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# EXPECTANCY THEORY MODELS OF JOB PREFERENCE AND JOB CHOICE APPLIED TO GRADUATE ENGINEERING STUDENTS AT THE AIR FORCE INSTITUTE OF TECHNOLOGY

THESIS

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(6) EXPECTANCY THEORY MODELS OF JOB PREFERENCE AND JOB CHOICE APPLIED TO GRADUATE ENGINEERING STUDENTS AT THE AIR FORCE INSTITUTE OF TECHNOLOGY.

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ABSTRACT

This thesis examined the power of the valence model in predicting job preference and the power of the force model in predicting job choice as hypothesized by Vroom's expectancy theory. The research involved a decision making exercise to capture 64 Air Force Institute of Technology (AFIT) students' job preference policy and their job choice policy.

Four job factors and their outcomes captured the valence policy; five job factors (the same four plus the expectancy factor) captured the force policy. Each of the five factors had two possible outcomes, so a full factorial design of $2^5$ or 32 jobs was used.

The valence model was quite powerful in predicting students' job preference. The mean $R^2$ was .83, and the group $R^2$ was .59. The results of the force model analyses were contradictory to Vroom's conceptualization of expectancy. The AFIT student did not incorporate expectancy information into his/her force decision making.

# EXPECTANCY THEORY MODELS OF JOB PREFERENCE AND JOB CHOICE APPLIED TO GRADUATE ENGINEERING STUDENTS AT THE AIR FORCE INSTITUTE OF TECHNOLOGY

## I. Introduction

### Background

Expectancy theory evolved in 1964 out of Victor H. Vroom's book, Work and Motivation. Basically, this theory asserts that the strength and direction of an individual's choice behavior can be explained from a motivational point of view. Specifically, Vroom proposed that the motivational force of an individual can be predicted in terms of (1) his preference among outcomes -- the valence concept, (2) how instrumental he perceives the preference for attainment of other outcomes -- the instrumentality concept, and (3) his assessment of how likely it is his effort will lead to his preference -- the expectancy concept. Applications of expectancy theory have ranged from predicting job performance to leadership behavior, from estimating job satisfaction to the importance of pay, and from forecasting occupational choice to suicide attempts.

### Expectancy Theory Models

Vroom's expectancy theory is formalized in two separate but highly related models. In Proposition 1, he theorizes the prediction of an individual's preference or valence toward or away from an outcome.

> Proposition 1. The valence of an outcome to a person is a monotonically increasing function of the algebraic sum of the products of the valences of all other outcomes and his conceptions of its instrumentality for the attainment of these other outcomes (Vroom, 1964, p. 17).

Appropriately labeled the valence model, Proposition 1 can be represented in the following equation:

$$V_j = \sum_{k=1}^{n} (V_k I_{jk})$$

where

$V_j$ = the Valence of outcome j

$V_k$ = the Valence of outcome k

$I_{jk}$ = the perceived Instrumentality of outcome j for the attainment of outcome k

n = the Number of outcomes

The instrumentality concept in the valence model is almost self-evident. It refers to the individual's perception of how instrumental the outcome in question, outcome j, is to all associated outcomes, outcomes k from 1 to n, for which he has varying preferences or valences.

An example will clarify the valence and instrumentality concepts. Graduating students are posed with a job selection decision; applying the valence model to a student's choice among job possibilities implies that his valence for each job is predictable from the sum of interactions between (1) the valence of other outcomes associated with the job, such as working conditions and promotional opportunity, and (2) his cognition of how instrumental the job is in attaining these other, associated outcomes.

According to Vroom, a person's behavior is dependent upon more than his preference among outcomes. A person also takes into account the element of uncertainty in the outcomes and in so doing he forms an expectation, or probability belief, concerning the likelihood the outcomes will be realized if he acts upon his choice. Vroom refers to these beliefs as expectancies and combines the concepts of valence and expectancy to derive Proposition 2 which predicts how individuals' choices are determined.

> Proposition 2. The force on a person to perform an act is a monotonically increasing function of the algebraic sum of the products of the valences of all outcomes and the strength of his expectancies that the act will be followed by the attainment of these outcomes (Vroom, 1964, p. 18).

Proposition 2 is known as the force model and reduces to the following mathematical notation:

$$F_i = \sum_{j=1}^{n} (E_{ij} V_j)$$

where

$F_i$ = the Force on the individual to perform act i

$E_{ij}$ = the strength of the Expectancy that act i will be followed by outcome j

$V_j$ = the Valence of outcome j

n = the Number of outcomes

Therefore, according to Proposition 2, the motivational force of a student for a particular job is predictable from the sum of the multiplication of the student's expectancy that his effort will lead to the job and his valence to the job.

## Thesis Purpose

Expectancy theory has been the subject of many researchers since 1964. However, their results are tempered partly by shortcomings in the methodologies used in testing the theory and partly by the research emphasis toward modifying Vroom's model of motivation. The primary purpose of this research is to test the predictive power of the valence model and the force model, while strictly adhering to the original formulation by Vroom, where possible. Equally important, this thesis will test the strength of Vroom's multiplicative assumption in the force model against the alternate assumption of additivity in combining components of the model.

## Assumptions

The assumptions made surrounding any study certainly tend to affect its direction and destination. Obviously, the theoretical assumptions of Vroom are an intricate part of this study, and they will be addressed in Chapter II. Other assumptions made in this research are:

1. Each respondent to the decision making exercise answered in all honestly according to his own perceptions and intentions regarding the job scenarios.

2. The criteria used in the decision making exercise are realistic and sufficient.

3. Policy capturing provides a means to accurately and objectively identify an individual's decisions.

## Limitations

In this study the predictor variables (outcomes) were limited to make the experiment acceptable to the subjects and to the experimenter in terms of time and effort. The subjects in this research are limited to engineering graduate students at the Air Force Institute of Technology (AFIT), and the results of the research are not applicable beyond this homogeneous group.

## II. EXPECTANCY THEORY REVIEW

Expectancy Theory Development

The underlying theme of expectancy theory is the principle of hedonism. Man's tendency to think and act in such a way as to maximize his pleasure, or conversely minimize his pain, is an old tenet, yet hedonism fails as a model of human motivation because the concept only offers an after-the-fact explanation of man's behavior.

Vroom saw Thorndike's law of effect and Hull's principle of reinforcement as theories based upon hedonism of the past. Therefore, while these theories partially explained how behavior is directed toward pleasant outcomes and away from painful ones, Vroom considered their theories deficient in providing predictor variables. In other words, the theories of Thorndike and Hull did not state how to distinguish the pleasurable from the painful outcome for an individual. Again, the explanation of behavior is after-the-fact.

An especially strong influence on Vroom's formulation of expectancy theory was Lewin's (1938) cognitive theory of behavior. Lewin's interest, which became Vroom's concern, was an ahistorical approach to explaining human behavior. This cognitive, ahistorical theory views behavior as rational, voluntary and dependent upon the present situation. Whereas the historical approach considers a person's behavior at a particular point in time to be affected by his past experiences, Vroom chooses to neglect the issue of learning and to concentrate his attention on predicting work related behavior with an ahistorical emphasis.

There are many other theorists, besides Lewin, who Vroom drew upon in formulating expectancy theory. He acknowledges the theoretical works of Peak (1955), Georgopoulous (1957), Atkinson (1958), and Tolman (1959) as influential in the development of the expectancy theory models.

## Vroom's Focus

In the preface of Work and Motivation, Vroom describes his constraints, assumptions and focus for the book. He constrained his coverage to individual work behavior, especially occupational choice, job satisfaction, and job performance. He assumed behavior is motivated and predictable in terms of one's preferences and expectations. His focus was to systematize, analyze and synthesize the existing experimental data dealing with work and motivation, and during the process he hoped to make some generalizations and offer some significant research issues.

## Expectancy Theory Terminology

While categorizing the terminology used by industrial psychologists to describe an individual's behavior, Vroom noted that in some instances the same term implied considerably different meanings, and in other instances distinctively different terms meant essentially the same thing. Since such inconsistency and inadequacy among researchers in defining their terms and concepts complicate research interpretation and integration, Vroom consciously attempted to avoid this criticism in his models' construction. The concepts of expectancy theory as defined by Vroom are presented below.

Outcomes. An outcome is a state of nature or an event which is not totally controllable by an individual's behavior. For example, several outcomes for a particular job choice could be a $20,000 annual salary, a harsh climate, and little opportunity for advancement. So an outcome is a consequence that an individual may or may not want to attain or result.

Valence (V). Vroom defines valence as an affective orientation toward a particular outcome. He describes valence as the strength of an individual's attraction toward or away from a specific outcome. If the attraction is toward the outcome, then the outcome is positively valent. Where the person is neither attracted nor repelled by an outcome, its valence is zero; if the individual finds an outcome unattractive, then it is negatively valent.

Vroom differentiates between the terms valence and value. A person's anticipated satisfaction from an outcome, its valence, is not necessarily the same as the actual satisfaction derived from an outcome, its value. Another distinction by Vroom is the difference between valence and motive. Valence is synonymous with a preference for a single outcome, while a motive refers to a preference for a class of outcomes.

Instrumentality (I). Instrumentality is defined as the individual's conception of how instrumental the preferred outcome is in attaining the associated outcome(s). In essence, instrumentality is the perceived correlation between outcomes, and, therefore it can vary from minus one to plus one. When a person judges the outcome in question as never leading to the attainment of another outcome, a negative one instrumentality is indicated. A positive one instrumentality means the outcome in question always leads to the attainment of the associated outcome. Instrumentality, then, is merely an outcome-to-outcome association.

Expectancy (E). An individual's expectancy refers to his perceived probability that his action will lead to a particular outcome. If an individual expects the act certainly will be followed by a particular outcome, the strength of his expectation is maximal or 1.0; when he believes his effort will definitely not lead to a particular outcome, the strength of this formed expectancy is minimal or zero. So expectancy is simply an action-outcome probability that ranges from zero to one.

Force. The concept of force connotes a strength or energy exerted which has direction as well as magnitude. Vroom indicates his force concept is similar to those of Lewin (1938), Tolman (1959), Atkinson (1958), Luce (1962), and Rotter (1955). Stahl (1978) notes that the concept of force is tantamount to motivation.

## Vroom's Models

Expectancy theory is comprised of two models, the valence model and the force model. The valence model states:

> The valence of an outcome to a person is a monotonically increasing function of the algebraic sum of the products of the valences of all other outcomes and his conceptions of its instrumentality for the attainment of these other outcomes (Vroom, 1964, p. 17).

Symbolically, the valence model is expressed as:

$$V_j = \sum_{k=1}^{n} (V_k I_{jk})$$

where

$V_j$ = the Valence of outcome j

$V_k$ = the Valence of outcome k

$I_{jk}$ = the cognized Instrumentatility of outcome j in attaining outcome k

n = the Number of outcomes

The force model incorporates the notion of risk in predicting an individual's choice behavior. Vroom proposes:

> The force on a person to perform an act is a monotonically increasing function of the algebraic sum of the products of the valence of all outcomes and the strength of his expectancies that the act will be followed by the attainment of these outcomes (Vroom, 1964, p. 18).

Symbolically, the force model becomes:

$$F_i = \sum_{j=1}^{n} (E_{ij} V_j)$$

where

$F_i$ = the Force on the person to perform act i

$E_{ij}$ = the strength of the Expectancy that act i will be followed by outcome j

$V_j$ = the Valence of outcome j

n = the Number of outcomes

## Vroom's Hypotheses

For both models, Vroom (1964) presents hypotheses for application concerning an individual's (1) occupational choice, (2) job satisfaction, and (3) job performance. Since in this study only the hypotheses related to occupational choice will be tested, only they will be presented.

> Occupational Choice (Valence) Hypothesis: The valence of an occupation to a person is a monotonically increasing function of the algebraic sum of the products of the valences of all other outcomes and his conceptions of the instrumentality of the occupation for the attainment of these other outcomes (Vroom, 1964, p. 278).

> Occupational Choice (Force) Hypothesis: The force on a person to attempt to enter an occupation is a monotonically increasing function of the product of the valence of the occupation and of his expectancy that his attempt will be successful (Vroom, 1964, p. 282).

## Empirical Support

Vroom cites more than 15 investigations between 1933 and 1960 which support the valence hypothesis concerning occupational choice. Several analyses of fantasy show that an individual's stated preferences among occupations are logically consistent with his motives. Most of the evidence that supports Vroom's prediction of occupational choice is correlational, including an unpublished study by Vroom testing his hypothesis with college students.

As for the force hypothesis dealing with occupational choice, Vroom concedes that the evidence bearing on this hypothesis is limited in coverage and cogency. In fact, the most relevant experiment (Rosen, 1961) pertaining to the force hypothesis supports the concepts of valence and expectancy as predictors of force; but their hypothesized multiplicative interaction is not evident.

Expectancy Theory Assumptions

Expectancy theory is based upon the assumption that an individual's behavior is motivated in terms of his preferences and expectations relative to outcomes. Additionally, Vroom considers only behavior that is voluntary and rational. Involuntary or compulsive acts, such as one's neural responses or muscular reflexes and even abnormal behavior, are defined as unmotivated behavior. So Vroom reasonably assumes job behavior is motivated.

Another assumption Vroom makes in formulating expectancy theory is that an ahistorical model of choice behavior is more promising than an historical model. He does not regard the historical process of motives as essential, but emphasizes the role of the present in predicting behavior. This assumption is one of personal preference but palatable since the ahistorical and historical approaches are complementary in nature.

Additive and multiplicative assumptions are built into the expectancy theory models. Specifically, the valence of an outcome (its score) is derived when each attendant outcome's valence is multiplied by its respective instrumentality and then summed. The valence score is, in turn, multiplied by the attendant expectancy to derive the force score or index.

The combinatorial properties of the models are controversial, to say the least, because they have created methodological problems. The disagreement between researchers over the mathematical relationships of expectancy theory will be addressed in detail in the next section.

Psychometric Problems in Testing the Models

The mathematical relationship between valence, instrumentality, and expectancy has been criticized for its psychometric, i.e., operational measurement, problems. The methodology employed in expectancy theory research tends to measure the valence and instrumentality components with Likert-type scales. However, as Mitchell (1974) points out, such measures are not ratio and, perhaps, not even interval. Therefore, the typical measure of the valence and instrumentality is relegated to an interval measurement at best, and possibly ordinal.

Hackman and Porter (1968) tested the force model of expectancy theory and put the problem in the following perspective:

> Although there are zero vlaues on both the E and V questionnaire scales, it is clear that these measurement procedures do not meet the criteria for ratio scales. Thus, it is not legitimate to claim that the $\Sigma(E_i \times V_i)$ predictor is a psychometrically valid measure of the motivation of individual subjects. Instead, the predictor is viewed as a numerical score which, given the measurement and arithmetic operations employed to obtain the score and the theory from which the operations were

> derived, should reflect gross differences in the motivation of subjects to work hard. Thus, the procedures used follow Comrey's (1951) 'practical validity criteria' rather than 'fundamental-measurement criteria'. As Comrey (1951) and Hays (1963) note, such procedures are reasonable, as long as the scores are substantively meaningful on extramathematical grounds and so long as the scores do in fact relate to the criterion variables of interest (p. 420-421).

A strict interpretation of this perspective, according to Mitchell (1974), means that motivational force scores are allowable for predictive purposes, but such scores are not applicable for validating the multiplicative nature of the model.

Schmidt (1973) arrived at the same conclusion based upon his findings with various linear transformations of interval-scaled valence and expectancy data. He even contended that the revision of measurement techniques was necessary to render any meaningful test of the multiplicative assumption in the force model, and he noted necessary scaling procedures seem to be available just not employed.

While Connolly (1976) concedes the scaling issues raised by Schmidt require some caution, he disagrees with Schmidt's empirical analysis. Because Connolly considers the measurement errors necessary to produce Schmidt's results unlikely in practice, he reaches a counter conclusion. Connolly argues that "the simple models and measures apparently will suffice for the present approximate level of research precision in this area (p. 45)."

The major cause of the scaling problem is, according to

Schmidt, the variability of the true zero point. He demonstrates that by adding a constant to each component in the force model, a change in the correlation between the force score and the criterion results. However, Nebeker and Moy (1976) note that instead of using the across-person analysis employed by Schmidt, a within-subject comparison is appropriate and mollifies Schmidt's criticism. The result from a within-person analysis is that:

> the ordinal properties of the force are invariant within a subject and, therefore, the predictions are not affected to any large degree by the addition of a constant (Nebeker and Moy, 1976).

Besides the psychometric problems of the expectancy theory models, there is a problem with the assumed mathematical relationship between the components of the models. In particular, the valence model implies an equal weighing of all the valence-instrumentality products ($V_k \times I_{jk}$). Yet the research of Lawler and Porter (1967) and Mitchell and Pollard (1973) weighed these products separately by employing a multiple regression model. Although this approach tended to produce higher correlation coefficients, no further validation exists (Mitchell, 1974), other than intuition. Lewis (1978) points out that it is intuitively unlikely that a person weighs a given set of outcomes equally in his decision process.

<u>Problem of Identification/Selection of Outcomes</u>

The first task that besets an experimenter of expectancy theory is the generation of outcomes, and Vroom (1964) is not explicit in this regard. In the valence model he calls for incorporation of all associated outcomes; likewise, the force model calls for all outcomes.

A simple distinction has been made by Galbraith and Cummings (1967) between first-level and second-level outcomes. A first-level outcome refers to the outcome an investigator is interested in predicting, whereas second-level outcomes represent those outcomes expected due to the attainment of the first-level outcome. The distinction is so clear and common that recent literature by Heneman and Schwab (1973), Connolly (1976), Parker and Dyer (1976), and Stahl (1978) contain the terms without explanation. A schematic representation saliently highlights the relationships between first-and second-level outcomes, valence, expectancy and force. See Figure 1.

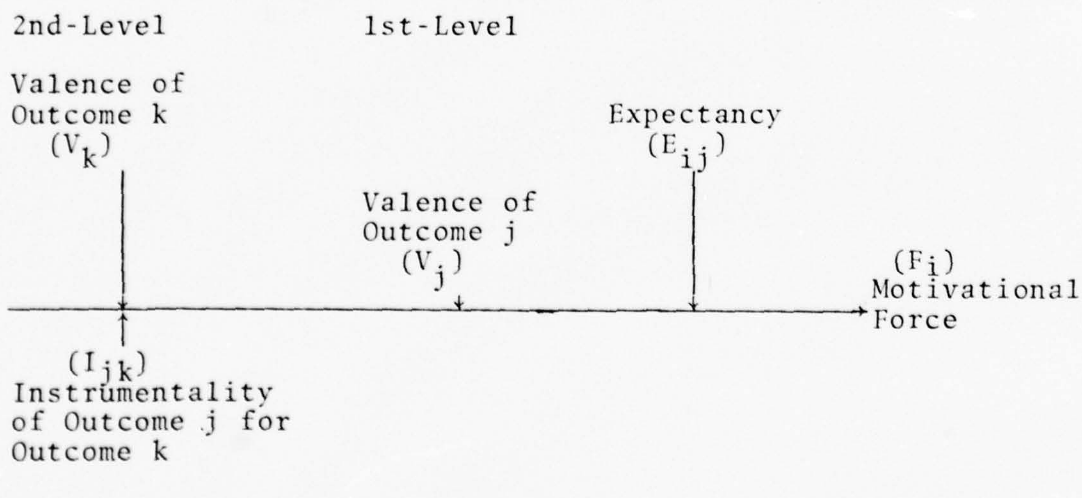


Figure 1. Relationship of Expectancy Theory Components, Adapted from Heneman and Schwab (1973, p. 44).

At issue, as pointed out by Mitchell (1974), are the following questions about the identification of outcomes:

> Is a list of _all_ outcomes really necessary?
> Should the experimenter or the subject generate the list of outcomes?
> Should negative outcomes be included?

The experimenter's answers to these questions about outcomes depend upon his interpretation of expectancy theory and, in turn, tend to affect the results as well as his approach. The answers to these questions in this research study will be presented in the methodology chapter.

## Problem with Expectancy Concept

Campbell, Dunnette, Lawler and Weick (1970) have decomposed Vroom's expectancy concept into two _possible_ elements: Expectancy I and Expectancy II. Expectancy I is seen as an individual's probability belief that he has the wherewithal to attain a particular outcome. Expectancy II is defined as an individual's personal probability estimate that his attainment of the particular outcome will lead to other associated outcomes. The Expectancy I and Expectancy II distinction quickly becomes moot, if not muddy, with the inclusion of the distinction between first-and second-level outcomes. Suffice it to say, there is disagreement about how outcome-to-outcome relationships should be operationalized. Some authors and researchers use a perceived correlation (-1 to +1), the instrumentality concept suggested by Vroom. Other authors and researchers treat the outcome-to-outcome association as a perceived probability (0 to +1), the Expectancy II alternative approach (Lewis, 1978). The methodology chapter will state which approach is used in this study and why it was chosen.

Problem of Within-Person Analysis or Across-Person Analysis

Mitchell (1974) notes that expectancy theory is based upon a within-person analysis but tested using an across-person analysis. This mismatch creates a problem since an individual does not select from alternatives by comparing his force for only one of the alternatives with the forces of other individuals for the same alternative (Lewis, 1978).

Additionally, testing expectancy theory with an across-person analysis makes an implicit and unfounded assumption (Guion, 1965; Nunnally, 1967). Specifically, the across-person approach assumes that individuals having valences, instrumentalities, and expectancies of equal strength will indicate the same responses on measurement scales. The potential impact is that the predictive purpose of the force model is weakened (Parker, 1974).

Problem of Measurement of Expectancy Theory Components

The method of measuring the separate components of expectancy theory is complicated by the fact that Vroom (1964) left the approach rather open to the investigator's assumptions. This has led to confusion, if not misconception, in the implementation of the models. The tendencies of researchers will be presented along with Vroom's suggestions, explicit or implicit.

Expectancies. Mitchell (1974) notes the expectancy component is treated in almost every experiment as it was conceptionalized by Vroom, i.e., as a probability measurement. The methods used vary from employing probability values from 0 to 1 (Mitchell and Pollard, 1973) to employing either a 5-point or a 7-point scale (Mitchell and Nebeker, 1973). The consistent application of measuring expectancy as a probability is indicative of few problems with its measurement (Mitchell, 1974).

Instrumentalities. This component was described by Vroom as a -1 to +1 outcome-to-outcome relationship. Yet, Mitchell (1974) finds that most researchers disregard this correlation suggestion. Instead, they measure instrumentality as a probability and, thereby, neglect the negative portion of the instrumentality relationship. Whether or not this misconstrual of Vroom's formulation impacts the predictive ability of expectancy theory is still unknown. Compounding, not correcting, the misconstrual of the measurement of instrumentality is the tendency to misconstrue the valence measurement.

Valences. As just alluded, the valence measures used seldom conform to Vroom's assumption that the valence of outcomes take on a negative, as well as positive, range. The absence of negative valences or negative instrumentalities precludes a negative valence score; in turn, only positive valence scores preclude the generation of a negative force score. Such implementation clearly supplants the Vroom formulation of force. In particular, one loses sight of the directional aspect of force.

Research Results with Expectancy Theory

In reviewing expectancy theory research findings, Mitchell (1974) draws this encouraging observation about the valence model.

> Almost every test of the valence model produced strong significant findings. Also, the more accurately the investigation reflected the original Vroom model, the better the results. Thus, we have fairly convincing evidence that this model has predictive utility (Mitchell, 1974).

As for the force model, Mitchell (1974) notes its research findings are not as good as the valence model's results, but they are generally supportive; again, he suggests a closer theoretical representation might reduce the amount of variance unaccounted for in the force model prediction.

Expectancy theory has been tested against alternative theories, and the research findings are mixed. In the case of an experiment (Yukl, Wexley, and Seymore, 1972) concerned with salary schedule and amounts affect upon behavior, a noncognitive Skinnerian approach proved to be clearly better in prediction than the force model. A study of job satisfaction by Wanous and Lawler (1972) compared the valence model with a number of discrepancy-type models. Their findings support expectancy theory, but the valence model did not fare so well against a $\Sigma IV/\Sigma V$ model in predicting job satisfaction (Sobel, 1971).

The implications of all the expectancy theory research in Mitchell's (1974) summation are twofold. One, the theory manages consistent positive results, in spite of the differing criteria predicted, the different sample populations involved, and the varying measurement approaches used. Second, the original theory still requires testing and emphasis rather than premature rejection or refinement. The impetus of this research has this perspective in mind.

## III. Methodology

Expectancy research methodology and results have been mixed, and the tendency has been to misconstrue or refine Vroom's concepts during the measurement process (Mitchell, 1974). The approach undertaken in this research is to consistently apply Vroom's explicit or implicit formulation of the expectancy theory components.

### Policy Capturing

In his theory of work motivation, Vroom focused upon the individual, the voluntary choice situation, and a decision or behavior intent. According to Zedeck (1977) a research method known as policy capturing is compatible with Vroom's definition of motivation and his development of expectancy theory. Besides providing a within-subjects analysis, policy capturing permits focusing on the motivational elements which affect a person's decision behavior. Specifically, this methodology allows incorporation of such questions as how does an individual combine outcomes, which outcomes are more important, and how do the circumstances (instrumentalities and expectancies) affect the person's effort.

Policy capturing involves information processing and decision making. It attempts to capture an individual's cognitive processing of information available to him in deciding to act. With this methodology the emphasis is on the uniqueness of a person's weighing, combining, and integrating of information in order to make a decision (Hoffman, 1960). Policy capturing certainly appears suitable for testing expectancy theory, and the use of multiple regression analysis is the most appropriate of the policy capturing techniques (Zedeck 1977, Slovic and Lichtenstein, 1971).

Policy capturing allows the researcher to construct a decision making exercise which circumvents reliance on the respondent's self-report of his decision behavior. That is, policy capturing permits derivation of inferred, objective importance weights for outcomes rather than relying on stated subjective weights that are typically misleading (Slovic and Lichtenstein, 1971). Moreover, while policy capturing alters the complexities of "real" decision making into contrived artificial situations, the decisions under both contrived and natural settings have been demonstrated to be highly similar (Brown, 1972).

So policy capturing amounts to quantification of the decision and the decision making process in the form of a multiple regression equation. For example, the regression equation

$$Y_d = b_1x_1 + bx_2 + --- +b_Nx_N$$

is clearly equivalent to Vroom's valence model when $Y_d$ is the prediction of the decision maker's valence for a job, $b_1,\cdots,b_k$ are his valences of the outcomes associated with the job, and $x_1,\cdots,x_k$ are the values of the perceived instrumentality relationships between the job and the associated outcomes.

Therefore, the methodology employed in this thesis will be policy capturing through regression analysis because of its applicability and its adequacy. The remainder of the chapter addresses the development and design of the decision making exercise.

## Problem Identification

As indicated in Chapter I and recommended in Chapter II, this thesis is designed to test the power of the valence model in predicting a person's job preference and the force model in predicting a person's job choice. Moreover, the assumption in the force model that valence is multiplied by the expectancy will be tested against the alternative that the valence and expectancy components interact in an additive fashion.

## Population Identification

The questions of which job an individual prefers and which job a person chooses are pertinent to the author and his peers as graduating AFIT students. Therefore, a logical and convenient choice for a sample population for the expectancy theory experiment was those Air Force officers willing to be participants in a decision making exercise.

The desired sample size was at least 40, and based upon a historical 50% return rate for similar decision making exercises, exercises were randomly distributed to 80 AFIT students. It was hoped that more than 50% would participate because of the pertinent topic, plus the incentive of feedback if requested.

## Identification of Job Selection Criteria

Regression analysis is a powerful means for predicting quantitative decisions made on the basis of specific criteria (Slovic and Lichtenstein, 1971), but determining the criteria can be a problem. (Throughout this study, the terms criteria, outcomes, and factors are used interchangeably.) Possible sources for the criteria include historical data, personal experience, expert opinion, and/or intuition. Although no historical data of job selection criteria exist for graduating AFIT students, there is quasi-comparable data available from research on other college students (Vroom, 1966). It may be argued that the only expert in divulging a person's preferences and choices in job selection is the person himself, but there are surely some criteria applicable to all graduating students. Personal experience and intuition recognize that a person prefers different outcomes at different times, and the same outcome may be unattractive, inconsequential, or attractive depending upon his circumstances. These ideas of some commonality and some time dependency in job selection decisions are supported by the Air Force Form 90, the Air Force officers' assignment "dream sheet".

The "dream sheet" is a logical starting point for determination of the common outcomes to be used in the decision making exercise, but Vroom's theory is an individual model and suggests that all outcomes associated with an assignment should be included in the valence model. This unfortunate conflict with expectancy theory is inevitable when there are so many outcomes that the use of a full factorial design becomes prohibitive. Practicality overrides the theory in this situation, and the net loss to the model's predictive capability is unknown and hopefully insignificant.

The factors solicited on the "dream sheet" are an officer's:

1. Duty position preference
2. Base preference
3. State preference
4. Geographic preference
5. Major command preference
6. Career broadening preference
7. Rated supplement preference

Obviously, there is possible overlap, and clearly, there may be other outcomes considered by an officer.

To preclude omitting other key considerations, the author asked two friends with different backgrounds to provide him with the factors they consider in making a job choice. One list was so extensive it would qualify as exhaustive in accord with Vroom's theory. This list (Appendix A) of 21 factors contains overlap and was considerably abbreviated to a list of only five factors. Although a substantial reduction, five factors are consistent with most individuals capacity for incorporation into their decision making process (Slovic and Lichenstein, 1971). Moreover, four or five factors that are very appropriate will account for about 80% of the variance in the decision process (Slovic and Lichenstein, 1971). The five outcomes deemed appropriate for an AFIT graduating student were:

1. geographic location
2. family needs and desires
3. overall professional growth and career development
4. promotion to the next rank
5. utilization of special knowledge and skills

A pretest (Appendix B) of these five outcomes was conducted to gain insight into their validity. Eighteen classmates were asked to rank these factors and any three other factors in order of importance to them in choosing their next job. The results (Appendix C) indicated that the five factors were virtually free from competition, that overall career development was overwhelmingly the most important, and that promotion, utilization of skills, and geographic location were essentially the same in importance.

The overall career development factor was excluded from the decision making exercise because it was felt that this factor overlapped with factor numbers 4 and 5 in people's minds. The other four outcomes appeared promising as predictor variables of job preference and job choice. Although it was neither mentioned nor derived from the pretest, the factor of expectancy was included in the decision making exercise in order to test Vroom's force model.

Design of Decision Making Exercise

The physical format of the decision making exercise is partially depicted in Appendix D. It consists of two sections. Section I gathers demographic information; the second section requires the respondent to rate 32 hypothetical jobs in terms of their attractiveness (valence) and in terms of his effort (force) for each based only upon the stipulated outcomes.

The four factors associated with each job valence decision were: geographic location, working conditions, utilization of special skills and knowledge, and being promoted to the next higher rank. Each of the factors is described as either very positive or very negative. A very positive outcome is indicative of a +1 instrumentality association; a very negative outcome represents the -1 instrumentality association. This correlation between a particular job and the associated job outcomes is as conceived by Vroom.

The attractiveness rating (Decision A) corresponds to the student's valence for the job according to the four factors and their outcomes. The scale of -5 to +5 was selected to be congruent with Vroom's formulation of valence as "a wide range of both positive and negative values" (Vroom, p. 15, 1964). The word attractive was chosen as a suitable synonym for valence since Vroom (1964) referred to valence as an attraction, and Mitchell (1974) considered attractive as the closest term to Vroom's definition of the valence concept.

After a respondent makes his valence decision, he is given the likelihood he can get the job if he seeks it. The probability is communicated as either low (.2) or high (.8), and then the respondent is asked to indicate how much effort he would exert to get or avoid the job, considering its attractiveness and the expectancy information. The individual's rating of effort represents his motivational force for the job. Again, both negative and positive values are used to be consistent with Vroom's concept of force.

So the design of the decision making exercise parallels Vroom's concepts as closely as possible. However, the participants are only told that the exercise will be used to test several hypotheses. No mention is made of expectancy theory because some students may have been exposed to a management course in which expectancy theory was discussed.

## IV. Data Analysis and Results

Of the 80 decision making exercises randomly distributed to AFIT students, 68 exercises were returned. Only four had to be discarded due to incompletion of the exercise or receipt after the cutoff established for the analysis. Thus the usable response rate was 80%, and nearly 50% requested feedback on their decision making. A partial copy of the exercise is presented in Appendix D.

Each respondent's decision making data was coded and punched into three standard IBM cards. Card 1 contained the demographic information, the subjective weightings of the five factors used in the exercise, the reply to the feedback offer, plus identifying numbers for the card and the respondent. The alphabetic responses to the demographic questions were recoded into numerical equivalents. For example, an A response was coded as a 1, a B response was coded as a 2, and so forth. Card 2 contained the valence (Decision A) responses and the identifying numbers for the card and the respondent. A -5 response was coded as a 1, a -4 response was coded as a 2, and so on up to a +5 response being coded as an 11. Card 3 contained the force (Decision B) responses plus the identifying numbers for the card and respondent.

All data analysis was performed on the CDC 6600 computer using the multivariate capabilities provided by the Statistical Package for the Social Sciences (SPSS) (Nie, et al., 1975). The specific statistical techniques used were: one-way frequency distributions, multiple regression, multivariate analysis of variance (MANOVA), T-test, and Pearson product-moment correlations.

Initially, a frequency distribution was obtained to determine the proportion of responses for each question. In particular, the frequencies revealed that there is sufficient dispersion in the responses to the valence decisions and the force decisions to allow for subsequent meaningful analysis. The numerical results of the frequency distributions for the demographics, the respondents' subjective weightings, their valence decisions, and their force decisions are summarized in Appendices E thru H, respectively.

## I. The Valence Model

The decision making exercise (reference Appendix D) limited the outcomes associated with a job valence (Decision A) to four. Then, the valence model for predicting AFIT students' job preference becomes:

$$V_j = \sum_{k=1}^{4} (V_k I_{jk}) = V_1 I_{j1} + V_2 I_{j2} + V_3 I_{j3} + V_4 I_{j4}$$

where

$V_j$ = Valence of job j

$V_1$ = Valence of geographic location

$V_2$ = Valence of working conditions

$V_3$ = Valence of utilization of special skills and knowledge

$V_4$ = Valence of being promoted to the next higher rank

$I_{j1}$ = Instrumentality of job j for geographic location

$I_{j2}$ = Instrumentality of job j for working conditions

$I_{j3}$ = Instrumentality of job j for use of special skills and knowledge

$I_{j4}$ = Instrumentality of job j for being promoted to the next higher rank

The instrumentalities in the experiment are communicated as being either very positive (+1) or very negative (-1). With a person's valence decision as the criterion variable and the attendant set of instrumentalities as the predictor variables a regression analysis captures the valence for each of the four outcomes in the form of the regression coefficients or beta weights. More importantly, the regression analysis provides the degree to which the valence model captures the person's variance in the decision making process. The index used as an indication of the predictive power of the model is $R^2$, the amount of variance in the valence decision process explained by the summed products of the valence and instrumentality components.

When capturing each AFIT student's job valence decision the smallest $R^2$ was .33 and the highest $R^2$ was .99; the mean $R^2$ for the 64 students was .83. So, each student applied his own job valence policy with a fairly high degree of consistency, and in this experiment Vroom's valence model indicated considerable predictive power. As would be expected, the emphasis placed upon the four outcomes varied from student to student. Appendix I contains each respondent's $R^2$ as well as his beta weights (valence) placed upon the four outcomes.

When capturing the job valence model for the entire group combined, the $R^2$ dropped to .59. The decision consistency for the individuals taken as a group decreased because of disagreements among individuals about the valence of the various outcomes (Reference Appendix I). This result tends to highlight the fact that Vroom's model is more appropriate as a model for individuals. The group $R^2$ and the beta weights with their F-test significance levels are provided in Appendix J.

## II. The Force Model

The decision making exercise (Appendix D) contained all the force model components. The valence component (Decision A) was previously gathered as described; subsequently, the expectancy component (likelihood information) was given as either .2 or .8. Then, based upon this attractiveness and likelihood information, the force component (Decision B) was gathered. Therefore, the force model for predicting the AFIT student's force for a specific job becomes:

$$F_j = E_j V_j$$

where

$F_j$ = Force on the student to exert effort j

$E_j$ = the strength of the Expectancy that effort j will be followed by job j

$V_j$ = Valence of job j

According to Vroom's hypothesis, the job force decision is dependent upon the student's expectancy concerning the likelihood the job will be followed by his effort. To determine if the expectancy component did make a difference in the subjects' force decisions a multivariate analysis of variance (MANOVA) between the valence and force decisions was performed. The results of the MANOVA disclosed no overall statistically significant difference between the valence and force decisions made for the 32 hypothetical jobs (F Test, $p = .36$). Although the MANOVA results strongly detract from Vroom's expectancy assumption in the force model, the apparent contradiction was important enough to warrant further testing before drawing any conclusions about the force model.

Next, it was decided to make a distinction between the positively valent decisions and the negatively valent decisions to see if such a distinction affected the force decisions in accordance with Vroom's theory. Three hypotheses seemed appropriate for testing, and the t-test was the statistical technique employed. (It was decided to recode the negative valence and negative force decisions to their absolute values to ease the t-test interpretation.)

The first null hypothesis considered was: no difference exists between the means of Vroom's theoretical force decision and the actual force decision. The theoretical force decision was computed by multiplying the communicated expectancy times the respondents' valence decisions, Decision A. The actual force decision is Decision B.

Constraining the data to only negatively valent decisions, the t-test rejected the null hypothesis; with the positively valent restriction on the data the null hypothesis was again rejected. Both t-tests indicated that the theoretical force was statistically different from the actual force decision made at the .000 significance level. The mean differences and t values are given in Appendix K.

The second null hypothesis considered was: no difference exists between the means of the force decision based on a low expectancy (.2) and the force decision made on the basis of a high expectancy (.8). Acceptance of this hypothesis would be contrary to Vroom's theory of force as directly proportional to the expectancy component.

Whether the data was only positively valent or only negatively valent, the implication of the t-test results was the same. There was no statistical difference between the force decision based upon a low expectance and the force decision made when expectancy was high. Appendix L shows the t-test results. Since the null hypothesis cannot be rejected, Vroom's conceptualization that force is proportional to the expectancy variable was not supported.

The third null hypothesis considered was: no difference exists between the means of the valence decision and the force decision. Acceptance of this hypothesis would contradict Vroom's formulation that the force prediction is less than the valence prediction when the expectancy is less than one.

The force was statistically different from the valence decision but in the opposite direction hypothesized when considering only the negatively valent subset. That is, the mean force decision was greater than the mean valence decision. The t-test results are contained in Appendix M. Again, Vroom's hypothesized formulation was not supported.

In the case of positive valent job constraints, Vroom's formulation was supported by the t-test results. There was a statistical difference in the hypothesized direction (force less than valence) between means of the valence and force decisions. The results are provided in Appendix N.

Therefore, all three force model hypotheses suggested by Vroom's expectancy theory are rejected in this experiment with respect to the constraint of negatively valent jobs. The positive valence situations only supported the third hypothesis. Thus far any support for the force model has been extremely tenuous.

Next, the Pearson product correlation between the valence decision and the force decision was calculated for comparative purposes with the correlation between the theoretical force and the actual force decisions. The statistical test for difference between correlations provided by Snedecor and Cochran (1967) was used. Again, the distinction between positive and negative valence jobs was made to insure that the overall decisions were not masking the motivational process.

For all 32 job scenarios the correlation between the corresponding valence and force decisions was .9299, while the theoretical force correlation with the actual force was .6071. This difference was statistically significant at the .001 level. Considering only the positively valent jobs, the valence and force decisions correlated .8048, but the theoretical force correlation with the actual force decisions was only .1639. Again, this was a .001 statistically significant difference. As for the subset of negatively valent jobs the correlation was .677 for the valence and force decisions; the theoretical force correlated .4865 with the actual force. This difference was also statistically significant at .001.

Therefore, all comparisons indicated statistically different and higher correlations between the valence and force decisions than between the theoretical force and the actual force decisions. The incorporation of expectancy is undetectable in AFIT students' force decisions concerning the 32 hypothetical jobs presented. The use of the expectancy variable is absent from the overall force decision pattern, the positive valence subset, and the negative valence subset.

## Further Analysis of the Force Model

The objective of this analysis was to test the expectancy component as an additive variable in the force model. Regression analysis was performed for each student and for the entire group. The criterion variable was the respondent's force decision, and the five predictor variables were the four job outcomes associated with the valence decision and the variable of communicated expectancy. Thus, the force model for predicting the amount of effort (motivational force) to get or to avoid a job simply becomes:

$$F_j = V_1I_{j1} + V_2I_{j2} + V_3I_{j3} + V_4I_{j4} + E$$

where $F_j$ represents the force for job j, the subscripted V's and I's are identical to the valence model representation, and the E is the expectancy factor with values of .2 or .8.

Considering the expectancy concept as an additive component in the force model yielded a $R^2$ for individuals ranging from .28 to .97. Although the *mean* $R^2$ for individuals was .80, an analysis of each individual's regression equation revealed a negligible contribution from the expectancy component in the explanatory power of the force model. Only eleven of the 64 individuals incorporated the expectancy component at a significance level of less than or equal to .05 into their force decision making. Of these eleven subjects, the largest increase in $R^2$ provided by the addition of the expectancy variable was .11; the smallest increase was .01. It is interesting to note that ten out of the eleven individuals had negative beta weights for the expectancy component. Appendix O contains all 64 individual's $R^2$ and attendant beta weights for the five variables.

The group $R^2$ for the force model using expectancy in an additive fashion was .55, but the group incorporated the expectancy element at the .054 significance level. Again, the beta weight for the expectancy variable was negative, and the $R^2$ contribution was less than .1%. A summary of the multiple regression results is given in Appendix P.

The outcome of the individual regressions and the outcome of the group regression do not substantiate the additive assumption for the expectancy component in the force model. Apparently AFIT students do not incorporate the additive concept of expectancy into their decision making about the amount of effort they will exert to seek or avoid a particular job.

Finally, to see if the students used a multiplicative interaction between the valence and expectancy components in their force decision making, another regression analysis was performed. This time the regression equation was:

$$F_j = V_1I_{j1} + V_2I_{j2} + V_3I_{j3} + V_4I_{j4} + (EI_{j1} + EI_{j2} + EI_{j3} + EI_{j4})$$

The value of the interaction(s) depend(s) upon the increase in $R^2$ and whether or not the terms are statistically significant.

The regression results for individuals revealed only nine people derived their force decisions with any statistically significant multiplicative interaction. The $R^2$ increase for these individuals averaged only .03, and no individual incorporated more than one significant (.05) interactive term. Similarly, for the regression of the group as a whole, the variance explained in the force decision by the interactive terms beyond the additive terms was negliglble. All four interaction terms only increased the $R^2$ from .54747 to .54795, and none of the multiplicative terms had a statistically significant effect. The group regression results are given in Appendix Q.

The regression results also offer empirical evidence contradictory to Vroom's assumption that expectancy is incorporated into the force decision. The results suggest that the force decision is best predicted by the valence decision and that expectancy has no noticeable impact upon the student's force decision.

## III. Summary

The results of the valence model analysis certainly support Vroom's hypothesis for predicting job preference. The results of all the force model analyses definitely contradict Vroom's hypothesis for incorporation of the expectancy component in predicting a subject's force toward or away from a specific job.

## V. SUMMARY AND CONCLUSIONS

### I. Summary

The purpose of this thesis was twofold. The first objective was to test the power of Vroom's valence model in predicting an AFIT student's job preference; the second objective was to test the power of Vroom's force model in predicting an AFIT student's effort in relation to seeking or avoiding a job.

The research methodology employed to accomplish the tests was a decision making exercise designed to capture the student's policy of preference and his policy of effort for the 32 hypothetical jobs. Each of the 64 participants in the experiment was asked to consider only the four job outcomes stipulated in making his valence decision; then the expectancy information was given, and a force decision was required.

Regression analysis was the technique used to capture the valence decision policy for each student and for the composite group. The $R^2$ for individuals averaged .83, indicative of consistency and predictive power in the valence model for individuals. The group $R^2$ was .59, indicating differences among the students about the valence of the various job outcomes.

The multivariate analysis of variance (MANOVA) results indicated that there was no statistical difference between the valence and force decisions, contrary to Vroom's conceptualization of expectancy into the force model. Consideration was then given to the possibility that the overall decision pattern was obscuring Vroom's conceptualization. So a distinction was made between the positively valent and the negatively valent decisions, and further analysis on these subsets was performed. The hypothesis that no difference existed between the theoretical force (the student's valence decision multiplied times the communicated expectancy) and the actual force decisions ( the student's force decision rating) was rejected for both subsets on the basis of t-tests. The hypothesis that there was no difference in the force decisions made when the expectancy was low and when it was high was not rejected for either subset, but this contradicted Vroom's theory that force is proportional to the expectancy variable. The hypothesis that there was no difference in the valence decision and the force decision was contradicted for the negatively valent subset case and confirmed for the positively valent case.

Next, the Pearson product moment correlation between the valence decision and the force decision was calculated to test for a statistical difference with the correlation between the theoretical force and the actual force decisions. Although the subset distinctions were again considered, the results were the same. The difference was significant, and the correlation between the valence and force decisions was higher whether or not a subset constraint was imposed.

A regression analysis to test the expectancy component as an additive variable in the force model yielded negligible to nil contributions to the $R^2$ value. A final regression was performed to see if the student included a multiplicative interaction between the valence and expectancy components in their force decision making. The regression results showed that the interactive terms provided neither a substantial nor a significant contribution to the predicitive power of the force model.

## II. Conclusions

Based upon the regression analysis results, Vroom's valence model was clearly supported in this experiment. The average $R^2$ of .83 for an AFIT student's job valence model was indicative of strong predicitive power for Vroom's valence model. The group $R^2$ of .59 also lends support to the predicitive utility of the job valence model.

The force model theorized by Vroom was not supported by this research. The incorporation of expectancy by an AFIT student in making a job force decision was not evidenced. Based upon the MANOVA results, the t-test results, the correlation results, and the regression results, the expectancy component offers no explanatory power in the AFIT student's job force model.

## III. Further Research

Further research using the same methodology and different subjects is recommended to substantiate that expectancy has no influence upon the student's job force decision.

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## APPENDIX A

### Criteria Considered in Making a Job Choice Decision

1. Career objectives
2. Family state
3. Financial position
4. Children's needs: health, school, etc.
5. Economic conditions of geographic area
6. Special personal qualifications
7. Promotion opportunity
8. Current rank
9. Job satisfaction
10. Educational opportunity
11. Assignment availability
12. Weather
13. Distance from relatives
14. Amount of TDY
15. Housing availability (base/off-base)
16. Recreational opportunities in the area
17. Level of responsibility
18. Major command
19. Number of people supervised
20. Average number of work hours
21. The alternatives

## APPENDIX B

### Form of Pretest for
### Job Selection Outcomes

Please rank in order of preference the following job choice factors and any three others you consider important in making your next job decision. The most preferred will be ranked 1 and so on.

| Rank | Factor |
| --- | --- |
| ________ | Geographic location |
| ________ | Family needs and/or desires |
| ________ | Overall career development and professional growth |
| ________ | Promotion to the next rank |
| ________ | Utilization of your special skills and knowledge |
| | <u>Other factors; please specify</u> |
| ________ | ________________ |
| ________ | ________________ |
| ________ | ________________ |

## APPENDIX C

### Results of Pretest for Job Selection Outcomes

| Factor | Mean Rank | Std Dev | n=18 |
|---|---|---|---|
| Geographic location | 3.89 | 1.41 | |
| Family needs and/or desires | 2.50 | 1.15 | |
| Overall career development and professional growth | 1.72 | 1.02 | |
| Promotion to the next rank | 3.39 | 1.04 | |
| Utilization of your special skills and knowledge | 3.78 | 1.35 | |

Note: The few factors specified other than those listed above seemed to belong to one of the five factors listed.

## APPENDIX D

### A Decision Making Exercise for AF Officers

This decision making exercise is designed to investigate how individuals make their job-selection decisions. Your cooperation in this research will be both sincerely appreciated and strictly confidential.

The exercise contains two sections. Section I simply involves general information about yourself; Section II requires you to make several job choices. From this information, several hypotheses will be statistically tested concerning how individuals make job-selection decisions with respect to the job factors provided. The results will be incorporated in a masters thesis at the Air Force Institute of Technology.

If you want to know how your decisions compare with those of your contemporaries, a summary comparison will be mailed to you upon completion of the research. To receive this information, please print your name and address in the space provided at the end of the exercise.

Thank you for your participation.

## PRIVACY STATEMENT

In accordance with paragraph 30, AFR 12-35, the following information is provided as required by the Privacy Act of 1974:

a. Authority

(1) 5 U.S.C. 301, Departmental Regulations: and/or

(2) 10 U.S.C. 80-12, Secretary of the Air Force, Powers and Duties, Delegation By.

b. Principal purposes. The decision making exercise is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Air Force and/or DOD.

c. Routine uses. The decision making data will be converted to information for research use toward management related problems. Results of the research, based on the data provided, will be included in a written masters thesis and may also be included in published articles, reports, or texts. Distribution of the results of the research, based on the decision making exercise data, whether in written form or orally presented, will be unlimited.

d. Participation in this decision making exercise is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this exercise.

SECTION I

General Information

Please circle the response that is most applicable or fill in the blank.

1. What is your current rank?

A. 2nd Lt
B. 1st Lt
C. Capt
D. Major
E. Lt Col

2. What is your time in grade?

A. Less than 1 year
B. At least 1 year but less than 2 years
C. At least 2 years but less than 3 years
D. At least 3 years but less than 4 years
E. At least 4 years but less than 5 years
F. At least 5 years but less than 6 years
G. At least 6 years but less than 7 years
H. At least 7 years but less than 8 years
I. At least 8 years but less than 9 years
J. At least 9 years but less than 10 years
K. 10 or more years

3. What is your time in service?

A. Less than 2 years
B. 2 years but less than 4
C. 4 years but less than 6
D. 6 years but less than 8
E. 8 years but less than 10
F. 10 years but less than 12
G. 12 years but less than 14
H. 14 or more years

4. What was the Duty Air Force Specialty Code (DAFSC) for your last job? ____________________

5. In what discipline did you earn your undergraduate degree?

A. Engineering
B. Management
C. Business/Accounting
D. Sciences
E. Arts
F. Other (Please specify)

____________________

6. In what discipline are you earning your masters degree?

A. Civil Eng
B. Electrical Eng
C. Systems Eng
D. Systems Management
E. Ops Research
F. AERO Eng
G. Eng Physics
H. Nuclear Eng
I. ASTRO Eng
J. Computer Systems
K. Other (Please specify)

____________________

7. What is your age?

A. 21 or less
B. 22-25
C. 26-30
D. 31-35
E. 36-40
F. 41-45
G. Over 45

8. What is your sex?

A. Male
B. Female

9. What is your marital status?

A. Single
B. Married
C. Divorced
D. Separated
E. Widow/Widower

10. Indicate the ages of your children, if any.

______ ______ ______ ______ ______ ______

SECTION II

Decision Making Exercise

This section contains a decision making exercise. During the exercise, you should assume that you have been notified that you will soon be reassigned. A number of jobs are available to you. These jobs do not differ from each other in any respect, except for the factors that are described to you in each instance. In each case, you are asked to make two decisions. First (Decision A), you should judge the attractiveness of the job, based upon the outcomes associated with the four key factors presented to you. Second, (Decision B) you should decide how much effort you would exert in relation to the job, based upon all of the information provided to you about the job.

Work briskly, but do not hurry. There are no "correct" or "incorrect" decisions for these cases so express your true feelings and intentions. You should attempt to finish the complete exercise in a single sitting, which should take about 15 minutes. Thank you for your cooperation in participating in this study.

Of the 32 jobs, only Job #23 and Job #24 are extracted to give an idea of the decision making format.

JOB #23

The four factors and outcomes shown below are associated with this job in the ways described.

The relationship between this job and ---

--your assignment to a favorable geographic location is . . . . . . . . . . . . . . . . VERY NEGATIVE

--the work conditions your family wants you to have (TDY, stress, overtime, etc) is . VERY NEGATIVE

--the utilization of your special skills and knowledge is . . . . . . . . . . VERY POSITIVE

--being promoted to the next higher rank is VERY NEGATIVE

DECISION A. With the factors and outcomes shown above in mind, indicate the attractiveness of this job to you.

| -5 | -4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 | +4 | +5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Very Unattractive | | | | | | | | | | Very Attractive |

Further Information. If you decide to seek this job, the likelihood you can get it is high (probability = 80%).

DECISION B. With the attractiveness and likelihood information from above in mind, indicate how much effort you would exert in relation to this job.

| -5 | -4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 | +4 | +5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Great effort to avoid it | | | | | | | | | | Great effort to get it |

JOB #24

The four factors and outcomes shown below are associated with this job in the ways described.

The relationship between this job and ---

--your assignment to a favorable geographic location is . . . . . . . . . . . . . . . . . VERY POSITIVE

--the work conditions your family wants you to have (TDY, stress, overtime, etc) is . . VERY NEGATIVE

--the utilization of your special skills and knowledge is . . . . . . . . . . VERY POSITIVE

--being promoted to the next higher rank is . VERY POSITIVE

DECISION A. With the factors and outcomes shown above in mind, indicate the attractiveness of this job to you.

| -5 | -4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 | +4 | +5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Very Unattractive | | | | | | | | | | Very Attractive |

Further Information. If you decide to seek this job, the likelihood you can get it is low (probability = 20%).

DECISION B. With the attractiveness and likelihood information from above in mind, indicate how much effort you would exert in relation to this job.

| -5 | -4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 | +4 | +5 |
|---|---|---|---|---|---|---|---|---|---|---|
| Great effort to avoid it | | | | | | | | | | Great effort to get it |

## A FINAL DECISION

Please indicate the relative importance you believe you placed upon the five criteria during the exercise by distributing 100 points among these criteria. The most important job factors, as you perceive it, will receive the most points, and so on.

| CRITERIA | ASSIGNED POINTS |
| --- | --- |
| Your assignment to a favorable geographic location | ________ |
| The work conditions your family wants you to have (TDY, stress, overtime, etc.) | ________ |
| The utilization of your special skills and knowledge | ________ |
| Being promoted to the next higher rank | ________ |
| Probability of your getting the job if you seek it | ________ |
| Total Points: | 100 |

Again, thank you for your participation. Remember, if you desire a summary comparison mailed to you just print your name and address here: ____________________

____________________

____________________

## APPENDIX E

### Sample Population Classification by Category of Demographic Variable

| Demographic and Response Group | Absolute Frequency | Percentage |
|---|---|---|
| **Grade** | | |
| (1) 2nd Lt | 13 | 20 |
| (2) 1st Lt | 2 | 3 |
| (3) Capt | 47 | 73 |
| (4) Major | 2 | 3 |
| **TIG** | | |
| (1) Less than 1 year | 17 | 27 |
| (2) 1 year to 2 years | 17 | 27 |
| (3) 2 years to 3 years | 4 | 6 |
| (4) 3 years to 4 years | 7 | 11 |
| (5) 4 years to 5 years | 5 | 8 |
| (6) 5 years to 6 years | 7 | 11 |
| (7) 6 years to 7 years | 6 | 9 |
| (8) 7 years to 8 years | 1 | 2 |
| **TIS** | | |
| (1) Less than 2 years | 13 | 20 |
| (2) 2 years to 4 years | 2 | 3 |
| (3) 4 years to 6 years | 12 | 19 |
| (4) 6 years to 8 years | 10 | 16 |
| (5) 8 years to 10 years | 16 | 25 |
| (6) 10 years to 12 years | 3 | 5 |
| (7) 12 years to 14 years | 6 | 9 |
| (8) 14 or more years | 2 | 3 |
| **BA/BS Degree** | | |
| (1) Engineering | 38 | 59 |
| (4) Sciences | 19 | 30 |
| (5) Arts | 1 | 2 |
| (6) Other (Math) | 6 | 9 |
| **MS Degree** | | |
| (2) Electrical Eng | 20 | 31 |
| (3) Systems Eng | 2 | 3 |
| (4) Systems Management | 20 | 31 |
| (5) Ops Research | 10 | 16 |
| (6) Aero Eng | 2 | 3 |
| (7) Eng Physics | 4 | 6 |
| (8) Nuclear Eng | 2 | 3 |
| (9) Astro Eng | 2 | 3 |
| (11) Other | 2 | 3 |

Appendix E (Continued)

| Demographic and Response Group | Absolute Frequency | Percentage |
|---|---|---|
| Age | | |
| (1) 21 or less | 2 | 3 |
| (2) 22-25 | 12 | 19 |
| (3) 26-30 | 31 | 48 |
| (4) 31-35 | 18 | 28 |
| (5) 36-40 | 1 | 2 |
| Sex | | |
| (1) Male | 63 | 98 |
| (2) Female | 1 | 2 |
| Marital Status | | |
| (1) Single | 10 | 16 |
| (2) Married | 53 | 83 |
| (3) Divorced | 1 | 2 |

## APPENDIX F

### Descriptive Statistics for Subjective Weightings of the Job Associated Outcomes

| Associated Outcome | Mean | Std Dev | Mode | Min | Max |
|---|---|---|---|---|---|
| Geographic location | 17.67 | 10.64 | 10.0 | 2.0 | 60.0 |
| Working conditions | 23.63 | 13.61 | 20.0 | 0. | 96.0 |
| Use of skills and knowledge | 20.41 | 11.94 | 10.0 | 0. | 50.0 |
| Being promoted to next higher rank | 27.63 | 13.56 | 30.0 | .5 | 70.0 |
| Probability of getting job if sought | 10.35 | 7.68 | 10.0 | 0. | 30.0 |

APPENDIX G

Descriptive Statistics for
Job Valence Decisions

| JOB # | VALENCE: MEAN | STD DEV | SKEWNESS | KURTOSIS |
|---|---|---|---|---|
| 1 | 7.80 | 2.23 | - .73 | - .11 |
| 2 | 3.73 | 2.26 | .85 | .13 |
| 3 | 5.47 | 2.50 | - .18 | - 1.04 |
| 4 | 4.08 | 2.37 | .57 | - .54 |
| 5 | 10.84 | .511 | -3.94 | 17.25 |
| 6 | 8.23 | 2.17 | -1.83 | 3.03 |
| 7 | 2.41 | 1.79 | 1.68 | 2.44 |
| 8 | 2.42 | 1.84 | 2.26 | 7.01 |
| 9 | 5.8 | 2.35 | - .41 | - .87 |
| 10 | 1.09 | .53 | 6.87 | 50.22 |
| 11 | 2.44 | 1.71 | 2.54 | 9.54 |
| 12 | 8.11 | 2.31 | -1.40 | 1.13 |
| 13 | 8.50 | 2.10 | -1.46 | 1.68 |
| 14 | 5.98 | 2.60 | - .22 | - .79 |
| 15 | 10.89 | .47 | -4.92 | 25.53 |
| 16 | 6.42 | 2.42 | - .57 | - .61 |
| 17 | 4.37 | 2.27 | .32 | - .75 |
| 18 | 2.58 | 1.42 | .69 | - .28 |
| 19 | 8.72 | 1.94 | -1.91 | 3.53 |
| 20 | 4.17 | 2.33 | .22 | - 1.29 |
| 21 | 5.98 | 2.33 | - .21 | - .90 |
| 22 | 2.91 | 1.50 | .78 | .31 |
| 23 | 3.17 | 2.06 | 1.16 | 1.08 |
| 24 | 7.64 | 2.29 | - .47 | - 1.00 |
| 25 | 4.41 | 2.24 | .68 | .11 |
| 26 | 5.58 | 2.55 | - .11 | - 1.11 |
| 27 | 5.72 | 2.47 | - .24 | - .95 |
| 28 | 6.01 | 2.49 | - .31 | - .93 |

Appendix G (Continued)

| JOB # | VALENCE: MEAN | STD DEV | SKEWNESS | KURTOSIS |
|---|---|---|---|---|
| 29 | 4.12 | 2.31 | .66 | - .21 |
| 30 | 1.06 | .39 | 7.04 | 51.70 |
| 31 | 3.56 | 2.14 | .63 | - .59 |
| 32 | 4.33 | 2.28 | .42 | - .40 |

## APPENDIX H

### Descriptive Statistics for Job Force Decisions

| JOB # | FORCE: MEAN | STD DEV | SKEWNESS | KURTOSIS |
|---|---|---|---|---|
| 1 | 7.81 | 2.30 | - .64 | - .42 |
| 2 | 3.61 | 2.22 | .67 | - .35 |
| 3 | 5.19 | 2.48 | .08 | - .74 |
| 4 | 3.87 | 2.37 | .85 | .40 |
| 5 | 10.80 | .57 | -3.22 | 10.99 |
| 6 | 8.06 | 2.39 | -1.60 | 2.40 |
| 7 | 2.66 | 1.90 | 1.32 | 1.28 |
| 8 | 2.52 | 1.90 | 1.83 | 4.99 |
| 9 | 5.55 | 2.36 | - .26 | - .63 |
| 10 | 1.44 | 1.01 | 2.40 | 4.89 |
| 11 | 2.27 | 1.62 | 1.53 | 1.96 |
| 12 | 7.87 | 2.45 | -1.06 | .44 |
| 13 | 8.45 | 2.14 | -1.42 | 2.29 |
| 14 | 5.62 | 2.55 | - .19 | - .87 |
| 15 | 10.50 | 1.21 | -4.23 | 23.40 |
| 16 | 5.98 | 2.54 | - .47 | - .85 |
| 17 | 3.86 | 2.35 | .50 | - .49 |
| 18 | 2.19 | 1.31 | 1.05 | .31 |
| 19 | 8.17 | 2.10 | -1.60 | 2.75 |
| 20 | 4.02 | 2.26 | .15 | - 1.42 |
| 21 | 5.34 | 2.52 | - .09 | - 1.21 |
| 22 | 3.14 | 1.74 | .65 | - .22 |
| 23 | 2.95 | 2.04 | 1.20 | 1.15 |
| 24 | 7.41 | 2.61 | - .54 | - .40 |
| 25 | 4.44 | 2.38 | .59 | .04 |
| 26 | 5.50 | 2.39 | - .02 | - 1.03 |
| 27 | 5.69 | 2.47 | .04 | - .61 |
| 28 | 5.73 | 2.80 | - .01 | - .73 |

Appendix H (Continued)

| JOB # | FORCE: MEAN | STD DEV | SKEWNESS | KURTOSIS |
|---|---|---|---|---|
| 29 | 3.95 | 2.26 | .66 | .35 |
| 30 | 1.09 | .46 | 5.35 | 29.56 |
| 31 | 3.16 | 2.21 | .69 | - .88 |
| 32 | 4.11 | 2.41 | .53 | - .20 |

## APPENDIX I

Regression Results of the
Valence Model for Each Student

| STUDENT | $R^2$ | $B_1$ | $B_2$ | $B_3$ | $B_4$ |
|---|---|---|---|---|---|
| 1 | .93 | .34 | .77 | .44 | .17 |
| 2 | .80 | .10 | .22 | .30 | .81 |
| 3 | .92 | .52 | .47 | .22 | .62 |
| 4 | .89 | .30 | .23 | .23 | .83 |
| 5 | .79 | .10 | .46 | .14 | .74 |
| 6 | .85 | .28 | .34 | .21 | .79 |
| 7 | .87 | .10 | .59 | .33 | .63 |
| 8 | .78 | .10 | .20 | .51 | .68 |
| 9 | .84 | .36 | .30 | .30 | .73 |
| 10 | .76 | .36 | .65 | .16 | .43 |
| 11 | .95 | .27 | .50 | .55 | .57 |
| 12 | .80 | .50 | .44 | .44 | .41 |
| 13 | .85 | .16 | .23 | .42 | .78 |
| 14 | .88 | .12 | .10 | .76 | .53 |
| 15 | .85 | .16 | .11 | .80 | .42 |
| 16 | .68 | .27 | .58 | .13 | .50 |
| 17 | .79 | .52 | .35 | .28 | .57 |
| 18 | .95 | .33 | .19 | .15 | .89 |
| 19 | .94 | .33 | .26 | .19 | .85 |
| 20 | .92 | .24 | .44 | .13 | .81 |
| 21 | .80 | .17 | .67 | .32 | .47 |
| 22 | .66 | .59 | .40 | -.01 | .40 |
| 23 | .84 | .55 | .46 | .44 | .37 |
| 24 | .90 | .43 | .10 | .43 | .72 |
| 25 | .86 | .73 | .44 | .21 | .29 |
| 26 | .75 | .09 | .47 | .20 | .69 |
| 27 | .99 | .09 | .05 | .09 | .98 |
| 28 | .84 | .36 | .27 | .38 | .70 |

Appendix I (Continued)

| STUDENT | $R^2$ | $B_1$ | $B_2$ | $B_3$ | $B_4$ |
|---|---|---|---|---|---|
| 29 | .83 | .21 | .79 | .21 | .35 |
| 30 | .61 | .22 | .24 | .46 | .54 |
| 31 | .87 | .04 | .31 | .15 | .86 |
| 32 | .88 | .57 | .14 | .20 | .70 |
| 33 | .76 | .15 | .76 | .11 | .39 |
| 34 | .81 | .20 | .39 | .44 | .65 |
| 35 | .88 | .18 | .35 | .41 | .75 |
| 36 | .88 | .08 | .23 | .36 | .83 |
| 37 | .80 | .30 | .20 | .82 | .04 |
| 38 | .88 | .93 | -.03 | .04 | .10 |
| 39 | .84 | .15 | .78 | .45 | .07 |
| 40 | .56 | .35 | .27 | .56 | .21 |
| 41 | .90 | .50 | .29 | .18 | .73 |
| 42 | .75 | .38 | .67 | .32 | .21 |
| 43 | .85 | .22 | .45 | .27 | .72 |
| 44 | .83 | .23 | .20 | .01 | .86 |
| 45 | .94 | .24 | .11 | .11 | .93 |
| 46 | .89 | .46 | .51 | .44 | .46 |
| 47 | .93 | -.01 | .11 | .95 | .17 |
| 48 | .91 | .18 | .62 | .18 | .68 |
| 49 | .89 | .46 | .44 | .32 | .65 |
| 50 | .75 | .19 | .23 | .50 | .64 |
| 51 | .86 | .10 | .48 | .33 | .72 |
| 52 | .89 | .18 | .42 | .19 | .81 |
| 53 | .66 | .66 | .36 | .09 | .30 |
| 54 | .74 | .15 | .54 | .30 | .57 |
| 55 | .70 | .22 | .25 | .22 | .74 |
| 56 | .82 | .41 | .56 | .33 | .48 |
| 57 | .87 | .48 | .41 | .25 | .64 |
| 58 | .97 | .07 | .10 | .10 | .97 |

Appendix I (Continued)

| STUDENT | $R^2$ | $B_1$ | $B_2$ | $B_3$ | $B_4$ |
|---|---|---|---|---|---|
| 59 | .95 | .21 | .23 | .25 | .89 |
| 60 | .94 | .80 | .40 | .32 | .14 |
| 61 | .83 | .22 | .32 | .67 | .48 |
| 62 | .71 | .31 | .16 | .30 | .71 |
| 63 | .33 | .03 | .35 | .03 | .46 |
| 64 | .82 | .44 | .47 | .36 | .53 |

Average $R^2$ = .83

$B_1$ = Geographic Location

$B_2$ = Working Conditions

$B_3$ = Use of Special Skills and Knowledge

$B_4$ = Being Promoted to Next Higher Rank

## APPENDIX J

Regression Results of the
Group Valence Model

| JOB VARIABLE | BETA WT | F-LEVEL SIGNIF | R SQUARE CONTRIBUTION | CUMULATIVE R SQUARE |
|---|---|---|---|---|
| Geographic location | .28 | .00 | .08 | .08 |
| Working conditions | .34 | .00 | .11 | .19 |
| Use of skills and knowledge | .29 | .00 | .09 | .28 |
| Being promoted to next rank | .59 | .00 | .31 | .59 |

## APPENDIX K

T-Test Results for $H_0$: No difference in Means of Theoretical Force and Actual Force Decisions

| VARIABLE | CONSTRAINT | MEAN | MEAN DIFF | T-VALUE | 2-TAIL PROB | # OF CASES |
|---|---|---|---|---|---|---|
| Theoretical Force | | 1.50 | | | | |
| | Negative Valence | | -1.73 | -36.96 | .00 | 1259 |
| Actual Force | | 3.23 | | | | |
| Theoretical Force | | 4.25 | | | | |
| | Positive Valence | | -3.77 | -38.57 | .00 | 923 |
| Actual Force | | 8.02 | | | | |

## APPENDIX L

T-Test Results for $H_o$: No difference in Means of Force Decisions when Expectancy Is Low and when Expectancy is High

| VARIABLE | CONSTRAINT | MEAN | MEAN DIFF | T-VALUE | 2-TAIL PROB | # OF CASES |
|---|---|---|---|---|---|---|
| Force: low expectancy | | 1.55 | | | | |
| | Negative Valence | | -.13 | -1.27 | .20 | 1259 |
| Force: high expectancy | | 1.68 | | | | |
| Force: low expectancy | | 3.98 | | | | |
| | Positive Valence | | -.06 | - .23 | .81 | 923 |
| Force: high expectancy | | 4.04 | | | | |

## APPENDIX M

T-Test Results for $H_o$: No difference in Means of Valence and Force Decisions with Negative Valence Constraint

| VARIABLE | MEAN | MEAN DIFF | T-VALUE | 2-TAIL PROB | NO. OF CASES |
|---|---|---|---|---|---|
| Valence Decision | 2.99 | | | | |
| | | -.24 | -6.07 | .00 | 1259 |
| Force Decision | 3.23 | | | | |

## APPENDIX N

T-Test Results for $H_o$: No difference in Means of Valence and Force Decisions with Positive Valence Constraint

| VARIABLE | MEAN | MEAN DIFF | T-VALUE | 2-TAIL PROB | NO. OF CASES |
|---|---|---|---|---|---|
| Valence Decision | 8.46 | | | | |
| | | .44 | 11.66 | .00 | 923 |
| Force Decision | 8.02 | | | | |

APPENDIX O

Regression Results of the Force Model
for Each Student Using Expectancy
as an Additive Variable

| STUDENT | $R^2$ | $B_1$ | $B_2$ | $B_3$ | $B_4$ | $B_5$ |
|---|---|---|---|---|---|---|
| 1 | .89 | .30 | .75 | .45 | .13 | -.11 |
| 2 | .74 | .14 | .30 | .30 | .73 | .08 |
| 3 | .51 | .40 | .47 | .03 | .35 | -.05 |
| 4 | .28 | .10 | .35 | .05 | .37 | .05 |
| 5 | .80 | .09 | .45 | .14 | .74 | -.11 |
| 6 | .93 | .22 | .44 | .20 | .80 | .07 |
| 7 | .87 | .10 | .59 | .33 | .63 | .01 |
| 8 | .74 | .15 | .18 | .53 | .64 | -.05 |
| 9 | .81 | .36 | .22 | .29 | .74 | -.01 |
| 10 | .74 | .30 | .63 | .11 | .46 | .15 |
| 11 | .77 | .18 | .48 | .42 | .52 | -.25 |
| 12 | .79 | .51 | .45 | .39 | .39 | .16 |
| 13 | .90 | .14 | .28 | .44 | .76 | -.18 |
| 14 | .79 | .19 | .02 | .62 | .58 | -.21 |
| 15 | .85 | .24 | .04 | .77 | .44 | -.06 |
| 16 | .66 | .25 | .51 | .14 | .56 | -.04 |
| 17 | .75 | .65 | .22 | .22 | .48 | -.03 |
| 18 | .94 | .26 | .15 | .11 | .91 | -.11 |
| 19 | .93 | .32 | .26 | .20 | .84 | .03 |
| 20 | .88 | .19 | .38 | .17 | .82 | .02 |
| 21 | .65 | .19 | .56 | .26 | .40 | -.26 |
| 22 | .83 | .29 | .25 | .01 | .83 | .08 |
| 23 | .85 | .54 | .47 | .49 | .33 | .07 |
| 24 | .84 | .41 | .05 | .41 | .70 | .16 |
| 25 | .86 | .76 | .39 | .20 | .32 | -.03 |
| 26 | .71 | .07 | .50 | .13 | .65 | .09 |
| 27 | .97 | .10 | .07 | .07 | .97 | -.02 |
| 28 | .81 | .31 | .33 | .36 | .68 | -.12 |

Appendix O (Continued)

| STUDENT | $R^2$ | $B_1$ | $B_2$ | $B_3$ | $B_4$ | $B_5$ |
|---|---|---|---|---|---|---|
| 29 | .83 | .17 | .77 | .25 | .37 | .07 |
| 30 | .64 | .39 | .22 | .39 | .42 | .33 |
| 31 | .87 | .08 | .26 | .15 | .88 | .00 |
| 32 | .88 | .63 | .10 | .25 | .65 | -.02 |
| 33 | .72 | .25 | .67 | .06 | .46 | -.01 |
| 34 | .94 | .13 | .20 | .46 | .82 | -.08 |
| 35 | .80 | .11 | .30 | .45 | .70 | .09 |
| 36 | .88 | .05 | .22 | .42 | .80 | -.13 |
| 37 | .84 | .28 | .18 | .84 | .08 | .14 |
| 38 | .86 | .84 | .15 | .31 | .01 | -.15 |
| 39 | .88 | .28 | .76 | .46 | .06 | -.17 |
| 40 | .52 | .37 | .23 | .54 | .18 | .04 |
| 41 | .86 | .54 | .31 | .18 | .67 | -.02 |
| 42 | .76 | .42 | .66 | .32 | .21 | -.04 |
| 43 | .65 | .07 | .22 | .46 | .60 | -.17 |
| 44 | .84 | .23 | .23 | .00 | .85 | -.08 |
| 45 | .93 | .25 | .12 | .10 | .92 | -.02 |
| 46 | .86 | .44 | .53 | .44 | .42 | -.14 |
| 47 | .97 | .02 | .05 | .97 | .15 | .02 |
| 48 | .91 | .16 | .63 | .16 | .67 | -.08 |
| 49 | .92 | .41 | .49 | .41 | .58 | -.11 |
| 50 | .65 | .12 | .31 | .50 | .54 | -.06 |
| 51 | .84 | .08 | .38 | .34 | .76 | .00 |
| 52 | .87 | .20 | .39 | .22 | .79 | -.05 |
| 53 | .66 | .71 | .32 | .03 | .18 | -.14 |
| 54 | .84 | .11 | .53 | .37 | .64 | .05 |
| 55 | .73 | .30 | .26 | .22 | .69 | -.22 |
| 56 | .81 | .36 | .56 | .29 | .53 | -.05 |
| 57 | .88 | .54 | .42 | .28 | .56 | .12 |
| 58 | .97 | .09 | .09 | .12 | .97 | .01 |
| 59 | .96 | .20 | .15 | .15 | .92 | -.15 |

Appendix O (Continued)

| STUDENT | $R^2$ | $B_1$ | $B_2$ | $B_3$ | $B_4$ | $B_5$ |
|---|---|---|---|---|---|---|
| 60 | .92 | .82 | .35 | .33 | .13 | -.07 |
| 61 | .79 | .16 | .31 | .64 | .43 | -.29 |
| 62 | .73 | .34 | .18 | .29 | .70 | .10 |
| 63 | .48 | -.03 | .41 | .22 | .48 | -.16 |
| 64 | .82 | .40 | .48 | .43 | .48 | .11 |

$B_1$ = Geographic Location

$B_2$ = Working Conditions

$B_3$ = Use of Special Skills and Knowledge

$B_4$ = Being Promoted

$B_5$ = Expectancy

## APPENDIX P

Regression Results of the Group Force
Model Using Expectancy as an Additive Variable

| JOB VARIABLE | BETA WT | F-LEVEL SIGNIF | R SQUARE CONTRIBUTION | CUMULATIVE R SQUARE |
|---|---|---|---|---|
| Geographic Location | .27 | .000 | .07 | .07 |
| Working Conditions | .32 | .000 | .10 | .17 |
| Use of Skills and Knowledge | .29 | .000 | .09 | .26 |
| Being Promoted to Next Rank | .54 | .000 | .29 | .54 |
| Expectancy | -.03 | .054 | .00 | .54 |

APPENDIX Q

Regression Results of the Group Force Model with Interactive Terms

| JOB VARIABLE | BETA WT | F-LEVEL SIGNIF | R SQUARE CONTRIBUTION | CUMULATIVE R SQUARE |
|---|---|---|---|---|
| Geographic Location | .27 | .00 | .07 | .07 |
| Working Conditions | .32 | .00 | .10 | .17 |
| Use of Skills and Knowledge | .29 | .00 | .09 | .26 |
| Being Promoted to Next Rank | .54 | .00 | .29 | .55 |
| Expectancy x Geographic Location | .20 | .70 | .00 | .55 |
| Expectancy x Working Conditions | .23 | .17 | .00 | .55 |
| Expectancy x Use of Skills | .22 | .91 | .00 | .55 |
| Expectancy x Being Promoted | .41 | .91 | .00 | .55 |

# VITA

Steven B. Morris was born in Scottsboro, Alabama on 15 February 1947. He attended Newberry College in Newberry, South Carolina from 1965 to 1969 and graduated with a Bachelor of Arts Degree in Mathematics. After a year of teaching high school math, he enlisted in the United States Air Force as a Disbursement Accounting Specialist. In 1973 he was commissioned through the OTS program and was initially assigned to the 317th Combat Support Group, Comptroller Division, Pope AFB, N. C. There he worked as a Deputy Accounting and Finance Officer and Project Officer for base conversion to the Joint Uniform Military Pay System (JUMPS). In 1975 he was assigned to Detachment 10, Incirlik Common Defense Installation, APO NY 09289 where he held the position of Assistant Comptroller of Nonappropriated Funds before becoming the base Accounting and Finance Officer. In 1977 he was assigned to the Air Force Institute of Technology, Wright-Patterson AFB, Ohio, as a graduate student in Operations Research.

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This thesis examined the power of the valence model in predicting job preference and the power of the force model in predicting job choice as hypothesized by Vroom's expectancy theory. The research involved a decision making exercise to capture 64 Air Force Institute of Technology (AFIT) students' job preference policy and their job choice policy.

Four job factors and their outcomes captured the valence policy; five job factors (the same four plus the expectancy factor)

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captured the force policy. Each of the five factors had two possible outcomes, so a full factorial design of $2^5$ or 32 jobs was used.

The valence model was quite powerful in predicting students' job preference. The mean $R^2$ was .83, and the group $R^2$ was 59. The results of the force model analyses were contradictory to Vroom's conceptualization of expectancy. The AFIT student did not incorporate expectancy information into his/her force decision making.