Figure 1 of chapter one, do the functional personnel rate the less effective program managers as risk averse, risk neutral, or risk taking?

Discussion: Table 5 on the next page summarizes the analysis of program manager risk behavior using the risk behavior model of Figure 1. The program managers classified as less effective by the SPO Directors were PM 1 through PM 10. All of these program managers were labeled as exhibiting risk neutral behavior. Recall that these were the observations of the functional personnel. Also, note that

Table 5

Analysis of Program Manager Risk Behavior

PM	INFORMATION GATHERING	DECISION MAKING TIME	CONTROL	ANALYSIS
PM1	TAKER	AVERTER	NEUTRAL	NEUTRAL
PM2	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
PM3	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
PM4	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
PM5	NEUTRAL	NEUTRAL	TAKER	NEUTRAL
PM6	NEUTRAL	NEUTRAL	NEUTRAL	NEUTRAL
PM7	N/A	N/A	N/A	N/A
PM8	N/A	N/A	N/A	N/A
PM9	TAKER	NEUTRAL	NEUTRAL	NEUTRAL
PM10	NEUTRAL	TAKER	NEUTRAL	NEUTRAL
PM11	TAKER	NEUTRAL	TAKER	TAKER
PM12	NEUTRAL	NEUTRAL	TAKER	NEUTRAL
PM13	TAKER	AVERTER	TAKER	TAKER
PM14	TAKER	NEUTRAL	TAKER	TAKER
PM15	TAKER	NEUTRAL	TAKER	TAKER
PM16	TAKER	NEUTRAL	TAKER	TAKER
PM17	N/A	N/A	N/A	N/A
PM18	TAKER	NEUTRAL	TAKER	TAKER
PM19	TAKER	NEUTRAL	TAKER	TAKER
PM20	TAKER	AVERTER	NEUTRAL	NEUTRAL

Data missing on PM7, PM8, and PM17.

55

data was unavailable for PM 7 and PM 8. Conclusions
concerning program manager risk behavior are included in
chapter five of this report.

Research Question 11.

> Once research questions 9 and 10 have been
> answered, are there identifiable differences
> between the more effective program managers and the
> less effective program managers?

Discussion: Once again referring to Table 5 on the previous
page, it is clear that the less effective program managers could
be labeled as risk neutral and the more effective program
managers could be labeled as risk taking. More discussion on
this difference is included in the conclusions section (chapter
five) of this report.

V. Conclusions and Recommendations

Overview

This chapter includes the conclusions drawn from this study as well as recommendations for further research in the area of program manager effectiveness and risk taking propensity. The research objectives which were formulated in chapter one of this report are addressed in this chapter. Also, the hypotheses which were generated in chapter one are discussed in this chapter.

Research Objective 1 Conclusions

The first research objective of this study was to determine if there was a difference in risk taking propensity between more effective Air Force program managers and less effective Air Force program managers. Nine of the fifteen measures showed a significant difference of the group means (using a significance level of .1). Not only were there significant differences between the more effective and the less effective groups using the nine measures, but the differences were as hypothesized.

Hypotheses Which Were Validated. The nine hypotheses which were validated by this study are the following:

> Hypothesis 2: More effective Air Force program managers (as classified by their supervisors) rated themselves as gathering significantly more information to make decisions than less effective Air Force program managers.

Discussion: As a measure of risk taking propensity, greater information gathering is positively correlated with greater tendency to take risks (2:258). Therefore, based on a self-reporting of the amount of information they gather to make decisions, more effective Air Force program managers demonstrate greater risk propensity than less effective Air Force program managers.

Hypothesis 3: More effective Air Force program managers rated themselves as spending significantly less time to make decisions than less effective Air Force program managers.

Discussion: As a measure of risk taking propensity, less time spent making decisions is positively correlated with greater tendency to take risks (11:231). Therefore, based on a self-reporting of the amount of time spent making decisions, more effective Air Force program managers demonstrate greater risk propensity than less effective Air Force program managers.

Hypothesis 4: More effective Air Force program managers rated themselves as having significantly more control over their environment than less effective Air Force program managers.

Discussion: As a measure of risk taking propensity, a perception of greater control over the environment is positively correlated with greater risk propensity (11:225). Therefore, based on a self-reporting of the perceived amount of control over the environment, more effective Air Force program managers demonstrate greater risk propensity than less effective Air Force program managers.

Hypothesis 6:   More effective Air Force program managers
were rated by their supervisors as taking significantly
more risks than less effective Air Force program managers.

Discussion: Based on the supervisors' evaluation of risk

taking propensity, more effective Air Force program managers

demonstrate greater risk propensity than less effective Air

Force program managers.   The difference between the more

effective group and the less effective group was very

distinct using this measure (p value of 0.0012 using the

Kruskal-Wallis ANOVA technique).

Hypothesis 7:   More effective Air Force program managers
were rated by their supervisors as gathering significantly
more information to make decisions than less effective Air
Force program managers.

Discussion: This hypothesis validation is consistent

with the validation of Hypothesis 2 which was discussed

above.   Again, there was a distinct difference between the

more effective group and the less effective group (p value of

0.0003 using the Kruskal-Wallis ANOVA technique).

Hypothesis 9:   More effective Air Force program managers
were rated by their functional personnel as taking
significantly more risks than less effective Air Force
program managers.

Discussion: This hypothesis validation is consistent

with the validation of Hypothesis 6 which was discussed

above.   The difference between the more effective group and

the less effective group was relatively strong (p value of

0.0254 using the Kruskal-Wallis ANOVA technique).

Hypothesis 10:   More effective Air Force program
managers were rated by their functional personnel as
gathering significantly more information to make
decisions than less effective Air Force program
managers.

Discussion: Again, this hypothesis, based on observation by the functional personnel, is validated consistent with two similiar hypotheses (Hypothesis 2 and Hypothesis 7) which were based on self-reporting of the program managers and reporting by the supervisors. Therefore, using amount of information gathered to make decisions as a measure of risk propensity, this study validated across three organizational levels that more effective Air Force program managers demonstrate greater risk propensity than less effective Air Force program managers.

> Hypothesis 12: More effective Air Force program managers were rated by their functional personnel as having significantly more control over their environment than less effective Air Force program managers.

Discussion: The validation of this hypothesis is consistent with the validation of Hypothesis 4 which was discussed above. Recall that the supervisors were not asked to rate the program managers in the area of control. Therefore, the levels of the organization which were polled on program manager control over the environment (i.e. the program managers themselves and the functional personnel) were consistent in reporting a significant difference between the more effective group and the less effective group.

> Hypothesis 13: More effective Air Force program managers were rated by their functional personnel as seeking significantly more sensation in their lives than less effective Air Force program managers.

Discussion: As a measure of risk propensity, greater sensation seeking is positively correlated with greater tendency to take risks (11:221). Therefore, based on

observations by the functional personnel and using sensation seeking as a measure of risk propensity, more effective Air Force program managers demonstrate greater risk propensity than less effective Air Force program managers. It should be noted, however, that a similiar evaluation of sensation seeking by the program managers themselves showed no significant difference between the more effective group and the less effective group.

Hypotheses Which Were Not Validated. Hypotheses 1, 5, 8, 11, 14, and 15 as postulated in chapter one of this report were not confirmed with this study. In addition, because of the error of ommission in survey A, Hypotheses 16, 17, 18, and 19 were unable to be confirmed or denied in this study.

Hypothesis 1 was based on a self-evaluation by the program managers of their tendency to take risks. The hypothesis stated that more effective Air Force program managers would rate themselves as taking significantly more risks than less effective Air Force program managers. As discussed in the review of the literature in chapter two, there is a favorable cultural bias towards taking risks. In other words, society looks favorably upon risk takers. Therefore, this cultural bias concerning risk taking may have influenced the self-reporting of the program managers, and therefore, there was no statistically significant difference between the more effective group and the less effective group.

Hypothesis 5 dealt with the program managers' self-reporting of their sensation seeking. As discussed in the previous section, the functional personnel, using the same sensation seeking evaluation tool, reported that the more effective group sought significantly more sensation than the less effective group. It is concluded that the sensation seeking measure used in this study may not be a good indicator of risk propensity.

It is interesting to note that with regard to decision making time (Hypotheses 3, 8, and 11), the program managers rated themselves as hypothesized (e.g. more effective program managers spend significantly less time making decisions than less effective program managers, Hypothesis 3). However, both the supervisors and functional personnel rated the two groups as having no significant difference in regard to decision making time, and therefore, Hypothesis 8 and Hypothesis 11 were not validated. It should be noted that in examining the decision making time raw data, the less effective group had a lower group mean than the more effective group as rated by both the supervisors and functional personnel. One explanation for this dicrepancy (or divergence from what the literature indicates) is that more effective program managers are perceived by their supervisors and functional personnel as spending more time making decisions than in reality because the more effective program managers may be perceived to make good decisions. On the other hand, the less effective program managers are

perceived as spending less time making decisions than in reality because the less effective program managers are perceived to make poorer decisions.

Hypotheses 14 and 15, which were based on risk measures 14 (percentage of total assets held in risky categories) and 15(life insurance to annual salary ratio), were also not validated. One explanation may be that these two measures were of a different domain than the measures previously discussed. MacCrimmon and Wehrung labeled these measures as risk measures based on naturalized situations (209-211). The other measures evaluated in this study were labeled by MacCrimmon and Wehrung as attitudinal measures (11:221-223). As was discussed in chapter two, when measuring risk propensity, one must be conscious of the domain effect (11:205-206).

Research Objective 2 Conclusions

The second research objective of this study was to verify the supervisors' classification of more effective and less effective by comparing it to the functional personnel classification based on the three effectiveness measures (PROC, OUT, and INJOB). Recall that a set of decision rules was formulated in chapter three in order to govern the labeling of the program managers as less effective, neutral, or more effective based on the functional personnel ratings. In this comparison, the researcher considered the classification of NEUTRAL by the functional personnel to be LESS EFFECTIVE. Therefore, out of the seventeen program

managers in which there was data to compare, the functional

personnel agreed with fourteen (or 82%) of the SPO Directors'

classifications.

Hypotheses Which Were Validated. The hypotheses which

were confirmed by this study were the following:

Hypothesis 20: More effective Air Force program
managers (as rated by the SPO Directors) were rated by
their functional personnel as being significantly more
effective than less effective Air Force program managers
in terms of management processes.

Discussion: Using the effectiveness measure PROC, the

more effective group (as labeled by the SPO Directors) was

rated significantly higher by the functional personnel than

the less effective group in terms of management processes

(planning, organizing, communication, administration, human

relations, and leadership). Recall that the effectiveness

scale in Figure 5 of chapter three was used to label the

program manager as less effective, neutral, or more effective.

Hypothesis 22: More effective Air Force program
managers were rated by their functional personnel as
being significantly more effective than less effective
Air Force program managers in terms of overall job
effectiveness.

Discussion: Using the effectiveness measure INJOB, the

more effective group (as labeled by the SPO Directors) was

rated significantly higher by the functional personnel than

the less effective group. Again, the effectiveness scale in

Figure 5 was used as a basis for evaluation.

As was discussed in chapter four, the effectiveness

measures PROC and INJOB indicated that the more effective

group (as labeled by the SPO Directors) was rated as more effective by the functional personnel. The less effective group (as labeled by the SPO Directors) was rated as neutral by the functional personnel.

Hypothesis Which Was Not Validated. It is interesting to note that Hypothesis 21 as postulated in chapter one of this report was not confirmed. This hypothesis had to do with effectiveness based on management outcomes. As the literature indicates, the functional personnel may not be as sensitive to management outcomes as much as they are to management processes. Therefore, in the eyes of the functional personnel, it is understandable that they perceive no distinction between the more effective program managers and the less effective program managers in terms of management outcomes.

Research Objective 3 Conclusions

The third, and final, research objective of this study was to analyze the risk taking propensity of Air Force program managers in terms of the risk behavior model presented in Figure 1 of chapter one. Using this model and the decision rules discussed in chapter three, the classification of risk averse, risk neutral, or risk taking was accomplished using the functional personnel ratings in the areas of decision making time, information gathering, and control over the environment. As presented in the findings (chapter four), the more effective program managers could be

classified as risk taking and the less effective program managers could be classified as risk neutral. Figure 7 on the next page depicts the percentage of more effective program managers who were classified as risk takers (78%). Figure 8 on page 68 depicts the percentage of less effective program managers who were classified as risk neutral (100%).

Hypothesis Which Was Validated. The following hypothesis was confirmed in this study:

> Hypothesis 23: Using the model of risk behavior in Figure 1 of chapter one, the more effective Air Force program managers were rated by their functional personnel as exhibiting risk taking behavior.

Discussion: Using the set of decision rules on page 43 in chapter three, the more effective group was generally rated as risk taking (seven of the nine program managers). Recall that the risk behavior scale in Figure 6 on page 44 was used as the benchmark to label the program managers as risk averse, risk neutral, or risk taking in each of the areas of decision making time, information gathering, and control (the three variables of the risk behavior model in Figure 1).

Hypothesis Which Was Not Validated. Hypothesis 24 as postulated in chapter one was not confirmed by this study. This hypothesis stated that the less effective Air Force program managers would be rated by their functional personnel as exhibiting risk averse behavior. Rather, the functional personnel rated the less effective program managers as exhibiting risk neutral behavior.

MORE EFFECTIVE PROGRAM MANAGER
RISK BEHAVIOR CLASSIFICATION

n = 9

RISK TAKER
7

RISK NEUTRAL
2
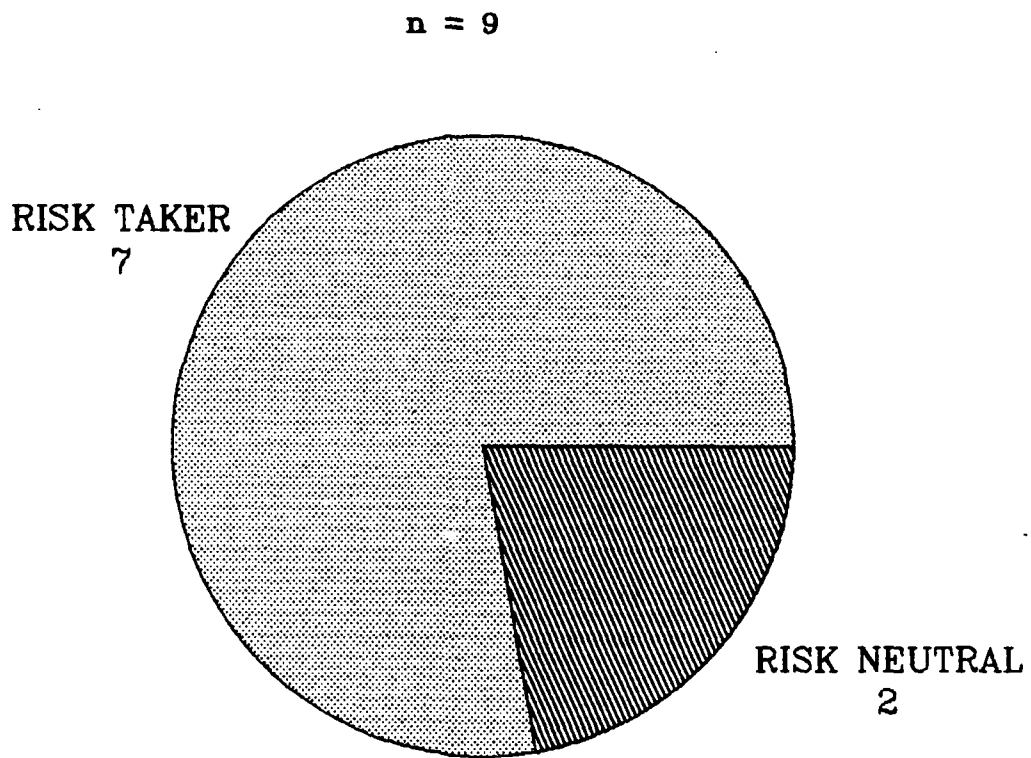
Figure 7: More Effective Risk Behavior

LESS EFFECTIVE PROGRAM MANAGER
RISK BEHAVIOR CLASSIFICATION

n = 8

RISK NEUTRAL
8
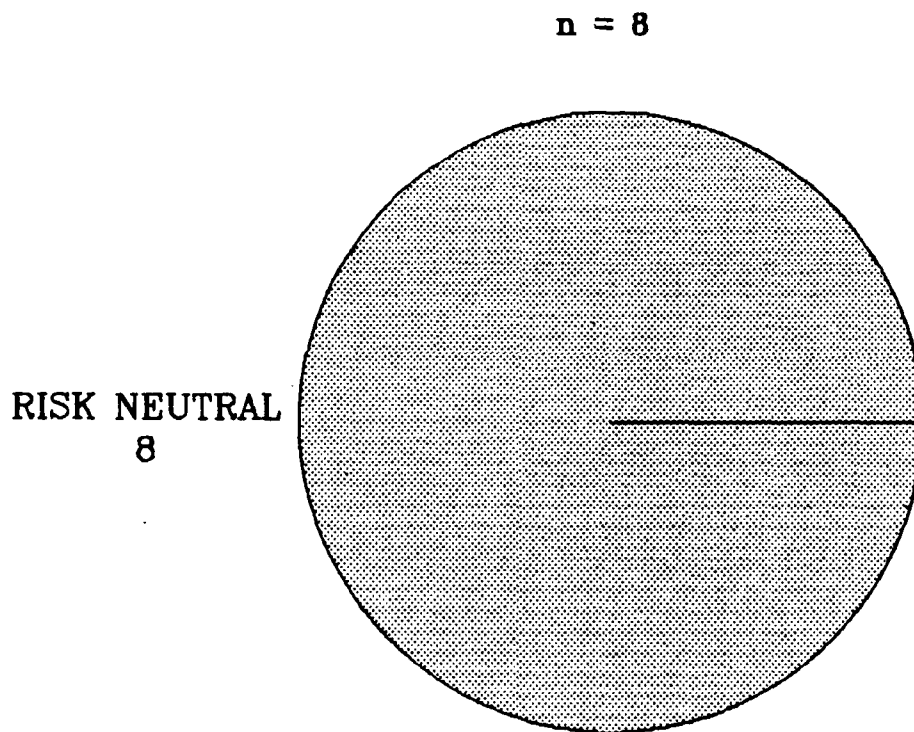
Figure 8: Less Effective Risk Behavior

Summary Conclusions

The more effective program manager group has the following characteristics when compared with the less effective group:

a. Takes more risks. Both the SPO Directors and the functional personnel substantiated this claim. There was no statistical difference between the two groups in the self-ratings.

b. Gathers more information to make decisions. The program managers themselves, the SPO Directors, and the functional personnel all substantiated this claim.

c. Perceives to have more control over the environment. The program managers and the functional personnel substantiated this claim. The SPO Directors were not asked to respond in this area.

d. Seeks more sensation (as rated by the functional personnel). As noted, only the functional personnel substantiated this claim. There was no statistical difference between the two groups as rated by the program managers themselves. Again, the SPO Directors were not asked to respond in this area.

e. Spends less time making decisions (as rated by themselves). As noted, only the program managers themselves substantiated this claim. The SPO Directors and functional personnel reported no difference between the two groups in this area.

Figure 9 on page 70 was developed to describe the more effective Air Force program manager group and Figure 10 on page 71 was developed to describe the less effective Air Force program manager group.

Recommendations for Further Research

This study was accomplished in an exploratory mode, and, therefore, the methodology used in this study should be refined and validated. Specifically, the following

Figure 9: Description of More Effective Group

DESCRIPTION OF LESS EFFECTIVE PROGRAM MANAGER GROUP

(As compared to more effective group)

✓ TAKES LESS RISKS

✓ GATHERS LESS INFORMATION

✓ HAS LESS CONTROL OVER ENVIRONMENT

✓ SEEKS LESS SENSATION (AS RATED BY SUBORDINATES)

✓ SPENDS MORE TIME MAKING DECISIONS (AS RATED BY THEMSELVES)

RISK NEUTRAL

Figure 10: Description of Less Effective Group

recommendations are made to enhance research in the area

of program manager effectiveness and risk taking propensity:

1. Improvement of risk measures. The risk measures used in this study were mainly attitudinal measures (although they were reported from three organizational levels). A detailed risk "portfolio" as suggested by MacCrimmon and Wehrung should be used. The possibility of using preference or utility curves should also be investigated.

2. Multiple measures of effectiveness. The primary measure of effectiveness used in this study was the SPO Director classification. Other measures which might be considered are:

   a. Indices based on awards/promotions.

   b. Indices based on level in organization and years of experience.

3. Larger and more varied sample size. The sample used in this study was very limited. A sample which consists of subjects from different organizations would be ideal.

4. More indepth study of demographic factors associated with risk taking. This study disregarded demographic factors which may have influenced risk taking propensity.

These are only a few suggestions which could enhance the study of program manager effectiveness and its relationship to risk taking propensity. The data from this study gives preliminary indications that there is an association between effectiveness and greater risk taking tendency.

The implications of this type of study are of value to future program manager selection plans and policies. This study has demonstrated a relationship between program management effectiveness and risk taking propensity. Policy makers may wish to address the feasibility of training future DOD acquisition program managers in risk taking skills.

PROGRAM MANAGERS' RATING OF

RISK TAKING PROPENSITY
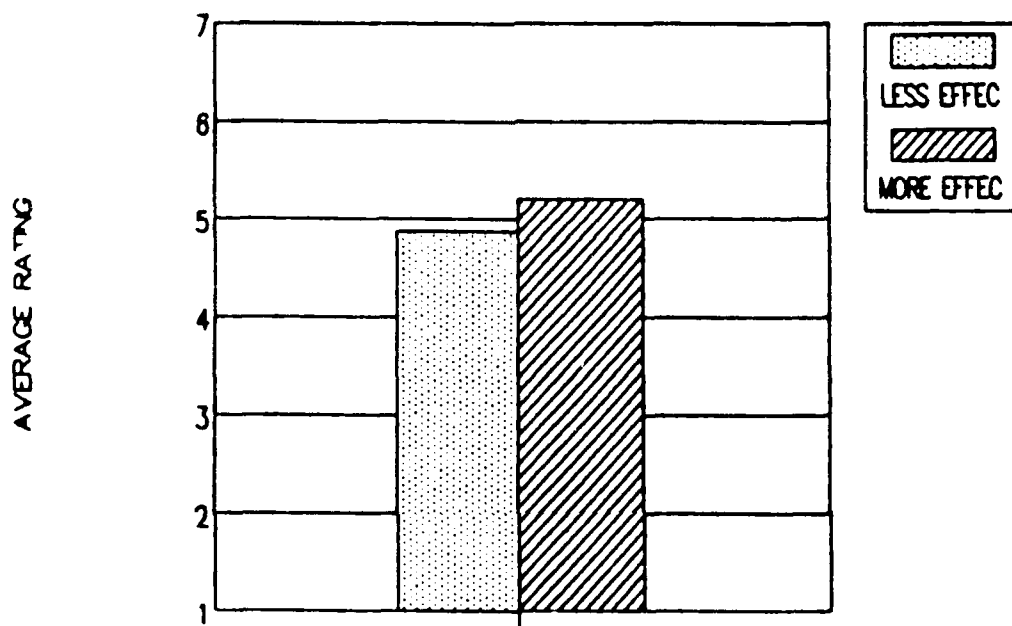
KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LESR	8.5	8
HESR	10.3	10
TOTAL	9.5	18

KRUSKAL-WALLIS STATISTIC   0.5374
P VALUE, USING CHI-SQUARED APPROXIMATION   0.4635

PROGRAM MANAGERS' RATING OF

INFORMATION GATHERING
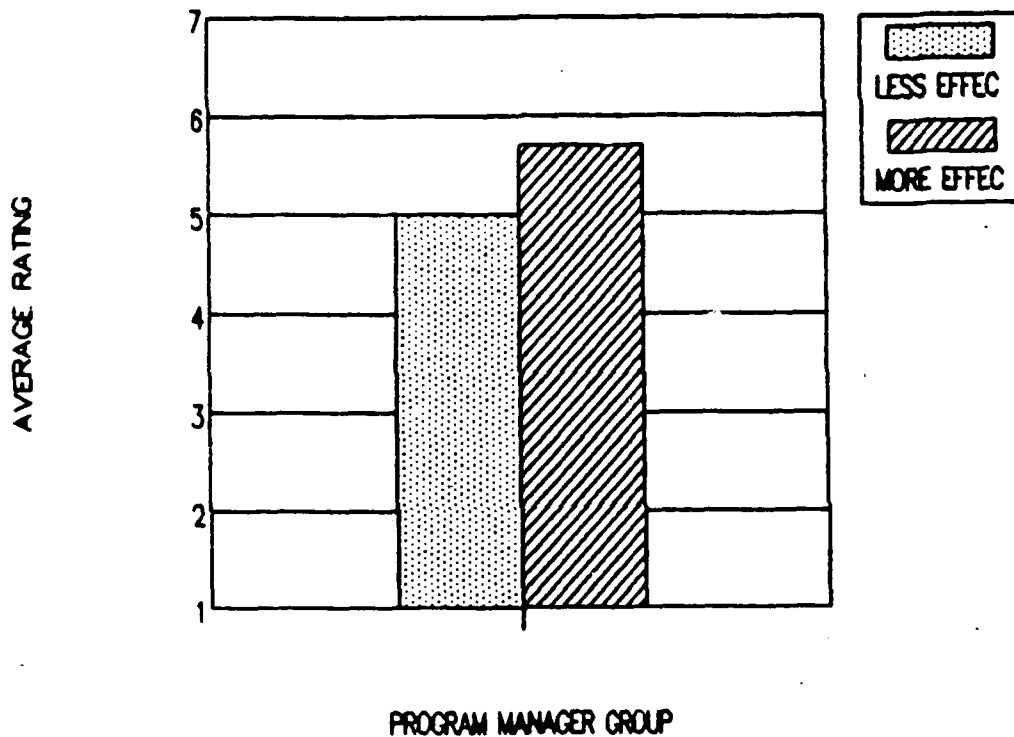
KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LEIG	7.1	8
MEIG	11.4	10
TOTAL	9.5	18

KRUSKAL-WALLIS STATISTIC	3.2644
P VALUE, USING CHI-SQUARED APPROXIMATION	0.0708

PROGRAM MANAGERS' RATING OF

DECISION MAKING TIME
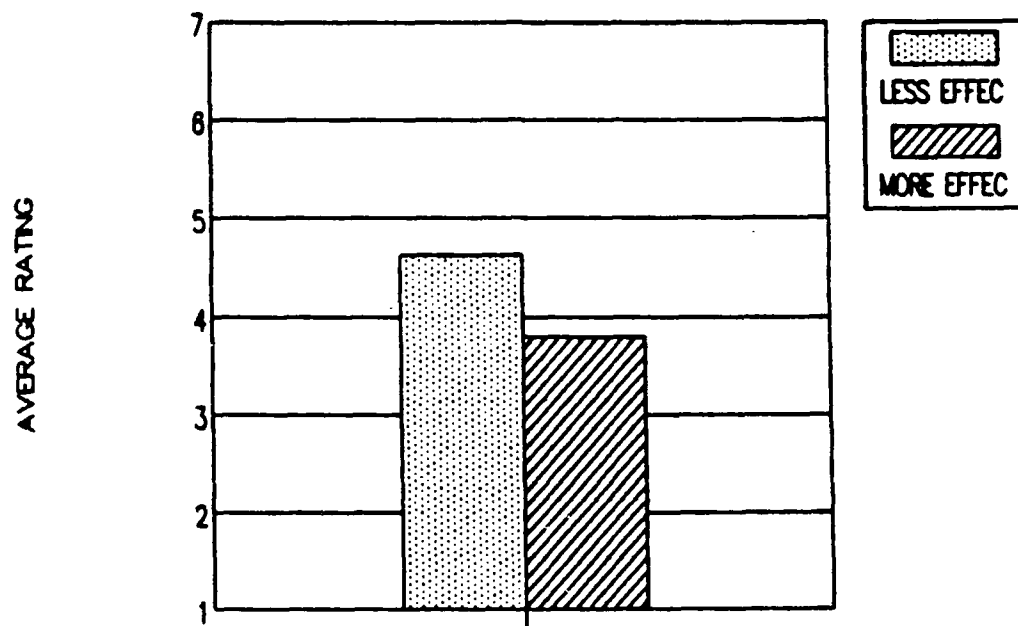
KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LEDT	11.7	8
MEDT	7.8	10
TOTAL	9.5	18

KRUSKAL-WALLIS STATISTIC	2.8532
P VALUE, USING CHI-SQUARED APPROXIMATION	0.1033

PROGRAM MANAGERS' RATING OF
CONTROL OVER THE ENVIRONMENT
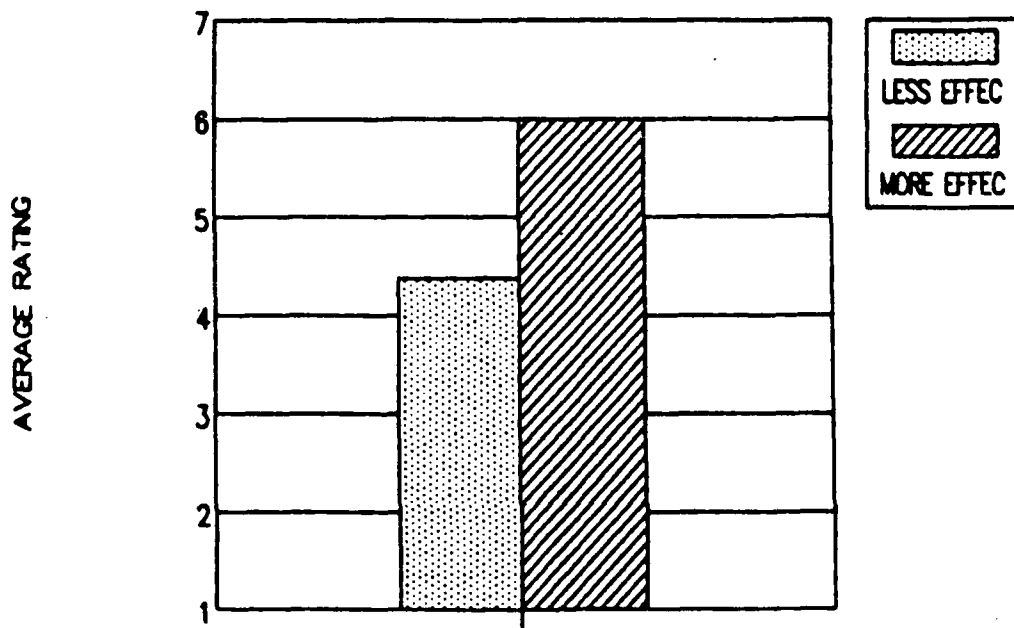
PROGRAM MANAGER GROUP

KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LECTL	8.6	8
MECTL	11.8	10
TOTAL	9.5	18

KRUSKAL-WALLIS STATISTIC	4.8021
P VALUE, USING CHI-SQUARED APPROXIMATION	0.0319

PROGRAM MANAGERS' RATING OF

SENSATION SEEKING
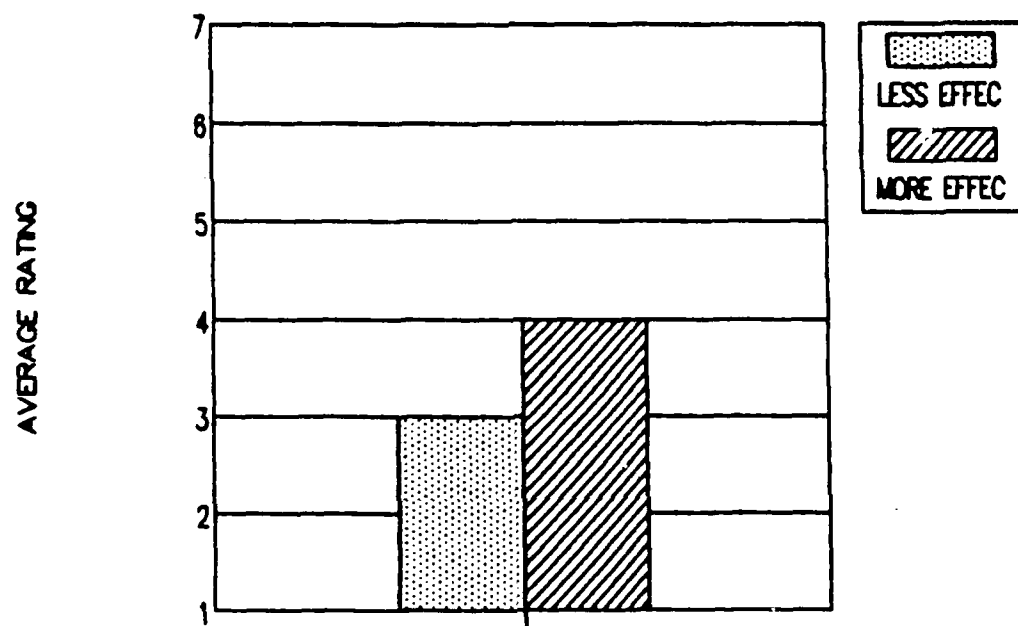
KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LESS	7.9	8
MESS	10.8	10
TOTAL	9.5	18

KRUSKAL-WALLIS STATISTIC	1.3768
P VALUE, USING CHI-SQUARED APPROXIMATION	0.2406

DIRECTORS' RATING OF PROGRAM MANAGER
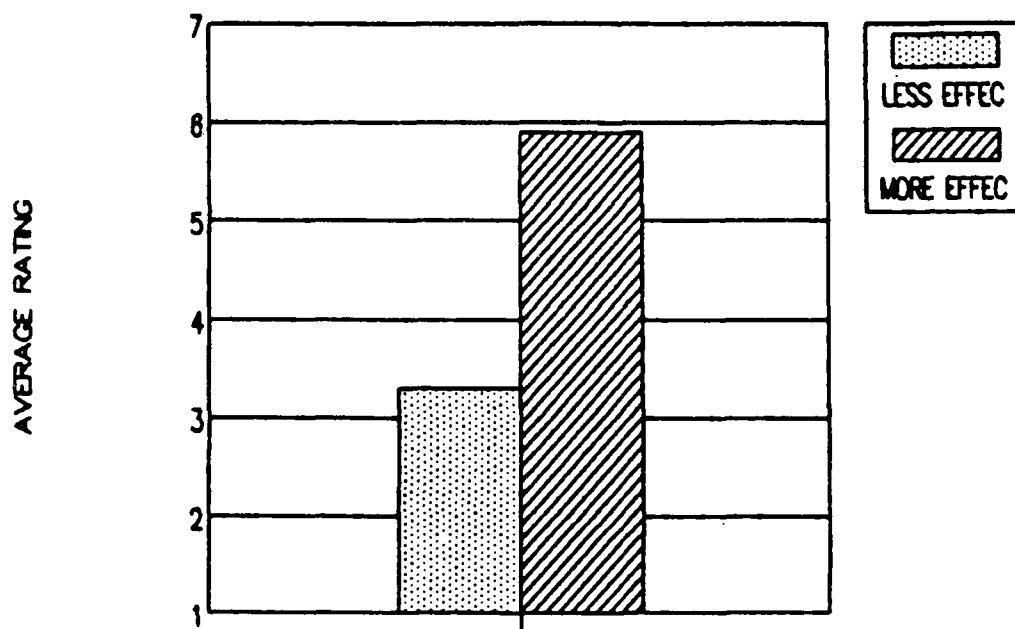
RISK TAKING PROPENSITY

KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LEDSR	6.3	10
MEDSR	14.7	10
TOTAL	10.5	20

KRUSKAL-WALLIS STATISTIC	10.4168
P VALUE, USING CHI-SQUARED APPROXIMATION	0.0012

DIRECTORS' RATING OF PROGRAM MANAGER
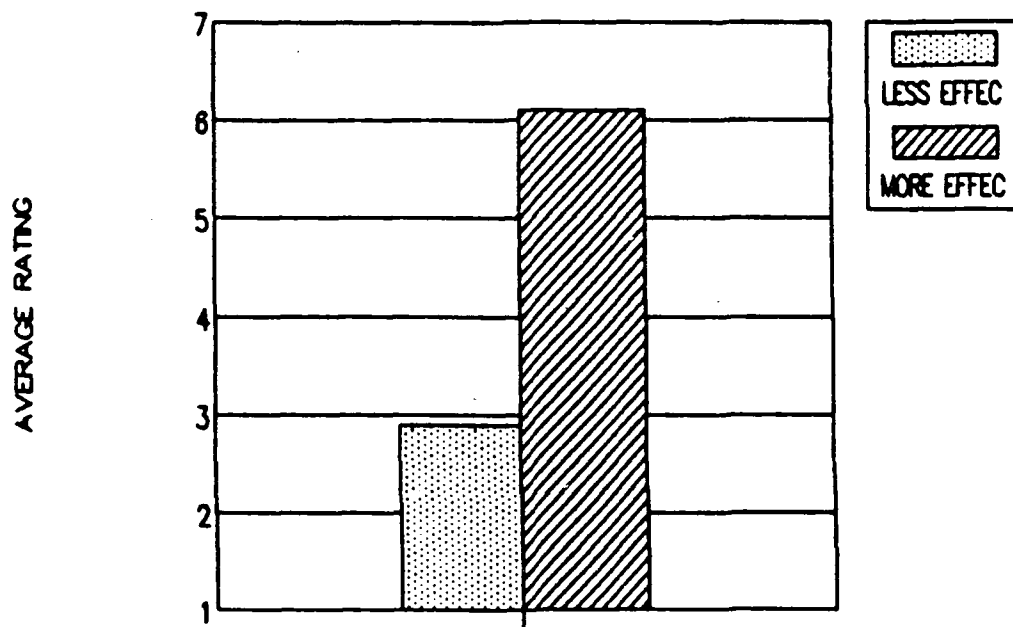
INFORMATION GATHERING

KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LEDIG	5.8	10
MEDIG	15.2	10
TOTAL	10.5	20

KRUSKAL-WALLIS STATISTIC   13.1984
P VALUE, USING CHI-SQUARED APPROXIMATION   0.0003

DIRECTORS' RATING OF PROGRAM MANAGER
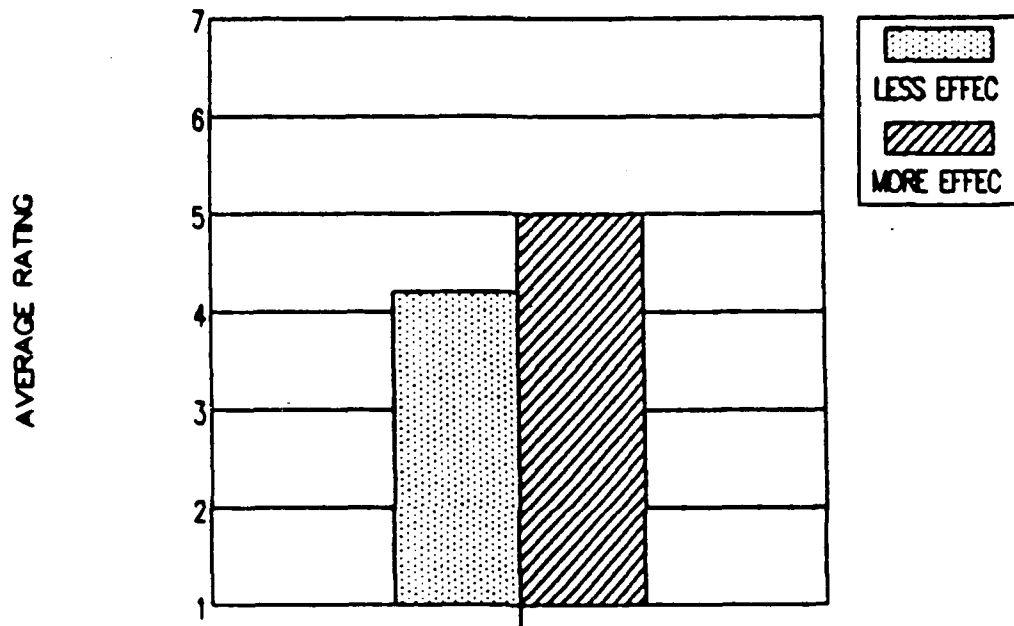
DECISION MAKING TIME

KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LEDDT	8.9	10
MEDDT	12.1	10
TOTAL	10.5	20

KRUSKAL-WALLIS STATISTIC   1.6200
P VALUE, USING CHI-SQUARED APPROXIMATION·   0.2031

FUNCTIONAL PERSONNEL RATING OF PROGRAM MANAGER RISK TAKING PROPENSITY
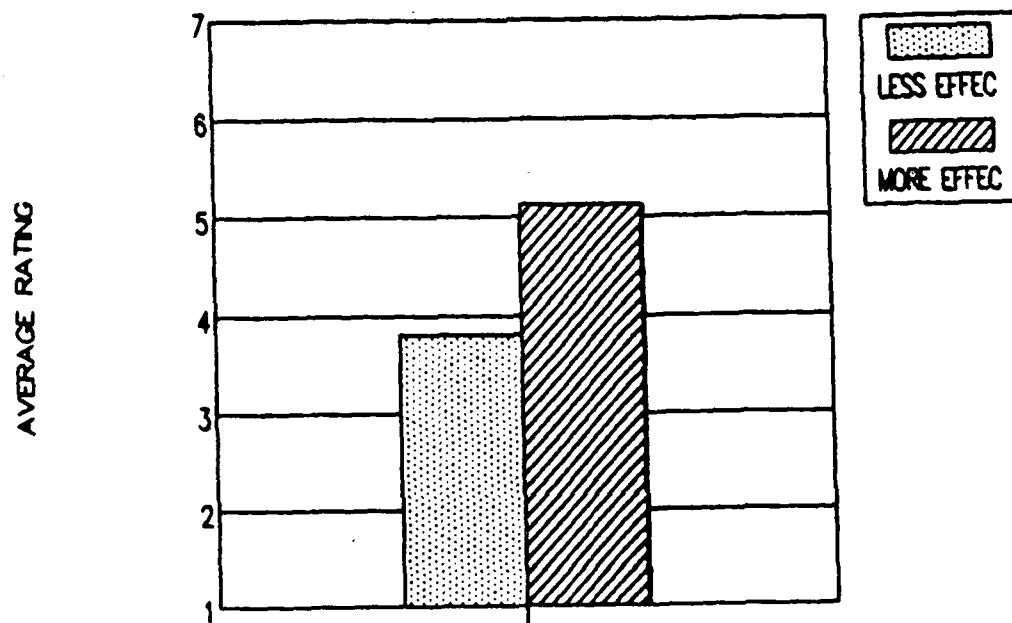
KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LESSR	6.1	8
MESSR	11.6	9
TOTAL	9.0	17

KRUSKAL-WALLIS STATISTIC	4.9961
P VALUE, USING CHI-SQUARED APPROXIMATION	0.0254

FUNCTIONAL PERSONNEL RATING OF
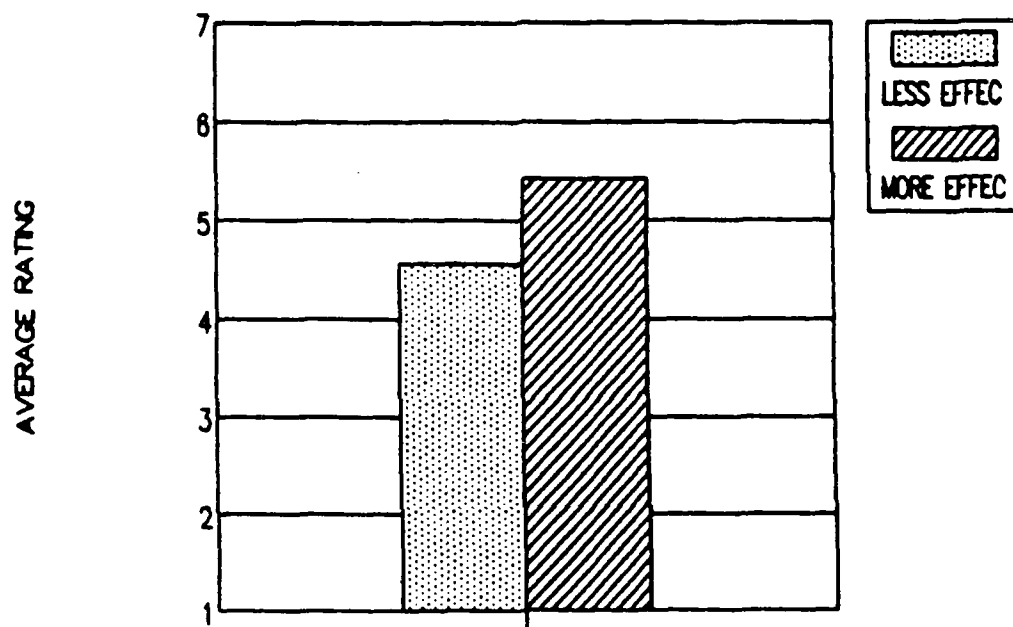
PROGRAM MANAGER INFORMATION GATHERING

PROGRAM MANAGER GROUP

KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LESIG	6.1	8
MESIG	11.8	9
TOTAL	9.0	17

KRUSKAL-WALLIS STATISTIC	5.2092
P VALUE, USING CHI-SQUARED APPROXIMATION	0.0225

FUNCTIONAL PERSONNEL RATING OF

PROGRAM MANAGER DECISION MAKING TIME

PROGRAM MANAGER GROUP
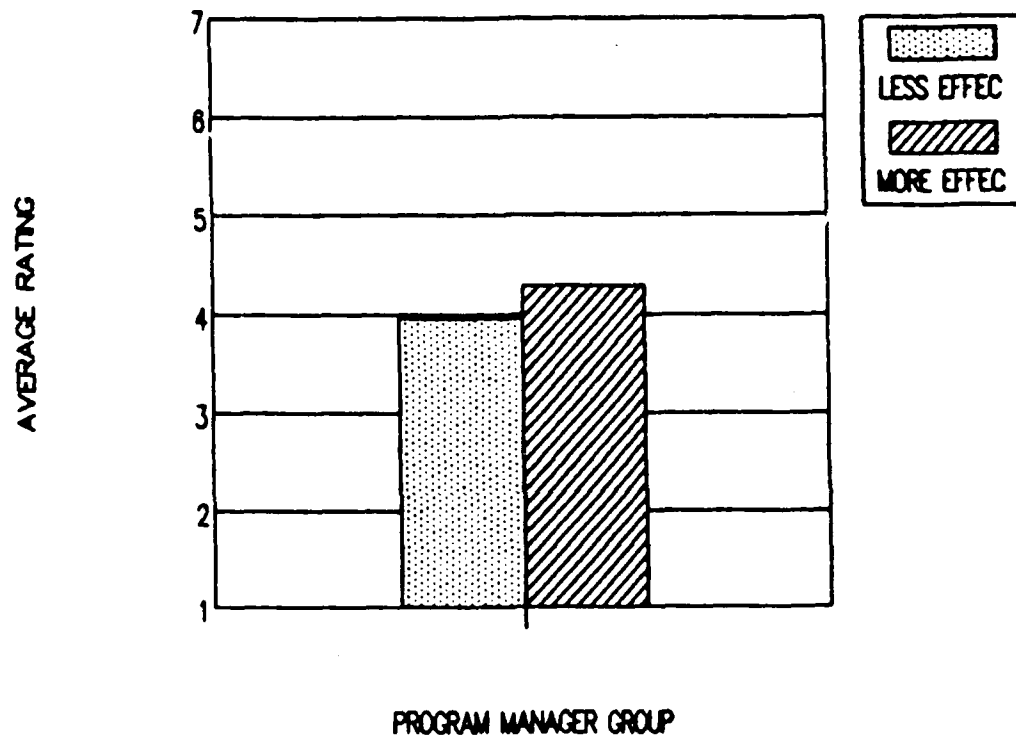
KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LESDT	8.1	8
MESDT	9.8	9
TOTAL	9.0	17

KRUSKAL-WALLIS STATISTIC   0.4805
P VALUE, USING CHI-SQUARED APPROXIMATION   0.4974

FUNCTIONAL PERSONNEL RATING OF PROGRAM
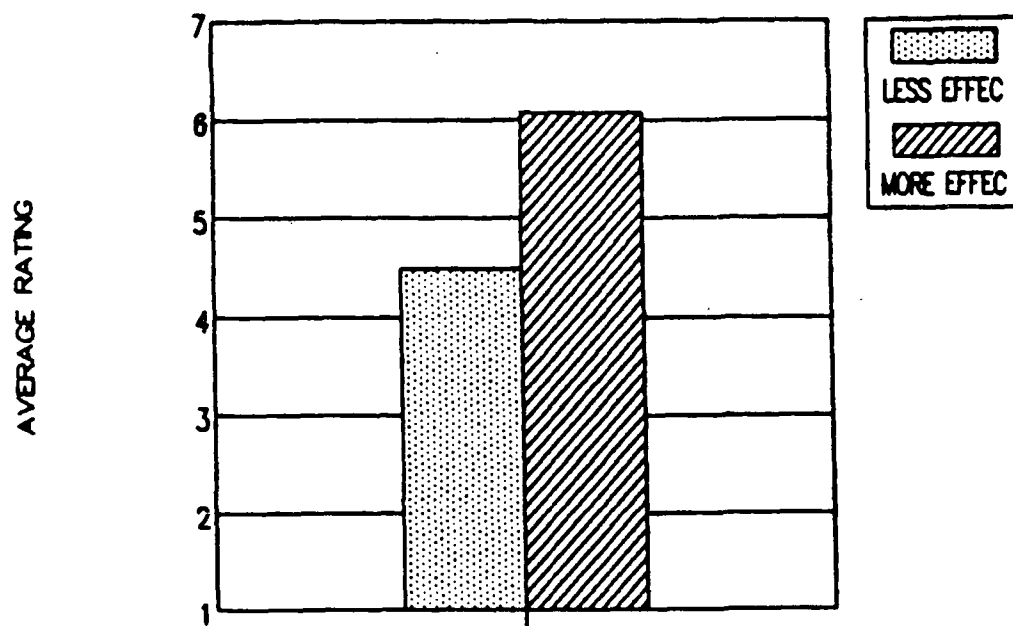
MANAGER CONTROL OVER THE ENVIRONMENT

PROGRAM MANAGER GROUP

KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LESCTL	6.0	8
MESCTL	11.7	9
TOTAL	9.0	17

KRUSKAL-WALLIS STATISTIC   5.3985
P VALUE, USING CHI-SQUARED APPROXIMATION   0.0201

FUNCTIONAL PERSONNEL RATING OF
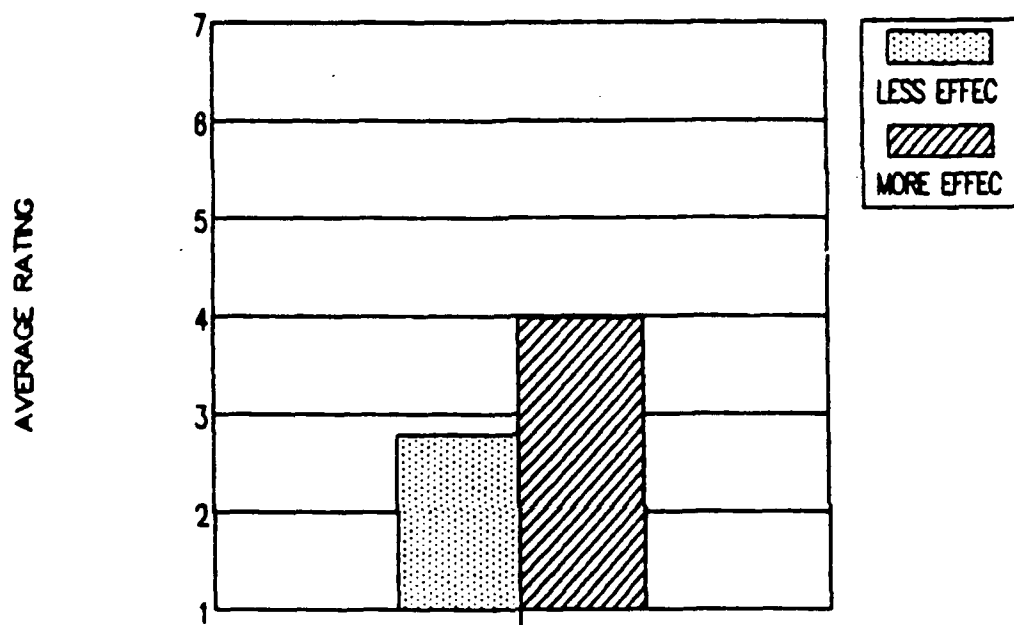
PROGRAM MANAGER SENSATION SEEKING

PROGRAM MANAGER GROUP

KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LESSS	6.3	8
MESSS	11.4	9
TOTAL	9.0	17

KRUSKAL-WALLIS STATISTIC	4.3440
P VALUE, USING CHI-SQUARED APPROXIMATION	0.0371

PROGRAM MANAGERS' PERCENTAGE OF

ASSETS HELD IN RISKY CATEGORIES
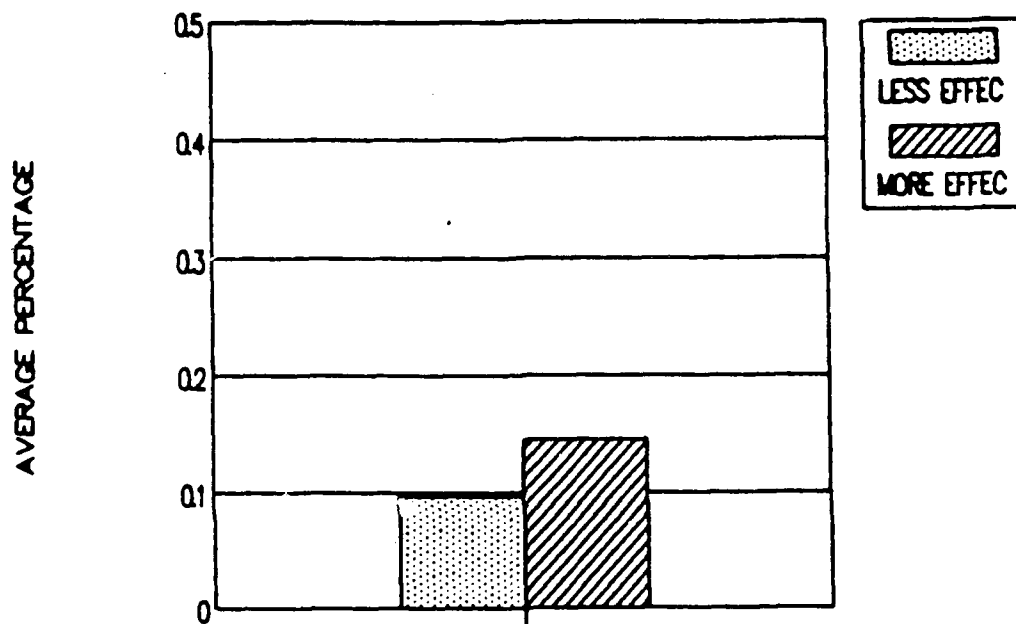
KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LERSKY	7.8	8
MERSKY	8.9	10
TOTAL	8.5	18

KRUSKAL-WALLIS STATISTIC	0.2288
P VALUE, USING CHI-SQUARED APPROXIMATION	0.6326

PROGRAM MANAGERS' RATIO OF

LIFE INSURANCE TO ANNUAL SALARY
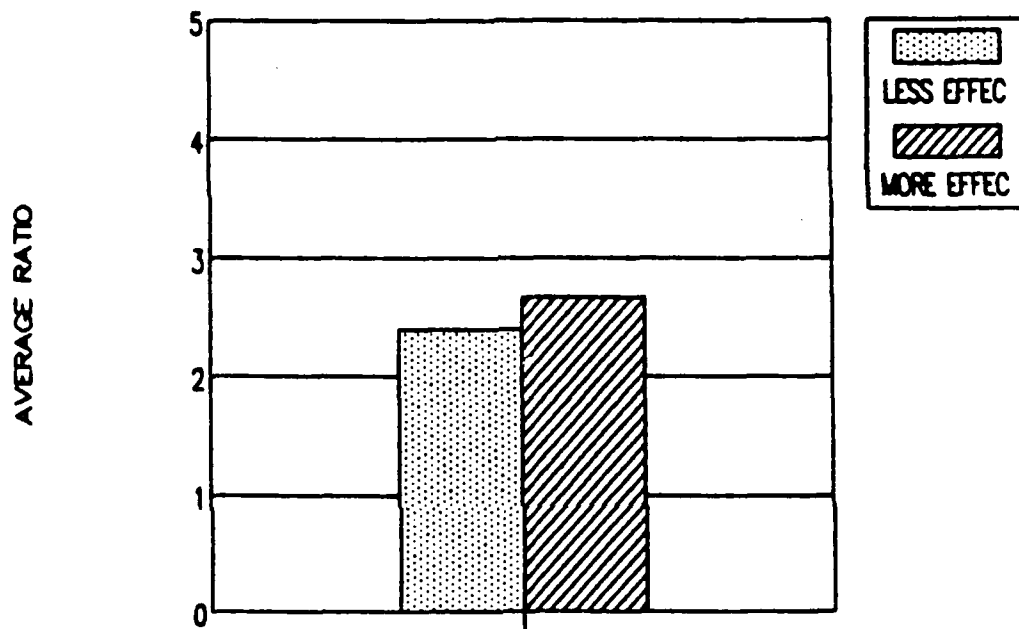
PROGRAM MANAGER GROUP

KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LEINSRAT	8.8	6
MEINSRAT	8.8	9
TOTAL	8.0	15

KRUSKAL-WALLIS STATISTIC   0.8842
P VALUE, USING CHI-SQUARED APPROXIMATION   0.4081

FUNCTIONAL PERSONNEL RATING OF PROGRAM

MANAGER EFFECTIVENESS BASED ON PROCESS
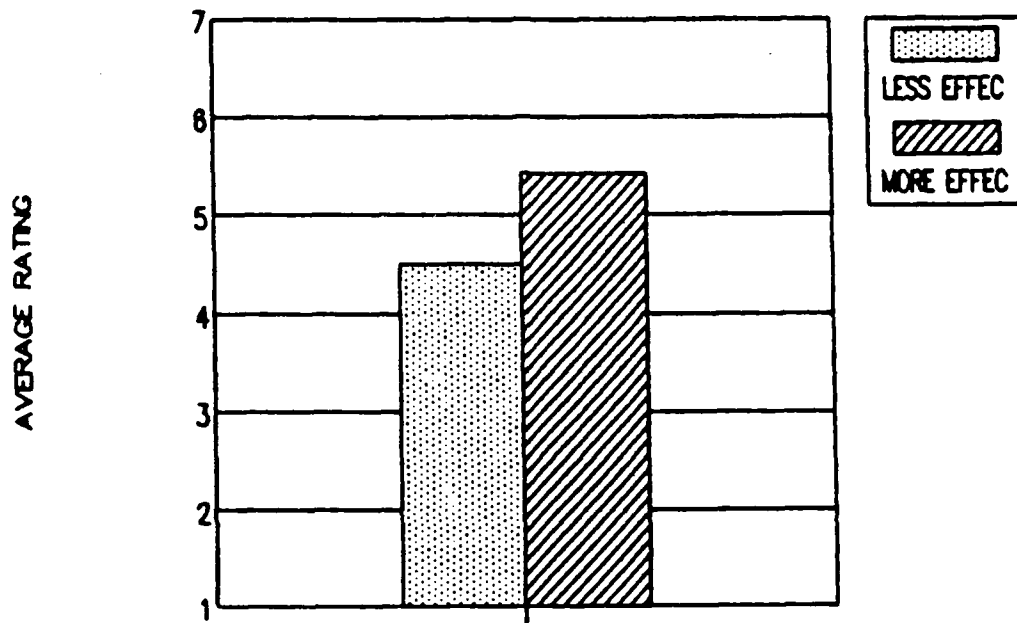
PROGRAM MANAGER GROUP

KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LEPROC	6.1	8
MEPROC	11.6	9
TOTAL	9.0	17

KRUSKAL-WALLIS STATISTIC	4.8981
P VALUE, USING CHI-SQUARED APPROXIMATION	0.0269

FUNCTIONAL PERSONNEL RATING OF PROGRAM MANAGER EFFECTIVENESS BASED ON OUTCOMES
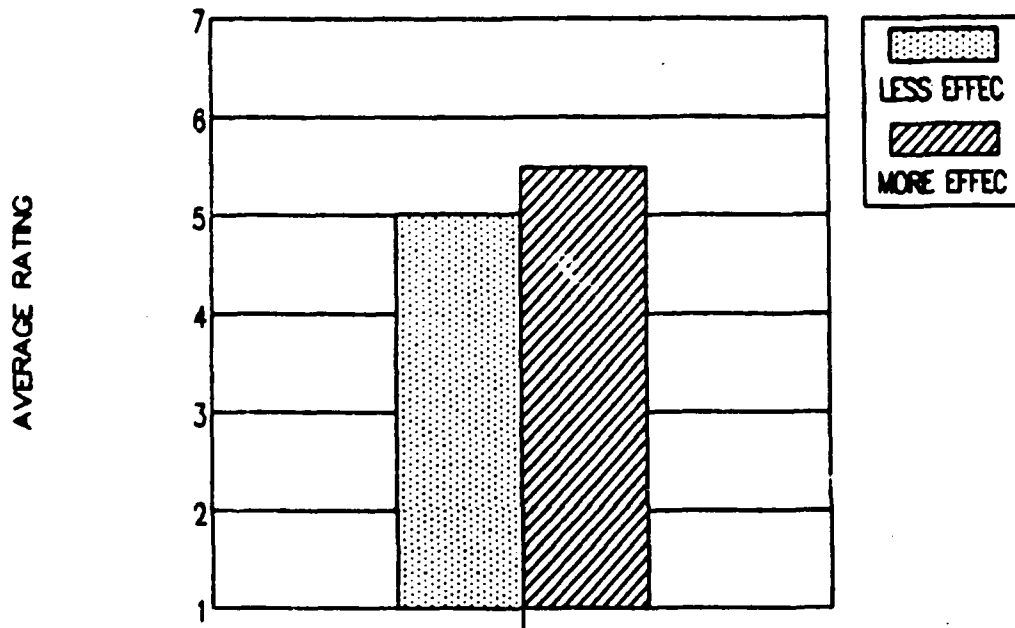
KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LEOUT	8.0	8
MEOUT	9.9	9
TOTAL	9.0	17

KRUSKAL-WALLIS STATISTIC	0.5928
P VALUE, USING CHI-SQUARED APPROXIMATION	0.4414

FUNCTIONAL PERSONNEL RATING OF PROGRAM

MANAGER OVERALL JOB EFFECTIVENESS
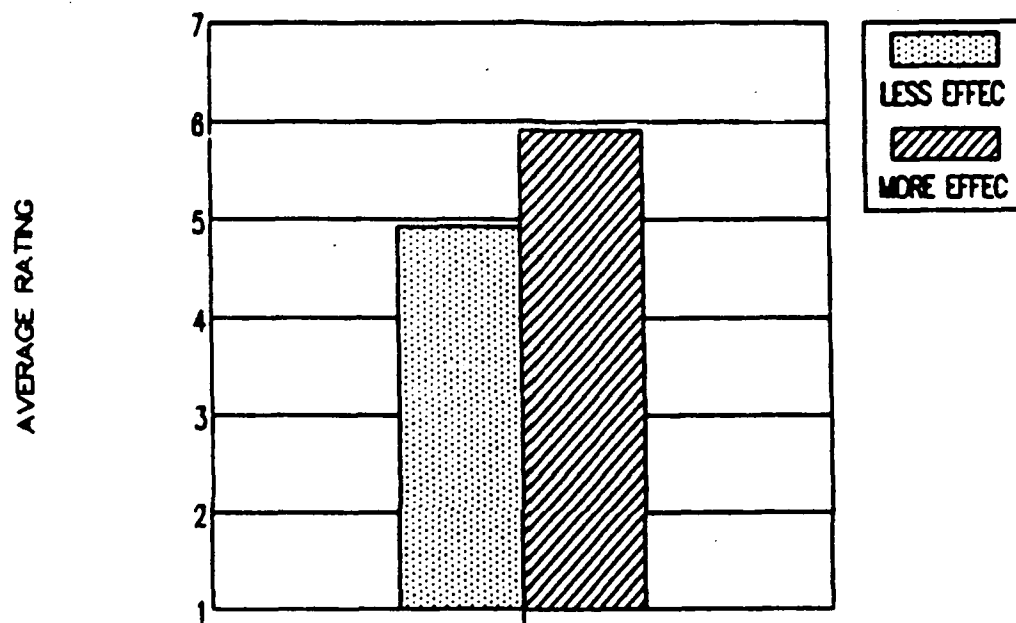
PROGRAM MANAGER GROUP

KRUSKAL-WALLIS ONEWAY NONPARAMETRIC AOV

VARIABLE	MEAN RANK	SAMPLE SIZE
LEINJOB	6.3	8
MEINJOB	11.4	9
TOTAL	9.0	17

KRUSKAL-WALLIS STATISTIC	4.3987
P VALUE, USING CHI-SQUARED APPROXIMATION	0.0360

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AERONAUTICAL SYSTEMS DIVISION (AFSC)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433-6503

REPLY TO
ATTN OF: AE

SUBJECT: AFIT Thesis Survey

TO: AE Member

1. You have been chosen to participate in a survey which investigates conflict handling styles and risk taking tendencies of project managers. This information is being collected by graduate students at the Air Force Institute of Technology in support of their thesis research. I am asking for your support and participation in this endeavor because I believe it will be of value to us in AE. I have been thoroughly briefed as to the nature of this research and have been assured that all responses will remain strictly confidential.

2. Your response to the survey is critical to the success of the study. Please complete and return the survey to the researchers within 10 days of receipt of the survey. Any questions concerning the attached survey should be addressed to the researchers, Captain Steve Wardlaw and Captain Tim McIntyre at (513) 255-6569.

RAYMOND A. SHULSTAD, Colonel, USAF
Program Director for Aeronautical
  Equipment SPO

1 Atch
Thesis Survey

CONFLICT HANDLING STYLE AND
RISK TAKING TENDENCY OF PROJECT MANAGERS
SURVEY

Purpose

Research in the management arena has continually tried to identify factors which describe the on-the-job behavior of managers. The purpose of this survey is to collect data on two of the managerial factors identified, conflict handling style and risk taking tendencies.

General Instructions

The survey is divided into three parts and will take approximately 45 minutes to complete. Part I of the survey asks you to evaluate how you handle conflicts with your director, peers, and functionals. Part II asks you answer questions pertaining to your risk taking tendencies. Finally, Part III asks you for some demographic and personal information

Nonattribution applies to this survey. Your name and organization is used only for collating your responses with those of other individuals evaluating your conflict handling style and risk taking tendencies. Once they have been collated your name will be removed from the data.

Please feel free to make additional comments as you fill out the survey. When you have completed the survey, please place the survey in the return envelope provided and mail it promptly.

THANK YOU FOR YOUR TIME AND COOPERATION.

If you have any questions or are interested in the results of this study, please contact either of the researchers listed below:

Captain Tim McIntyre   Captain Stephen Wardlaw
AFIT/LSG   AFIT/LSG
Wright-Patterson AFB, OH 45433   Wright-Patterson AFB, OH 45433
Office Phone: (513) 255-6569   Office Phone: (513) 255-6569

PROJECT MANAGER'S NAME:

ORGANIZATION / OFFICE SYMBOL:

PART I

THE ITEMS BELOW REPRESENT VARIOUS STYLES OF HANDLING CONFLICT. USE THE FOLLOWING RATING SCALE TO EVALUATE HOW ACCURATELY EACH ITEM DESCRIBES THE WAY YOU BEHAVE TOWARD THE DIRECTOR, OTHER PROJECT MANAGERS, AND YOUR FUNCTIONALS.

ALWAYS			SOMETIMES			NEVER	
1	2	3	4	5	6	7	

SUBSTITUTE THE WORDS TO THE RIGHT IN THE SPACES BELOW	Indicate your evaluation in the space provided below		
	The Director	Other Project Managers	The Functionals
01. I attempt to avoid being "put on the spot" and try to keep my conflict with _____ to myself.	AV 3	AV 3	AV 3
02. I sometimes use my power to win a competitive situation.	DO 3	DO 3	DO 3
03. I try to find a middle course to resolve an impasse.	CO 1	CO 1	CO 1
04. I try to bring all our concerns out in the open so that the issues can be resolved in the best possible way.	IN 3	IN 3	IN3
05. I use my expertise to make a decision in my favor.	DO 1	DO 1	DO 1
06. I usually accommodate the wishes of _____	OB 1	OB 1	OB 1
07. I try to keep my disagreement with _____ to myself in order to avoid hard feelings.	AV 1	AV 1	AV 1
08. I exchange accurate information with _____ to solve a problem together.	IN 1	IN 1	IN 1
09. I usually propose a middle ground for breaking deadlocks.	CO 2	CO 2	CO 2
10. I use my influence to get my ideas accepted.	DO 2	DO 2	DO 2
11. I try to satisfy the expectations of _____.	OB 2	OB 2	OB 2

SUBSTITUTE THE WORDS TO THE RIGHT IN THE SPACES BELOW	Indicate your evaluation in the space provided below		
	The Director	Other Project Managers	The Functionals
12. I usually avoid open discussion of my differences with _____.	AV 2	AV 2	AV 2
13. I try to work with _____ for a proper understanding of a problem.	IN 2	IN 2	IN 2
14. I give in to the wishes of _____.	OB 3	OB 3	OB 3
15. I use "give and take" so that a compromise can be made.	CO 3	CO 3	CO 3

THANK YOU FOR COMPLETING PART I OF THE SURVEY

PLEASE GO ON TO PART II

PART II

THIS PORTION OF THE SURVEY IS INTENDED TO MEASURE YOUR RISK TAKING TENDENCIES

For questions one through three, **please circle a number** on the seven point scale.

1. How would you rate your willingness to undertake risky propositions as compared to other managers at or near your position/level?

| | much less
willing to
accept risks | 1 | 2 | 3 | 4 | 5 | 6 | 7 | much more
willing to
accept risks |

much less
willing to   1   2   3   4   5   6   7   willing to
accept risks   accept risks

2. When making decisions, do you gather more or less information as compared to other managers at or near your position/level?

gathers much less   gathers much more
information to   1   2   3   4   5   6   7   information to
make decisions   make decisions

3. When making decisions, do you spend more or less time deliberating as compared to other managers at or near your position/level?

spends much less   spends much more
time deliberating   1   2   3   4   5   6   7   time deliberating
making decisions   making decisions

4.   a)   Estimate to the nearest $5,000 your annual salary.

$ _____

b). Estimate the total face value of your life insurance to the nearest $ 5,000 (only include life insurance in which the premiums are paid solely by you).

$ _____

5. Estimate to the nearest $10,000 your gross assets (current value of personal property, real estate property, financial assets, stock options, pension plans, insurance policies, etc.).

$ _____

6. Given this estimate of your current net wealth (i.e. gross assets minus liabilities), suppose that you are offered a chance to invest one-half your current net wealth in a new venture. The chances of the venture succeeding or failing are 50-50. You have to make a choice between (a) or (b):

Final Position

(a) Do not invest in - - - - - - - - - - - - - - - - - - retain your
    the venture   current wealth

(b) Invest in the venture,

                              50% chance of   losing one-half
                                                 your current
    resulting   in   a   - - - - - - - - - - - - - - - - - -   net wealth

                              50% chance of   ending up with
                                                 a net wealth to
                                                 be specified by
                                                 you

QUESTION: For you to risk one-half your current net wealth in a
            new venture having a 50-50 chance of succeeding, how
            large would the possible gain from such an investment
            have to be?

ANSWER: Smallest possible final net wealth you would require to
            make the investment:

                              $ _____

97

7. Suppose that you are offered a chance to invest one-half your current net wealth in a new venture. The chances of the venture succeeding or failing are 90-10. You have to make a choice between (a) or (b):

Final Position

(a) Do not invest in -----------------   retain your
     the venture   current wealth

(b) Invest in the venture,

                10% chance of   losing one-half
                                     your current
    resulting in a ------------------   net wealth

                90% chance of   ending up with
                                     a net wealth to
                                     be specified by
                                     you

QUESTION: For you to risk one-half your current net wealth in a new venture having a 90-10 chance of succeeding, how large would the possible gain from such an investment have to be?

ANSWER: Smallest possible final net wealth you would require to make the investment:

$ _____

8. Estimate the percentage of your gross assets currently in each of the following categories:

     a. Common stocks   _____%
     b. Real Estate: _____%
     c. Business ventures or partnerships: _____%
     d. Savings Accounts: _____%
     e. Commodity futures contracts: _____%
     f. Long or short stock positions: _____%
     g. Mutual funds: _____%
     h. Other (bonds, pension funds, cash value of life insurance policies, bank deposits, personal property):   _____%

                     TOTAL   ___100___%

9. Indicate the number of times in the last 12 months that you have engaged in any of the following activities and also give the average amount wagered per occasion:

   a. Gambling in established casinos (Las Vegas, Atlantic City, etc.):

   Number of times: _____

   Average total wagered per occasion: $_____

   b. Betting on your own recreational activities (golf, poker, etc.):

   Number of times: _____

   Average stake per occasion: $_____

   c. Betting on professional sports (football, baseball, horse racing, etc.):

   Number of times: _____

   Average stake per occasion: $_____

The next fourteen questions are designed to measure your attitudes towards risk related situations. Each question requires you to choose either option a or option b. **Please circle a or b.**

10.
   a. When I make plans, I am almost certain that I can make them work.

   b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

11.
   a. A good painting should shock or jolt the senses.

   b. A good painting should give one a feeling of peace and security.

12.
   a. I prefer a guide when I am in a place I don't know well.

   b. I like to explore a strange city or section of town by myself, even if it means getting lost.

13.
   a. By taking an active part in political and social affairs, people can control world events.

   b. As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.

14.

    a. Without the right breaks, one cannot be an effective leader.

    b. Capable people who fail to become leaders have not taken advantage of their opportunities.

15.

    a. I would prefer a job in one location.

    b. I would like a job which would require a lot of traveling.

16.

    a. I would prefer living in an ideal society where everyone is safe, secure, and happy.

    b. I would have preferred living in the unsettled days of our history.

17.

    a. Many of the unhappy things in people's lives are partly due to bad luck.

    b. People's misfortunes result from the mistakes they make.

18.

    a. I have often found that what is going to happen will happen.

    b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

19.

    a. When I feel discouraged, I recover by relaxing and having some soothing diversion.

    b. When I feel discouraged, I recover by going out and doing something new and exciting.

20.

    a. The most important goal of life is to find peace and happiness.

    b. The most important goal of life is to live it to the fullest and experience as much of it as you can.

21.

    a. In the long run, people get the respect they deserve in this world.

    b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

22.

    a. I prefer people who are emotionally expressive even if they are a bit unstable.

    b. I prefer people who are calm and even tempered.

23.

    a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.

    b. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.

24. What percentage of project budget in any given year do you consider to be adequate management reserve?

$ _____$

PLEASE GO ON TO PART III

PART III

THIS PART OF THE SURVEY ASKS YOU TO ANSWER QUESTIONS PERTAINING TO YOUR BACKGROUND AND YOUR CURRENT JOB

PLEASE CIRCLE YOUR ANSWERS

1. Military / Civilian

2. RANK:

    1. Second Lieutenant   5. Lt Colonel
    2. First Lieutenant   6. Colonel
    3. Captain   7. Civilian - Please specify
                                          grade/step: _____

3. SEX:

    1. Male   2. Female

4. PRESENT AGE IN YEARS:

    1. 20 - 24   4. 35 - 39
    2. 25 - 29   5. 40 - 44
    3. 30 - 34   6. 45 or over

5. MARITAL STATUS:

    1. Married   4. Divorced
    2. Single   5. Widowed
    3. Separated

6. NUMBER OF DEPENDENTS (spouse, children):

    1. None   5. Four
    2. One   6. Five
    3. Two   7. More than five
    4. Three

7. EDUCATION:

    A. Higher Education:
            DEGREE(S)   SPECIALIZATION

    _____   _____

    _____   _____

    _____   _____

    B. Professional/Technical qualifications (e.g. CPA, PE, etc.):

    _____

    _____

8. **YEARS IN PRESENT POSITION:**

1. 0 - 6 months
2. 6 months - 1 year
3. 1 - 2 years
4. 2 - 3 years
5. 3 - 4 years
6. Over 4 years

9. **GOVERNMENT PROJECT MANAGER EXPERIENCE (years):**

1. 0 - 4
2. 4 - 8
3. 8 - 12
4. 12 - 16
5. 16 - 20
6. 20 or over

10. **PLEASE INDICATE THE AREA IN WHICH YOUR CURRENT JOB IS MOST ASSOCIATED.**

1. Configuration/Data Management
2. Engineering
3. Logistics
4. Manufacturing/Production
5. Program Control
6. Safety
7. Test/Evaluation
8. Other - Please specify: _____

11. **WHAT PHASE OF THE ACQUISITION CYCLE ARE THE MAJORITY OF YOUR PROJECTS PRIMARILY IN:**

a. Concept exploration
b. Demonstration/ Validation
c. Full Scale Development
d. Production

12. **IF YOU ARE A CIVILIAN EMPLOYEE SKIP TO QUESTION 13. IF YOU ARE MILITARY PLEASE ANSWER THE FOLLOWING QUESTIONS BY CIRCLING THE APPROPRIATE ANSWER:**

YES   NO   a. Have you ever been nominated or promoted below the zone?

YES   NO   b. Have you ever been nominated or selected to attend the Defense Systems Management College?

c. As an Officer, what awards have you received? **PLEASE INDICATE HOW MANY IN THE BLANKS.**

AIR FORCE ACHIEVEMENT MEDAL   _____
AIR FORCE COMMENDATION MEDAL   _____
AIR FORCE MERITORIOUS MEDAL   _____

13.   ANSWER THE FOLLOWING QUESTIONS ONLY IF YOU ARE A CIVILIAN
       EMPLOYEE. PLEASE CIRCLE THE APPROPRIATE ANSWER:

YES   NO   a. Have you ever received a Superior Performance Award?
                    If so, how many? _____

YES   NO   b. Have you ever received a Quality Step Increase (QSI)?
                    If so, how many times? _____

YES   NO   c. Have you ever received a Merit Step Increase (MSI)?
                    If so, how many times? _____

                 d. How may years have you been working for the government
                    as a civilian employee (GS grade or higher)? _____

THANK YOU FOR YOUR TIME AND COOPERATION
IN COMPLETING THIS SURVEY

CONFLICT HANDLING STYLE AND
RISK TAKING TENDENCY OF PROJECT MANAGERS
DIRECTOR SURVEY

Purpose

Research in the management arena has continually tried to identify factors which describe the on-the-job behavior of managers. The purpose of this survey is to collect data on two of the managerial factors identified, conflict handling style and risk taking tendency, to determine what relationship they have with the effectiveness of project managers. This survey is designed to get a superior's perspective of the project manager.

General Instructions

The survey is divided into three parts and will take approximately 45 minutes to complete. Part I of the survey is made up of three sections. Section I asks you to evaluate how a specific project manager handles conflict with you. Section II asks you to evaluate how the same project manager handles conflict with other project managers. Section III asks you to answer questions pertaining to your project manager's risk taking tendencies. Furthermore, Part I of the survey will be repeated for _____ project managers under your supervision. Finally, Part II of the survey asks you for some demographic and personal information.

Nonattribution applies to this survey. Each of the project manager's names used in the survey are used only for collating your responses with those of other individuals evaluating the same project manager's conflict handling style and risk taking tendencies. Once all of the data has been collected and a file has been collated based on each project manager's name, you will be asked to separate the names into the two groups, EFFECTIVE AND LESS EFFECTIVE (previously identified for this study). To ensure confidentiality the top page of each collated file, which has the project manager's name on it, should be simultaneously removed while separating the data files into the two groups.

Please feel free to make additional comments as you fill out the survey. When you have completed the survey, please place the survey in the return envelope provided and mail it promptly.

THANK YOU FOR YOUR TIME AND COOPERATION.

If you have any questions or are interested in the results of this study, please contact either of the researchers listed below:

Captain Tim McIntyre   Captain Stephen Wardlaw
AFIT/LSG (513) 255-6569   AFIT/LSG (513) 255-6569
Wright-Patterson AFB, OH 45433   Wright-Patterson AFB, OH 45433

PART I

THIS PART OF THE SURVEY HAS A PAGE PRECEDING SECTIONS I, II, **and III** WHICH IDENTIFIES THE PROJECT MANAGER (BY NAME) FOR WHICH THE SURVEY PERTAINS

SECTION I   ASKS YOU TO ANSWER QUESTIONS PERTAINING TO HOW PROJECT MANAGER X HANDLES CONFLICT WITH YOU.

SECTION II   ASKS FOR YOUR PERCEPTION OF HOW PROJECT MANAGER X HANDLES CONFLICT WITH OTHER PROJECT MANAGERS (PEER RELATIONS).

SECTION III   ASKS YOU TO RATE PROJECT MANAGER X'S RISK TAKING TENDENCIES.

PLEASE REPEAT SECTIONS I, II, AND III FOR THE PROJECT MANAGER BELOW

SECTION I

THE ITEMS BELOW REPRESENT VARIOUS STYLES OF HANDLING CONFLICT. USE THE FOLLOWING RATING SCALE TO EVALUATE HOW ACCURATELY EACH ITEM DESCRIBES THE WAY PROJECT MANAGER X BEHAVES TOWARD YOU.

ALWAYS			SOMETIMES			NEVER
1	2	3	4	5	6	7

Indicate your evaluation in the spaces provided.

IN1   01. Exchanges accurate information with me to solve a problem together.

AV1   02. Keeps disagreements with me to him/herself in order to avoid hard feelings.

DO 1   03. Uses his/her expertise to make a decision in his/her favor.

OB 1   04. Usually accommodates my wishes.

CO 1   05. Tries to find a middle course to resolve an impasse.

IN 2   06. Tries to work with me for a proper understanding of a problem.

AV 2   07. Usually avoids open discussion of his/her differences with me.

DO 2   08. Uses his/her influence to get his/her ideas accepted.

OB 2   09. Tries to satisfy my expectations.

CO 2   10. Usually proposes a middle ground for breaking deadlocks.

**THANK YOU FOR COMPLETING SECTION I
OF THE SURVEY
PLEASE GO ON TO SECTION II**

SECTION II

THE ITEMS BELOW REPRESENT VARIOUS STYLES OF HANDLING CONFLICT. USE THE FOLLOWING RATING SCALE TO EVALUATE HOW ACCURATELY EACH ITEM DESCRIBES THE WAY YOUR PROJECT MANAGER BEHAVES TOWARD OTHER PROJECT MANAGERS.

ALWAYS			SOMETIMES			NEVER	
1	2	3	4	5	6	7	

Indicate your evaluation in the spaces provided.

IN 1   01. Exchanges accurate information with me to solve a problem together.

AV 1   02. Keeps disagreements with me to him/herself in order to avoid hard feelings.

DO 1   03. Uses his/her expertise to make a decision in his/her favor.

OB 1   04. Usually accommodates my wishes.

CO 1   05. Tries to find a middle course to resolve an impasse.

IN 2   06. Tries to work with me for a proper understanding of a problem.

AV 2   07. Usually avoids open discussion of his/her differences with me.

DO 2   08. Uses his/her influence to get his/her ideas accepted.

OB 2   09. Tries to satisfy my expectations.

CO 2   10. Usually proposes a middle ground for breaking deadlocks.

**THANK YOU FOR COMPLETING SECTION II
OF THE SURVEY**

PLEASE GO ON TO SECTION III

SECTION III

THE FOLLOWING QUESTIONS ARE DESIGNED TO GIVE YOUR
OBSERVATIONS
OF PROJECT MANAGER X'S RISK TAKING TENDENCIES.

Using the seven point scale given for each of the following questions, please circle
a number on the scale.

1. How would you rate Project Manager X's willingness to undertake risky
propositions as compared to other managers at or near his/her position/level?

much less								much more
willing to	1	2	3	4	5	6	7	willing to
accept risks								accept risks

2. When making decisions, does Project Manager X gather more or less information
as compared to other managers at or near his position/level?

gathers much less								gathers much more
information to	1	2	3	4	5	6	7	information to
make decisions								make decisions

3. When making decisions, does Project Manager X spend more or less time
deliberating as compared to other managers at or near his position/level?

spends much less								spends much more
time deliberating	1	2	3	4	5	6	7	time deliberating
making decisions								making decisions

**THANK YOU FOR COMPLETING SECTION III
OF THE SURVEY**

PLEASE GO ON TO THE NEXT PROJECT MANAGER

SECTION III

THIS PART OF THE SURVEY ASKS YOU TO ANSWER
QUESTIONS PERTAINING TO YOUR
BACKGROUND AND YOUR CURRENT JOB

PLEASE CIRCLE YOUR ANSWERS

1. Military / Civilian

2. RANK:

   1. Lt Colonel   3. Civilian -
   2. Colonel   Please specify grade/step _____

3. SEX:

   1. Male   2. Female

4. PRESENT AGE IN YEARS:

   1. 30 - 34   4. 45 - 49
   2. 35 - 39   5. 50 or over
   3. 40 - 44

5. YEARS IN PRESENT POSITION:

   1. 0 - 6 months   4. 2 - 3 years
   2. 6 months - 1 year   5. 3 - 4 years
   3. 1 - 2 years   6. more than 4 years

6. PROJECT MANAGEMENT EXPERIENCE (years):

   1. 0 - 4   4. 12 - 16
   2. 4 - 8   5. 16 - 20
   3. 8 - 12   6. 20 or over

THANK YOU FOR YOUR TIME AND COOPERATION
IN COMPLETING THIS SURVEY

CONFLICT HANDLING STYLE AND
RISK TAKING TENDENCY OF PROJECT MANAGERS
FUNCTIONAL SURVEY

Purpose

Research in the management arena has continually tried to identify factors which describe the on-the-job behavior of managers. The purpose of this survey is to collect data on two of the managerial factors identified, conflict handling style and risk taking tendency. This survey is designed to get the functional's perspective of the project manager's behavior.

General Instructions

The survey is divided into six parts and will take approximately 45 minutes to complete. Part I of the survey asks you for the name of your project manager and your office symbol. Part II of the survey asks you to evaluate how your project manager handles conflict with you. Part III asks you to answer questions about your project manager's risk taking tendencies. Parts IV & V ask you questions pertaining to your observation of the project manager's behavior. Finally, Part VI asks you for some demographic information.

Nonattribution applies to this survey. Your project manager's name is used only for collating your responses with those of other individuals evaluating the project manager. Once the data has been collated, the name will be removed. Your name is not requested so please answer the survey as candidly and honestly as possible.

Please feel free to make additional comments as you fill out the survey. When you have completed the survey, please place the survey in the return envelope provided and mail it promptly.

THANK YOU FOR YOUR TIME AND COOPERATION.

If you have any questions or are interested in the results of this study, please contact either of the researchers listed below:

Captain Tim McIntyre   Captain Stephen Wardlaw
AFIT/LSG   AFIT/LSG
Wright-Patterson AFB, OH 45433 Wright-Patterson AFB, OH 45433
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PART I

**PLEASE GIVE THE NAME
OF YOUR PROJECT MANAGER:**

_____

YOUR ORGANIZATION/OFFICE SYMBOL:

_____

THANK YOU FOR COMPLETING PART I OF THE SURVEY

PLEASE GO ON TO PART II

PART II

THE ITEMS BELOW REPRESENT VARIOUS STYLES FOR HANDLING CONFLICT. USE THE FOLLOWING RATING SCALE TO EVALUATE HOW ACCURATELY EACH ITEM DESCRIBES THE WAY YOUR PROJECT MANAGER BEHAVES TOWARD YOU.

ALWAYS			SOMETIMES			NEVER	
1	2	3	4	5	6	7	

Indicate your evaluation in the space provided.

AV 3   01. Attempts to avoid being "put on the spot" and tries to keep his/her conflict with me to his/herself.

DO 3   02. Sometimes uses his/her power to win a competitive situation.

CO 1   03. Tries to find a middle course to resolve an impasse.

IN 3   04. Tries to bring all our concerns out in the open so that the issues can be resolved in the best possible way.

DO 1   05. Uses his/her expertise to make a decision in his/her favor.

OB 1   06. Usually accommodates my wishes.

AV 1   07. Tries to keep his/her disagreement with me to his/herself in order to avoid hard feelings.

IN 1   08. Exchanges accurate information with me to solve a problem together.

CO 2   09. Usually proposes a middle ground for breaking deadlocks.

DO 2   10. Uses his/her influence to get his/her ideas accepted.

OB 2   11. Tries to satisfy my expectations.

AV 2   12. Usually avoids open discussion of his/her differences with me.

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ALWAYS			SOMETIMES			NEVER
1	2	3	4	5	6	7

IN 2   13. Tries to work with me for a proper understanding of a problem.

OB 3   14. Gives in to my wishes.

CO 3   15. Uses "give and take" so that a compromise can be made.

THANK YOU FOR COMPLETING PART II OF THE SURVEY

PLEASE GO ON TO PART III

PART III

THE FOLLOWING QUESTIONS ARE DESIGNED TO GIVE YOUR OBSERVATIONS OF YOUR PROJECT MANAGER'S RISK TAKING TENDENCIES.

For questions one through three, **please circle a number on the seven point scale.**

1. How would you rate Project Manager X's willingness to undertake risky propositions as compared to other managers at or near his/her position/level?

| much less willing to accept risks | 1 | 2 | 3 | 4 | 5 | 6 | 7 | much more willing to accept risks |

2. When making decisions, does Project Manager X gather more or less information as compared to other managers at or near his position/level?

| gathers much less information to make decisions | 1 | 2 | 3 | 4 | 5 | 6 | 7 | gathers much more information to make decisions |

3. When making decisions, does Project Manager X spend more or less time deliberating as compared to other managers at or near his position/level?

| spends much less time deliberating making decisions | 1 | 2 | 3 | 4 | 5 | 6 | 7 | spends much more time deliberating making decisions |

The next fourteen questions are designed to measure Project Manager X's attitude towards risk related situations. Each question requires you to chose the option which best describes Project Manager X. **Please circle a or b.**

4.

   a. When Project Manager X makes plans, he is almost certain that he can make them work.

   b. Project Manager X believes it is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

5.

   a. Project Manager X believes that a good painting should shock or jolt the senses.

   b. Project Manager X believes that a good painting should give one a feeling of peace and security.

6.

   a. Project Manager X would prefer a guide in a place he does not know well.

   b. Project Manager X would like to explore a strange city or section of town on his own, even if it meant getting lost.

7.

   a. Project Manager X believes that by taking an active part in political and social affairs, people can control world events.

   b. As far as world affairs are concerned, Project Manager X believes that most of us are victims of forces we can neither understand nor control.

8.

   a. Project Manager X believes that without the right breaks, one cannot be an effective leader.

   b. Project Manager X believes that capable people who fail to become leaders have not taken advantage of their opportunities.

9.

   a. Project Manager X would prefer a job in one location.

   b. Project Manager X would like a job which would require a lot of traveling.

10.

   a. Project Manager X would prefer living in an ideal society where everyone is safe, secure, and happy.

   b. Project Manager X would have preferred living in the unsettled days of our history.

11.

   a. Project Manager X believes that many of the unhappy things in people's lives are partly due to bad luck.

   b. Project Manager X believes that people's misfortunes result from the mistakes they make.

12.

a. Project Manager X believes that what is going to happen will happen.

b. Project Manager X believes that trusting to fate has never turned out as well for him as making a decision to take a definite course of action.

13.

a. When Project Manager X feels discouraged, he recovers by relaxing and having some soothing diversion.

b. When Project Manager X feels discouraged, he recovers by going out and doing something new and exciting.

14.

a. Project Manager X believes that the most important goal of life is to find peace and happiness.

b. Project Manager X believes that the most important goal of life is to live it to the fullest and experience as much of it as you can.

15.

a. Project Manager X believes that in the long run, people get the respect they deserve in this world.

b. Project Manager X believes that unfortunately, an individual's net worth often passes unrecognized no matter how hard he tries.

16.

a. Project Manager X prefers people who are emotionally expressive even if they are a bit unstable.

b. Project Manager X prefers people who are calm and even tempered.

17.

a. Project Manager X believes that who gets to be boss often depends on who was lucky enough to be in the right place first.

b. Project Manager X believes that getting people to do the right thing depends upon ability; luck has little or nothing to do with it.

THANK YOU FOR COMPLETING PART III OF THE SURVEY

PLEASE GO ON TO PART IV

PART IV

THIS PART OF THE SURVEY ASKS YOU TO ANSWER QUESTIONS
PERTAINING TO THE MANAGERIAL BEHAVIOR
OF YOUR PROJECT MANAGER

1	2	3	4	5	6	7
Disagree Strongly			Neutral			Agree Strongly

Please use the above scale to respond to each of the following items, placing the appropriate number in the space provided.

To what extent do you agree or disagree with the following statements about your project manager.

environment   _E1_   01. develops well-informed plans, policies, and
& resources   operational procedures to allocate scarce organizational
                                        resources.

information   _E2_   02. effectively transmits internal organizational
handling   information from one project team-member to another so
                                        that they really understand what is required of them.

information   03. communicates effectively within your organization:
   handling

               _E3_   a.) orally

               _E4_   b.) in writing

supervision   _E5_   04. handles the administrative side of his job well -- for
                                     example, planning and scheduling the work,indicating clearly
                                     when work is to be finished, assigning the right job to the
                                     right person, inspecting and following up on the work that is
                                     done, etc.

growth &   _E6_   05. insures, through career counseling and careful
development   observation and recording, that his project team-members
                                     are growing and developing in their skills for performing
                                     their work.

1	2	3	4	5	6	7
Disagree Strongly			Neutral			Agree Strongly

supervision   _E7_   06. handles the human relations side of his job well -- for example, getting people to work well together, getting individuals to do the best they can, giving recognition for good work done, letting people know where they stand, etc.

supervision   _E8_   07. generally tries to get your opinions and ideas for solving job problems.

supervision   _E9_   08. handles the institutional leadership side of his job well --for example, creating and formulating policy; handling matters of the group's relationships with outside organizations and groups; understanding the importance and relationships of the group's mission on the political, social, and economic environment.

supervision   _E10_   09. understands the "big picture" of what the Air Force is all about -- sees how the Air Force's mission relates to the social, and political environment of the country.

               _E11_   10. is effective in his job.

THANK YOU FOR COMPLETING PART IV OF THE SURVEY

PLEASE GO ON TO PART V

PART V

THIS PART OF THE SURVEY ASKS YOU TO ANSWER QUESTIONS
PERTAINING TO THE BEHAVIOR OF YOUR PROJECT TEAM

A project team is defined as a group of individuals, supervised by a
project manager, working together to accomplish the same task.

1	2	3	4	5	6	7
Disagree Strongly			Neutral			Agree Strongly

Please use the above scale to respond to each of the following items,
placing the appropriate number in the space provided.

To what extent do you agree or disagree with the following statements
about your project team?

adaptability __UE1__ 01. When changes are made in the routines or procedures, people in this project team accept and adjust to these changes.

cooperation __UE2__ 02. For the most part, people are cooperative with and helpful to other people in the program office whom, through their work, they come in contact.

flexibility __UE3__ 03. When emergencies arise, such as a schedule being moved up, overloads are often caused for many people. This project team copes with these emergencies more readily and successfully than other groups.

quality __UE4__ 04. The people in this project team turn out high quality products or services.

resource util __UE5__ 05. The people in this project team do NOT seem to get maximum output from the resources (money, time, and equipment) they have available. That is, they work inefficiently.

1	2	3	4	5	6	7
Disagree Strongly			Neutral			Agree Strongly

technical   UE6   06. The work performed by this project team meets or exceeds the technical objectives or standards set for it.

mission   UE7   07. Generally, the efforts made by people in this project team contribute to the overall goals of the organization.

schedule   UE8   08. In the last 12 months, this project team has been able to complete, on time, it's planned milestones and activities.

budget   UE9   09. Over the past year, this project team has been able to meet it's budget limitations or cost constraints.

planning   UE10   10. The people in this project team anticipate problems that may come up in the future and prevent them from occurring or minimize their effects.

THANK YOU FOR COMPLETING PART V OF THE SURVEY

PLEASE GO ON TO PART VI

PART VI

THIS PART OF THE SURVEY ASKS YOU TO ANSWER
QUESTIONS PERTAINING TO YOUR
BACKGROUND AND YOUR CURRENT JOB.

PLEASE CIRCLE YOUR ANSWERS

1.   Military / Civilian

2.   RANK:

    1. Second Lieutenant   5. Lt Colonel
    2. First Lieutenant   6. Colonel
    3. Captain   7. Civilian - Please specify
                                             grade/step: _____

3.   SEX:

    1. Male   2. Female

4.   PRESENT AGE IN YEARS:

    1. 20 - 24   4. 35 - 39
    2. 25 - 29   5. 40 - 44
    3. 30 - 34   6. 45 or over

5.   YEARS IN PRESENT POSITION:

    1. 0 - 6 months   4. 2 - 3 years
    2. 6 months - 1 year   5. 3 - 4 years
    3. 1 - 2 years   6. 4 years or more

6.   HOW LONG HAVE YOU WORKED WITH YOUR PROJECT MANAGER
      (number of years):

    1. 0 - 6 months   4. 2 - 3 years
    2. 6 months - 1 year   5. 3 - 4 years
    3. 1 - 2 years   6. 4 years or more

7.   Please indicate the area in which your current job is most associated.

   a. Configuration/Data Management
   b. Engineering
   c. Logistics
   d. Manufacturing/Production
   e. Program Control
   f. Safety
   g. Test/Evaluation
   h. Other - Please specify: _____

8. WHAT PHASE OF THE ACQUISITION CYCLE ARE THE MAJORITY OF YOUR PROJECTS PRIMARILY IN:

   a. Concept exploration
   b. Demonstration/ Validation
   c. Full Scale Development
   d. Production

THANK YOU FOR TIME AND COOPERATION
IN COMPLETING THIS SURVEY

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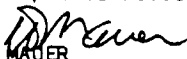21. "What's Happening at ASD," Air Force Magazine, 71: 71-87 (January 1988).

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Center in Houston, Texas was available and ready to support

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McIntyre also held the position of Executive Officer while

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The purpose of the study was to determine if there was a relationship between program management effectiveness and risk taking propensity. Air Force supervisors classified the program managers as more effective and less effective. Using a number of risk measures and non-parametric statistical techniques, the study concluded that more effective program managers consistently rated higher on the risk measures than their less effective colleagues. Additionally, using a risk behavior model developed in previous research, the more effective program managers were labeled as exhibiting risk taking behavior by their supporting functional personnel and the less effective program managers were rated by their supporting functional personnel as exhibiting risk neutral behavior.