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THE IMPACT OF SELF-ESTEEM AND LOCUS OF CONTROL ON  
EXPECTANCY THEORY PREDICTIONS OF WORK EFFORT

by

Michael Kuan Tsai

A Dissertation  
Submitted to the  
Faculty of The Graduate College  
in partial fulfillment of the  
requirements for the  
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School of Public Affairs and Administration

Western Michigan University  
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THE IMPACT OF SELF-ESTEEM AND LOCUS OF CONTROL ON  
EXPECTANCY THEORY PREDICTIONS OF WORK EFFORT

Michael Kuan Tsai, D.P.A.

Western Michigan University, 1989

The purpose of this dissertation is to explore the effects of self-esteem and locus of control on the relationships between expectancy model predictors and work effort. For this reason Vroom's (1964) Valence of Performance ( $\sum VI$ ) and Force to Perform ( $\sum VE$ ), and Galbraith and Cummings' (1967) Work Effort [ $E(\sum VI)$ ] model predictors were used.

Data were collected from 147 employees of the State government on job involvement as measured by Lodahl and Kejner's scale (1965), propensity to stay as measured by House and Rizzo's (1972) items and the job behavior variables which include job advancement, recognition and job performance. For measuring intervening variables, Rosenberg's (1965) self-esteem and Rotter's (1966) locus of control scales were used.

Expectancy model predictors correlated significantly with job behavior variables for the sample as a whole, but not with job involvement or propensity to stay. The effects of self-esteem were found to be significant in explaining the variation in job performance. The effects

of locus of control were found to be significant in explaining the variations in recognition and job performance.

In subgroup analyses, both the high self-esteem and the high internal locus of control groups were found to have higher correlations between expectancy model predictors and propensity to stay than the low self-esteem and the low internal locus of control groups. For the management group, the expectancy model predictors correlate significantly with job involvement. For the computer programmer group, the expectancy model predictors correlate significantly with job advancement and job performance. For the technical programmer and data system analyst group, the  $E(\sum VI)$  model predictor correlates significantly with propensity to stay. For the male group, the expectancy model predictors correlate significantly with job advancement and job performance. Finally, for the female group, the expectancy model predictors correlate significantly with the job behavior variables.

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Michael Kuan Tsai

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## CHAPTER I

### INTRODUCTION

#### Statement of Problem

Since the work of Tolman (1932) and Lewin (1938) in the 1930s, and the contributions of Vroom (1964), Galbraith and Cummings (1967), Porter and Lawler (1968), and Graen (1969) in the 1960s, the expectancy theory of work motivation has enjoyed considerable attention among researchers of industrial psychology. This is especially true of Vroom's (1964) text, Work and Motivation.

Vroom (1964) argues that the amount of motivating force acting on a person to exert effort in working situations is a function of three components: (1) the effort-performance expectancy (E), which is defined as the perceived probability of an effort leading to a good performance; (2) the performance-outcome instrumentality (I), which is defined as the perceived association of a good performance leading to obtainment of desired outcomes; and (3) the valence of outcomes (V), which is defined as the degree of attractiveness of each outcome for the individual as a consequence of a work effort or a given performance level.



Vroom (1964) constructed two expectancy models from the interactions of these three components for predicting one's motivating force. Vroom's first model is called the Force to Perform (VE). This is defined as one's motivating force to perform an act is the sum of the products of the valence (V) of a given performance level plus the expectancy (E) to achieve that desired performance level. Vroom's second model is called the Valence of Performance (VI). This is defined as one's motivating force to perform an act is the sum of the products of the valence (V) of each valued outcome (e.g., pay, promotion, and recognition) and the perceived instrumentality (I) from a given performance level to obtain the valued outcomes. Vroom did not define the relationship between the  $\sum VE$  model and the  $\sum VI$  model.

Vroom's (1964) two expectancy models have been popular in predicting a number of work-related behaviors and attitudes such as job effort, job performance, job satisfaction, job preference, and job choice (House, Shapiro, & Wahba 1974). However, most empirical results have provided weak support for Vroom's (1964) original models. The poor empirical results have triggered modifications to Vroom's models by Lawler and Porter (1967), Galbraith and Cummings (1967), Graen (1969), and Campbell, Dunnette, Lawler, and Weick (1970). For example, Galbraith and Cummings (1967) combined Vroom's

(1964)  $\sum VE$  and  $\sum VI$  models into one so-called Work Effort model [ $E(\sum VI)$ ]. They hypothesized that one's motivating force involves a two-stage process. The first stage is the expectancy of achieving a certain performance level. The second stage is the instrumentality of the given performance level which will lead to obtaining some valued outcomes. However, research on the modified models has been difficult due to the added complexity of the theory and problems associated with adequately measuring all of its components (Campbell & Pritchard 1976). Consequently, the utility of expectancy theory has been greatly hampered, though the theory's heuristic value still provides a powerful force in explaining the complex process of work motivation.

The first problem is the difficulty in applying the expectancy models in a real working situation. This difficulty is mostly caused by the complexity of the theory itself. Expectancy theory basically contains three components: (1) expectancy (E), (2) instrumentality (I), and (3) valence (V). Expectancy (E) is an individual's perception of the probability that a specified level of work effort will result in achieving a given performance level. Instrumentality (I) is an individual's perception that a given performance level will result in the attainment of a desired set of outcomes. Valence (V) has two parts: the first is an individual's desire to

perform at a specified performance level, and the second is an individual's desire to obtain a set of rewards associated with a given performance level. These three components are combined multiplicatively into expectancy predictor models such as the Force to Perform (VE) and Valence of Performance (VI) models by Vroom (1964), and the Work Effort model [E(VI)] by Galbraith and Cummings (1967). In interpreting the multiplicative characteristic of the equation, ordinary managers in an organization have experienced considerable difficulty in understanding the meanings of the results of each expectancy model.

The second problem is the lack of clear, specific definitions of the terms dependent and independent variables. Too often the dependent and the independent variables which were used in the research did not possess construct validity and reliability. For example, expectancy theory was designed to predict the amount of an individual's "work effort." Most often, the "work effort" was measured in terms of an individual's amount of energy, concentration and time spent on a task. However, there is no commonly accepted measurement of time, energy, and degree of concentration with any given "work effort" which can be used for comparison among different studies. Therefore, the lack of a clear, specifics, and universally accepted meaning for the dependent variables which the expectancy models are used for predicting have

been one of the major problems.

The third problem is the difficulty in identifying the circumstances under which the expectancy models work best. Researchers have experienced difficulty in identifying the most desired outcomes in relationship to the consequence of hard work. The inability to construct these most desired outcomes thus fails to capture the employees' strongest feeling toward each component (E, V, and I) of the expectancy models. Consequently, the ability of the expectancy models to predict dependent variables is reduced.

The fourth problem is the failure to control intervening variables which may affect an individual's perception of the probability of successfully obtaining desired rewards. For example, Vroom's (1964) expectancy theory is based on an individual's perception of future outcomes. An individual's perception of the probability of successfully obtaining desired rewards relates closely to personality characteristics such as self-esteem and internal-external locus of control (Rosenberg 1965, Rotter 1966, and Korman 1967).

Lawler (1971, 1973) incorporated self-esteem in his modified expectancy theory framework. However, he did not specify how self-esteem, which he defined as an individual's judgment of his or her self-worth, could be used to determine the expectancy judgment and work behavior.

According to Korman's (1967) study, an individual with low self-esteem tends to doubt his or her ability, skill, or knowledge to achieve good performance. Therefore, such an individual tends to have a lower expectation of his or her ability to achieve a good performance and to obtain desired rewards than someone possessing higher self-esteem.

Rotter's study (1966) indicates that an individual's subjective perception of mastery in obtaining desired rewards is affected by the individual's internal-external locus of control orientation. Therefore, an individual with a higher internal locus of control tends to have a higher expectation of his or her ability to achieve good performance and to obtain valued outcomes than do individuals with lower internal locus of control. The impacts of these personality orientations on the processes of expectancy judgment and work behavior have yet to be explored. Furthermore, these personality variables have not been systematically included in the studies of Force to Perform (VE), Valence to Perform (VI), and Work Effort [E(VI)] models.

In order to test the practical applicability of the expectancy models, both the universally accepted dependent variables and the intervening variables of the linkages should be used in expectancy model research. The use of more universally acceptable dependent variables

and controlling intervening variables may lead to broader practical applications of the expectancy model predictors.

### The Purpose of the Study

This study primarily focuses on the effects of personality factors in measuring the components of expectancy models in predicting work behaviors. The internal-external locus of control (Rotter, 1966) and self-esteem (Rosenberg, 1965) are used as intervening variables for this approach. This study also examines the components of expectancy models in predicting work behaviors without controlling for personality factors. The work behaviors are measured by five dependent variables: (1) job involvement (Lodahl and Kejner, 1965), (2) the propensity to stay (House and Rizzo, 1972), (3) job advancement, (4) recognition, and (5) job performance. The findings relating to these five dependent variables under these two approaches are compared. The data was collected from 178 data processing professionals in the Bureau of Information Systems (BuIS), Michigan Department of Social Services (MDSS).

Vroom's (1964) original expectancy theory framework is used as a foundation. His expectancy theory contains two parts. One is the effort-performance linkage, and the other is the performance-outcome linkage (see Figure

1). The effort-performance linkage involves two components: (1) expectancy (E) and (2) valence (V) of performance. The performance-outcome linkage involves (a) valence (V) and (b) instrumentality (I) of outcomes. Specifically, this study examines the effects of two intervening variables on these two linkages.

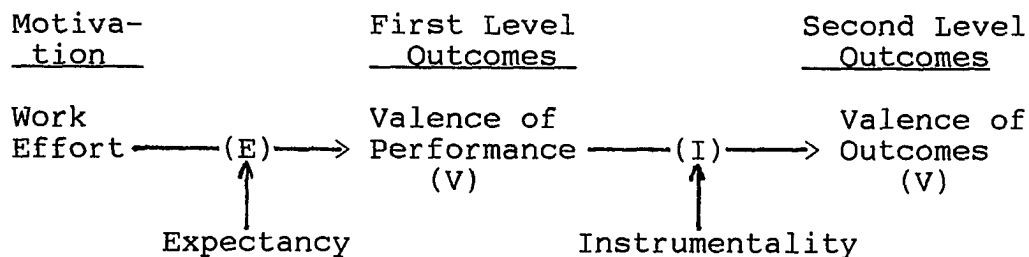


Figure 1. Vroom's Framework for Work Motivation (1964)

In addition, this research framework addresses a set of dependent variables which are important to the BuIS management. The first such dependent variable is job involvement. Lodahl and Kejner's (1965) concept of job involvement is adopted because expectancy theory seems to be cognitively consistent with the operationalization of job involvement. Lodahl and Kejner's (1965) job involvement scale consists of an individual's evaluation of work in general and desire to perform a particular task well. The second dependent variable is the propensity to stay with the job. The propensity to stay (House & Rizzo, 1972) involves the measurement of the intention to stay or leave a job as a result of one's

perception. The third dependent variable is job advancement as measured by the number of levels of advancement within a civil service system based on years of service. The fourth dependent variable is recognition as measured by the number of recommendation letters, memos, citations and rewards relating to performance received in the past four years. Finally, the fifth dependent variable is job performance which is gauged by combining the job advancement and the recognition scores.

The intent of this study is to replicate studies of the expectancy models with the proposed dependent variables, but also to extend the study by controlling for personality factors as intervening variables. This study also attempts to identify a set of valued outcomes which BuIS employees commonly expect to attain as a result of hard work. The desirability of these common outcomes may provide the BuIS management with an indication of possible discrepancies between the organization's goals and the employee's goals, and hence an opportunity to identify possible inadequacies of the BuIS' goal priority and reward system.

The exploration of the effects of self-esteem (Rosenberg, 1965) and internal-external locus of control (Rotter, 1966) on expectancy model predictors may clarify some inconsistencies from previous expectancy theory research. Specifically, this study involves assessing



the following relationships under the expectancy models:

First, determining the relative importance of the Vroom's (1964) Valence of Performance (VI) in predicting job involvement, propensity to stay, job advancement, recognition, and job performance.

Second, determining the relative importance of the Vroom's (1964) Force to Perform (VE) in predicting job involvement, propensity to stay, job advancement, recognition, and job performance.

Third, determining the relative importance of the Galbraith and Cummings' (1967) Job Effort model  $E(VI)$  in predicting job involvement, propensity to stay, job advancement, recognition, and job performance.

Fourth, determining the effects of self-esteem (Rosenberg, 1965) and internal-external locus of control (Rotter, 1966) on the expectancy models in predicting job involvement, the propensity to stay, job advancement, recognition, and job performance.

A zero-order correlation coefficient will be employed to test the relationships of the expectancy model predictors and dependent variables (job involvement, propensity to stay, job advancement, recognition, and job performance). The correlations of the expectancy models and the dependent variables are analyzed by the subgroups of the current job classifications, gender, the high and low self-esteem groups, and the high and the low internal

and external locus of control groups. In addition, a regression analysis is used to test the relative importance of self-esteem and locus of control factors in explaining variance in the expectancy model predictors and dependent variables.

Hopefully, this research will advance the understanding of work motivation through expectancy theory in an organization and contribute to the theoretical constructs seeking to explain complex human work behavior.

### Assumptions

This study accepts cognitive assumptions as the basis for work motivation. Individuals' cognitive orientations, furthermore, relate closely to their role perceptions. These role perceptions determine the kinds of work behavior that an individual should engage in to achieve a "balance" (Heider, 1958) between cognition about the self-perception of performance expectancy and a cognition about work outcomes. Therefore, this study assumes that individuals will perform at a proper level to achieve their cognitive balance in accordance with their role perception in a work environment. Four specific assumptions are:

1. People are rational human beings and behave accordingly so as to maximize positive outcomes.

2. Subjects have the ability to report their perceptions accurately.

3. All other things being equal, individuals will engage in those behavioral roles which maximize their sense of cognitive balance or consistency.

4. The BuIS environmental circumstances have met the specific boundary conditions necessary for expectancy models to work.

## CHAPTER II

### REVIEW OF THE PRIOR RESEARCH

#### Theoretical Development

Expectancy theory can be traced back to hedonism (Cofer & Appley, 1964). The concept of Hedonism is first documented in the times of Epicurus who died in 270 B.C. Epicurus believed that pleasure is the highest good. This conception suggests that pleasure and pain are potent determiners of human behavior. Hedonism became a chief principle of the British associationists and utilitarians (Cofer & Apply 1964). The 19th century social philosophers, Adam Smith, Jeremy Bentham, and John Stuart Mill, utilized hedonism to explain human behavior in terms of organisms that try to maximize pleasure and minimize pain. Bentham's (1748-1832) "Hedonic Calculus" postulated that individuals consciously calculated the relative pleasures and pains of various outcomes provided by alternative actions and sought to maximize their pleasure. Much later, Troland (1928) suggested that action is taken to satisfy unmet needs (homeostasis) and that the fulfillment of these needs is satisfying (hedonism). The problem is that the concept of hedonism is vague and

cannot be tested as a theory of behavior. Hedonism cannot predict behavior in advance. It only explains behavior by postulating a particular source of pleasure and pain after the fact. However, this conception has established the foundation for a cognitive incentive theory of motivation (Cofer & Apply 1964).

In the 1930s, the combination of hedonism, drive, need and incentive theories began to evolve into the current cognitive process theory. Tolman (1932) talked about expectations and argued for an approach that was more cognitively oriented. He suggested that an individual has expectancies concerning the possible outcomes of his or her acts. He further argued that each person makes choices among outcomes according to the perceived probability of their occurrence and their perceived value to the individual.

It was Kurt Lewin (1938) who bridged the earlier drive theories and contemporary expectancy value theories. He presented a theory of behavior that contained terms such as "valence" and "force." Lewin (1951) suggested that needs create a state of tension which an individual attempts to relieve through an appropriate action. The perceived attractiveness of various actions or outcomes is dependent on the individual's ability to relieve tension. The perceived attractiveness of an activity was referred to as its valence. Lewin's

(1938) definition of valence is an intensity of need in a person for an object. This force is defined as a function of the value of the goal. Lewin (1938) viewed the force on an individual to be a combination of the push of the need tensions and the pull of highly valent outcomes. Therefore, when the goal is obtained, the need is met and the tension relieved because the object loses its positive value, and the "force field" is removed.

The earlier works of Tolman (1932), Lewin (1935), Edwards (1954), Rotter (1954), and Atkinson (1957) influenced greatly the theoretical development of expectancy theory. However, the application of their concepts for the analysis of work behavior in terms of expectancy models has varied considerably. Finally, Vroom (1964) synthesized these different concepts and operationally defined expectancy theory as a given act that leads to the attainment of a set of outcomes. He hypothesized that the individual's work motivation was influenced by his or her subjective estimate (expectancies) of the effort which would lead to a performance level (first level outcomes) and the desirability (valence) of that performance level. A given performance level became desirable when it led (instrumentality) to the attainment of various desired outcomes (second level outcomes) like a promotion, an increase in pay, or a letter of recognition. These hypothesized relationships are defined by

Vroom (1964) in his two models.

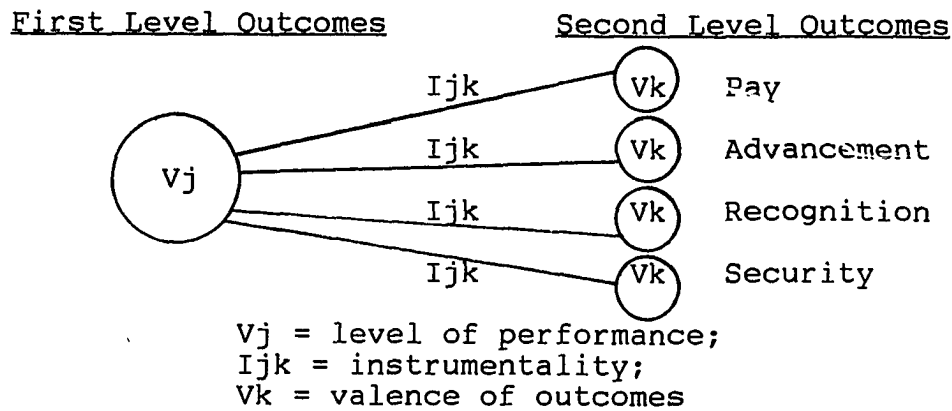


Figure 2. Vroom's Valence of Performance Model (1964)

Vroom's first model is called the Valence of Performance (VI) model (see Figure 2). It specifies that the valence of a given performance level (jth) is a function of the sum of the product of (a) the valence of outcomes ( $V_k$ ) and (b) the perceived instrumentalities ( $I_{jk}$ ) of the performance level (jth) for the attainment of those outcomes. This means that the desirability of a performance level is a cumulative multiplicative function of the individual's valence for each second level outcome like an advancement, an increase in pay, or recognition times the perceived instrumentality that good performance would lead to each outcome. Algebraically:

$$V_j = \sum_{k=1}^n (I_{jk} \times V_k) \quad k = 1, 2, \dots, n$$

where:  $V_j$  = the strength of a person's positive  
or negative affective orientation

toward the performance level  $j$ ;

$I_{jk}$  = the degree to which a person sees that his/her level of performance will or will not lead to the attainment of second level outcomes. The value of  $I_{jk}$  is between -1 and +1;

$V_k$  = the valence for attaining outcome  $k$ ;

$n$  = the number of  $k$  level outcomes.

Vroom's second model is called the Force to Perform model (VE). It specifies that the force to perform is a function of the sum of the products of (a) the valence of a performance level ( $V_j$ ) and (b) the expectancy ( $E$ ) that the amount of effort will result in achieving the performance level (see Figure 3). This means that a person's motivation to exert work effort is determined by the multiplicative interaction of expectancy times the perceived valence for performance. This model is expressed in the following equation:

$$F_i = \sum_{j=1}^n (V_j \times E_{ij}) \quad j = 1, 2, \dots, n$$

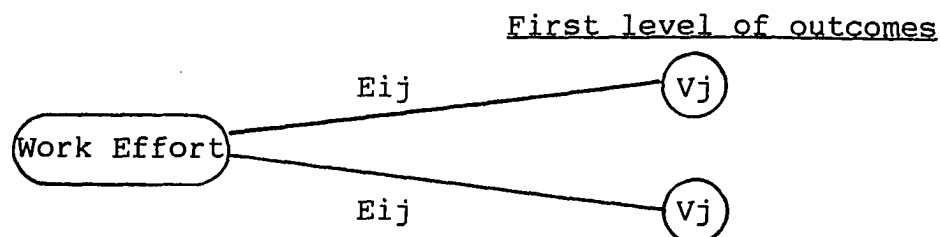
where:  $F_i$  = a person's work effort;

$E_{ij}$  = the probability that an act will influence the level of success in a particular work performance. The value of  $E_{ij}$  is between 0 and 1;

$V_j$  = a person's positive or negative affective orientation toward the



successful work performance  $j$ ;  
 $n$  = the number of  $j$  successful work  
 performances.



$E_{ij}$  = Expectancy;  $V_j$  = Valence of performance

Figure 3. Vroom's Force to Perform Model (1964)

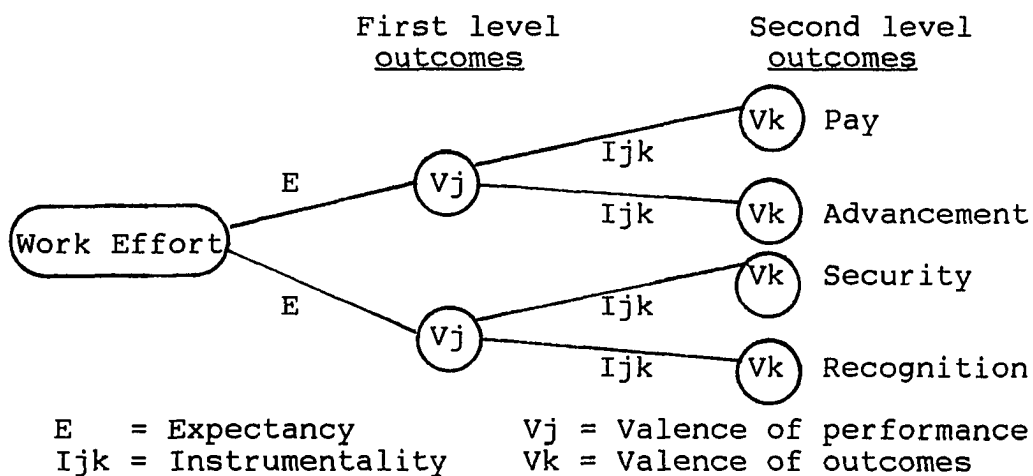
Galbraith and Cummings (1967) combined Vroom's two models into one which was called the Work Effort model  $[E(\sum VI)]$ . This model specifies that the second level outcomes are expected to stem from the first level outcomes. Work Effort is being predicted from the expectancy that a given level of effort leads to a given level of performance (the first level outcome) weighted by the valence of that performance level. The valence of this performance level is then determined by examining the degree to which it is instrumental for the attainment of second-level outcomes weighted in turn by their valence (see Figure 4).

Galbraith and Cummings' model is expressed in the following equation:

$$W = E \left[ \sum_{k=1}^n (V_k \times I_{jk}) \right] \quad k = 1, 2, \dots, n$$

where:

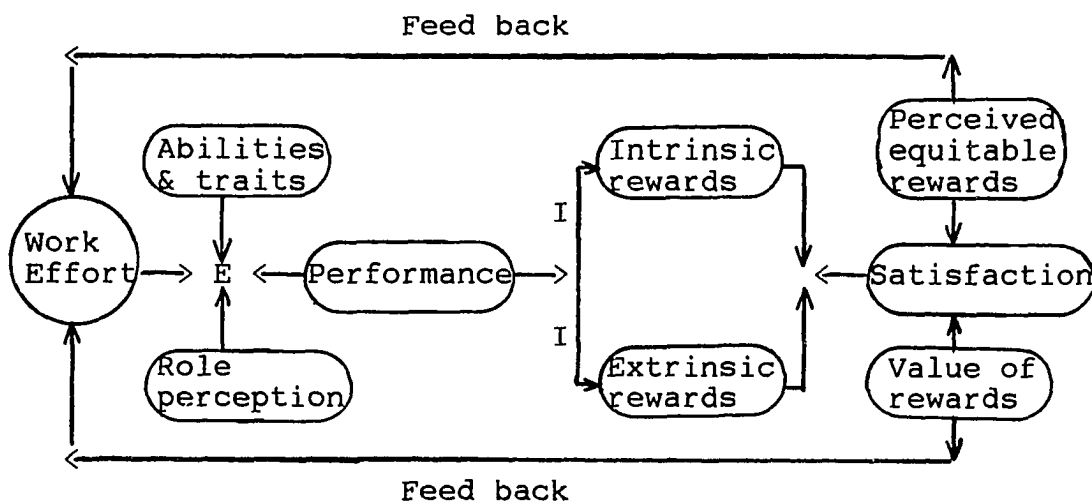
- $W$  = work effort;
- $E$  = the expectancy that effort leads to successful performance  $j$ ;
- $I_{jk}$  = the instrumentality of performance  $j$  for the attainment of second-level  $k$  outcomes;
- $V_k$  = the valence of the second level outcomes;
- $n$  = the number of  $k$  second level outcomes.



**Figure 4. The Galbraith and Cummings Work Effort Model (1967)**

Building on Vroom's theoretical work, Porter and Lawler (1968) incorporated variables that intervene between the work effort and performance level, the performance level and outcomes, and the feedback loops (see Figure 5). They hypothesized that a person's abilities,

traits, and role perception influence his or her perceptions of the relationships between effort and performance level. They also hypothesized that the perception of the relationship between performance and second level outcomes is modified by the perceived equitability of rewards. Porter and Lawler defined the equitable rewards as the input/output discrepancies a person perceived in comparing himself or herself with another person in the organization. Furthermore, Porter and Lawler divided rewards into intrinsic and extrinsic (see Figure 5).



E = Perceived effort-performance probability  
 I = Perceived performance-rewards association

Figure 5. Porter and Lawler's Expectancy Model (1968)

In 1970, Campbell, Dunnette, Lawler, and Weick presented another modification to the expectancy model. Their model classifies task performance into external

task performance, which is set by the employer or work group, and internal task performance, which is set by the individual. This model consists of two expectancy terms: (1) E1 (expectancy I) is the perceived probability of successful task performances and (2) E2 (expectancy II) is the perceived probability of receiving first level outcome rewards, each with a specific valence, given successful task performance. Finally, the instrumentality of the first level outcome rewards lead to the second level outcomes (such as needs and satisfaction) each with a specific valence (see Figure 6). Expectancy II is defined as a probability which is different from Vroom's (1964) construct of instrumentality. Algebraically, this model is expressed as  $\text{Work effort} = E1 E2 ( \sum VI )$  for one first level outcome.

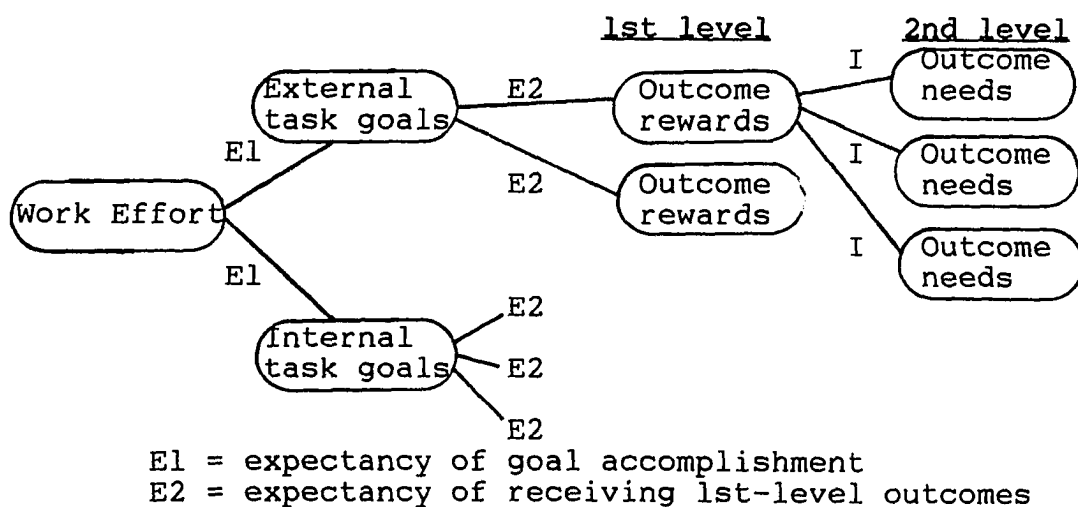


Figure 6. Campbell, Dunnette, Lawler, & Weick's Hybrid Expectancy Model (1970)

In the late 1970s, there was research proposed that examined the effects of intervening variables or boundary conditions on the linkage between effort and performance and the linkage between performance and outcomes. In one such study, Kopelman and Thompson (1976) proposed to control the effects of boundary conditions such as (a) time, (b) the initial level of the performance criterion, (c) the level of rewards, (d) task specific ability, and (e) control system responsiveness. They also suggested that the more enduring properties of the individual such as self-esteem and locus of control needed to be taken into account to determine the validity of expectancy theory.

### Research Findings

According to Vroom's (1964) expectancy models, two critical linkages can be identified: the performance and outcome linkage and the effort and performance linkage. This review summarizes the general findings on these linkages:

#### Performance and Outcome Linkage

The strength of the link between performance and outcomes is measured by Vroom's Valence of Performance model (VI). It means that the valued outcomes can be predicted from a sum of VI scores. This model has been

used to predict occupational preference (Vroom, 1966; Wanous, 1972), job satisfaction (Alderfer, 1972; Clark, & Rogers, 1971; Graen, 1969; Lawler, 1973; Mitchell, 1979; Porter & Lawler, 1968; Schuster, Pulakos & Schmitt, 1983), and desired performance level (Dachler & Mobley, 1973; Mitchell & Nebeker, 1973). Some of these findings are discussed below.

Vroom (1966) studied 49 graduate students who were engaged in the process of selecting an organization in which to begin their managerial careers. His study measured the VI scores for 15 job goals. Both valence (V) and instrumentality (I) were measured on a five-point scale of importance according to a 2, 3, 5, 3, 2 forced distribution method for each question. For example, of the 15 job goals, each subject was forced to give the two highest in importance, the next three highest, and so on. A  $\sum VI$  score was generated by computing the Pearson product-moment correlation coefficients between job goal and instrumentality judgements for each selected organization. This  $\sum VI$  score has a range of +1.00 for the case of complete correspondence between the V and the I score to -1.00 for the case of complete negative correspondence between the V and the I score. Each organization was rated on a scale from 1 to 11. Vroom reported that the  $\sum VI$  score was .58 for those with a rating of 10 and 11, and .03 for those with a rating of 5 or below.

Wanous (1972) studied 208 telephone company employees. Subjects were asked to rate their present job on each of 23 items. The valence score was obtained by asking how important each of the 23 items was. The instrumentality score was obtained by asking how much of each of the 23 items should be associated with the job. A seven-point scale was used. In addition, a single item measuring overall job satisfaction was also obtained. Wanous found that the correlation between average score of 23 items of job satisfaction measures and the  $\sum VI$  score was  $r = .74$  at  $p < .001$  (one-tail test). He also found that the correlation between the single item measuring overall satisfaction and the  $\sum VI$  score was  $r = .48$  at  $p < .001$  (one-tail test).

Vroom's (1964) Valence of Performance model (VI) hypothesizes that a person's satisfaction with a job is seen to be a function of the degree to which the job is instrumental for valued outcomes. The general research approach on job satisfaction is to correlate  $\sum VI$  scores with overall job satisfaction measures.

Graen (1969) tested the conditions affecting reward for performance in a laboratory situation. One of the test conditions was that money rewards were designed not to be contingent on performance. Under this test condition, the result was that the  $\sum VI$  score did not significantly relate to job satisfaction. For their part,

Porter and Lawler (1968) tested the motivational role of pay on seven diverse private and governmental agencies based on their  $\sum VI$  model. On the job satisfaction hypothesis, they concluded that the more an individual sees his or her pay as a satisfier, the more effort he or she will put forth to perform his or her job effectively. Schuster, Clark, and Rogers (1971) retested Porter and Lawler's (1968) experiment demonstrating the motivational role of pay. They surveyed 800 employees from a private firm. They found that the relationship between pay as a satisfier and  $\sum VI$  score is only at  $p = .09$  level.

Mitchell & Albright's (1972) study used 51 naval aviation officers to predict the effort, satisfaction, performance, and retention of two squadrons of naval aviation officers. The job satisfaction was measured by averaging two scores. One resulted from asking subjects how satisfied they are with their present position, and the other from how satisfied they are with their career in the navy. They found a significant relationship between  $\sum VI$  scores and overall satisfaction measures with  $r = .48$  at  $p = .01$ .

Pulakos and Schmitt (1983) studied 341 high school graduates taking their first permanent jobs. The  $\sum VI$  scores of their samples prior to employment were correlated with job satisfaction 9 and 20 months later. Pulakos and Schmitt (1983) used Alderfer's (1972) 13 item



scale as the outcome items to measure a valence model (VI) for predicting subsequent job satisfaction. Alderfer's theory assumes that an individual has three core needs that he or she strives to meet. They include obtaining his or her material existence needs, maintaining his or her interpersonal relatedness with significant other people, and seeking opportunities for his or her unique personal development and growth. The valence (V) score was obtained by importance ratings on Alderfer's (1972) items. The instrumentality (I) score was assessed by asking respondents to rate the extent to which they expected to be able to obtain each of the 13 outcomes when they became employed. The job satisfaction scores were obtained by the short form of the Minnesota Satisfaction questionnaire (Weiss, Dawis, England, & Lofquist, 1967) which contains external and internal job satisfaction items. Pulakos and Schmitt's (1983) study found that a significant relationship existed between the  $\sum VI$  score of existence ( $r=.16$ ), relatedness ( $r=.11$ ), and growth ( $r=.13$ ) and internal job satisfaction at  $p < .05$  level respectively nine months after those  $\sum VI$  scores were obtained. There was no significant relationship between these  $\sum VI$  scores and external job satisfaction in the same period of time. However, there were significant relationships not only between external job satisfaction and the  $\sum VI$  score of existence ( $r = .11$ ), relate-

ness ( $r=.20$ ), and growth ( $r=.17$ ) but also between internal job satisfaction and the  $\sum VI$  scores of existence ( $r=.21$ ), relatedness ( $r=.22$ ), and growth ( $r=.21$ ) 20 months after those  $\sum VI$  scores were measured.

The Valence of Performance model (VI) is also used to measure the valence of good performance and compares it with the  $\sum VI$  scores for good performance. Dachler and Mobley's (1973) study tested hypotheses by computing each employee across the five levels of performance. The levels of performance were defined in terms of earnings per hour in Plant 1 and percentage of standard on the individual's job at Plant 2. Each employee's computed  $\sum VI$  score was correlated with direct ratings of utility of the five levels of performance. They found that the average correlation between direct ratings of utility of the five levels of performance and the  $\sum VI$  score was significant with  $r = .92$  at  $p = .01$  level at Plant 1 where was comprised of 184 female sewing machine operators, and  $r = .73$  with  $p = .01$  at Plant 2 where was comprised of 412 male operative workers. These results indicate that the utility of a level of performance is closely related to the extent to which that performance level is associated with desirable outcomes.

Mitchell and Nebeker (1973) studied 60 male undergraduates from the University of Washington. Nine outcome items were chosen for measuring valence and instru-

mentality. There were three intrinsic items: (1) feelings of accomplishment, (2) self-confidence, and appreciation of ideas. Two items were extrinsic and impersonal: (1) a good job and (2) admission to graduate school. Four were extrinsic and social: (1) social attractiveness both with the opposite sex, (2) social attractiveness with the same sex, (3) parental praise, and (4) respect from peers.

Students rated these nine outcome items in terms of importance and pleasantness by two 7-point scales. The valence score was the mean of these two scores for each outcome item. The instrumentality was rated by the students regarding the degree to which obtaining good grades contributed to or detracted from the possibility of obtaining each outcome. This rating was also made by a 7-point scale. Finally, the mean rating of scales assessing the pleasant-unpleasant and important-unimportant feelings about good grades was used as the estimate of attitude toward performance. Mitchell and Nebeker (1973) found that the attitude toward performance correlated with  $\sum VI$  score at  $r = .71$  with the significant level of .01.

In general, the Valence of Performance model (VI) has supported the existence of the performance and outcome linkage from empirical tests. However, the correlation values in these studies between the  $\sum VI$  score and

the dependent variables were statistically weak. Many authors have, therefore, suggested that additional independent variables and intervening variables are needed to better measure the linkage of performance and outcomes.

### Effort and Performance Linkage

The study of the work effort and performance linkage used widely different measures and procedures. Vroom's (1964) Force to Perform model (VE) was designed to measure the strength of the linkage between work effort and performance. The  $\sum VE$  model measured the degree to which effort led to performance and then weighted this expectancy by a valence of the performance level. However, in some studies, discussed below, the  $\sum VI$  model and the  $\sum VE$  model were used interchangeably. These studies measured the linkage between the effort and the second level outcomes without addressing the performance level by using the  $\sum VI$  model or the  $\sum VE$  model. They used expectancy (E) and instrumentality (I) interchangeably in predicting work effort.

This confusion occurs that the performance level usually acquires a valence by its expected relationship to the valued outcomes. This problem was somewhat reduced following Galbraith and Cummings' (1967) more complex  $E(\sum VI)$  model which included the expectancy (E) variable in its formula. The following review summarizes

the general pattern of findings--including the works of Georgopoulos, Mahoney and Jones (1957), Galbraith and Cummings (1967), Lawler and Porter (1967), Hackman and Porter (1968), Gavin (1971), and Goodman, Rose, and Furcon (1970)--in predicting job effort and behavior.

One of the earliest studies of job behavior is Georgopoulos, Mahoney, and Jones (1957). They used the path-goal method to predict productivity. Georgopoulos, et al. (1957) hypothesized that a worker's productivity was a function of the worker's perception of the degree to which productivity was a path to the attainment of personal goals. More specifically, if a person perceives that high productivity is a path to his or her goals, the person will tend to be a high producer. Conversely, if a person perceives that a low productivity as a path leading to his or her goals, the person will tend to be a low producer. They selected 722 workers from a household appliance company for testing their hypothesis.

The path-goal perception was measured by having the worker evaluate high and low productivity on a five-point scale, from "helping" to "hurting" the attainment of a goal. They used a 10-point scale to measure the level of need for the goal items connecting with the high and low productivity instrumentalities. These goals are "making more money in the long run," "getting along well with the work group," and "promotion to a higher base rate."

The findings supported their hypothesis that productivity is a function of the path goal perception. They found that the proportion of high producers was significantly greater for the high-productivity-help perception workers (38%) than the high-productivity-hurt perception workers (21%) with respect to making more money in the long run. The percentage differences are significant using the chi-square test at the .05 level for a one tail test. Similarly, the low-productivity-hurt perception workers (30%) are higher producers than the low-productivity-help perception workers (22%) with respect to making more money in the long run. The percentage difference are also significant by chi-square test at the .05 level for a one tail test. For the goal items of getting along well with the work group and promotion to a higher base rate, the results are also in the predicted direction. However, there was no significant differences between the high-productivity-help and the high-productivity-hurt perception workers.

Ten years later, Galbraith and Cummings (1967) extended Vroom's (1964) expectancy theory to develop a more complex  $E(\sum VI)$  model. They assumed their samples had expectancies (E) of 1 in terms of the relationship between their effort and a good performance. They obtained ratings for the valence of five second-level outcomes (money, fringe benefits, promotion, supportive behavior

and group acceptance) and the perceived instrumentalities of performance for their attainments.

They selected 32 operative workers from a large heavy equipment manufacture. In order to assure that the subjects have expectancy probability of one, the selected subjects were there on performing independent tasks. These workers held jobs where they controlled the pace of the work. The company maintained work standards and made daily performance measurements on individuals. Therefore, performance was measured by daily output as a percentage of the standard average over a one month interval. Valence was measured on a scale from -10 to +10 unit intervals while instrumentality was measured on a scale from -1 to +1 using 0.1 intervals.

A multiple regression considering all variables simultaneously was used in predicting job performance. The results showed that the most significant interaction was between valence and instrumentality for supervisor supportive behavior ( $t$  value = 3.70,  $p$  = .001). The interaction was also significant for the money variable ( $t$  value = 3.01,  $p$  = .01). The multiple correlation coefficient was  $r = .57$  for the significant variables in the regression model. The results supported Vroom's (1964) model on the interactive effects of valence and instrumentality in determining motivation for a particular performance outcome.

Lawler and Porter (1967) studied expectancy of effort, high productivity, and good performance for attainment of seven second-level outcomes and the valence of these outcomes for 154 managers employed in five organizations. They used  $\sum VE$  scores to correlate with effort and job performance criteria using supervisor rating, peer rating, and self-rating categories. The results showed that the significant relationships between effort and  $\sum VE$  scores of reward outcomes were  $r = .27$  with  $p < .10$  level for supervisor rating;  $r = .30$  with  $p < .05$  level for peer rating; and  $r = .44$  with  $p < .01$  level for self-rating. The results indicated that supervisor ratings are not as good as peer and self-ratings in predicting job effort.

Hackman and Porter (1968) used Vroom's Force to Perform model (VE) to generate predictions on how hard employees will work on their jobs and how effective their performance will be. They selected 82 female telephone company service representatives for this study in a real working situation. They constructed 18 expected outcomes from working hard on the job. A seven-point scale was used, ranging from "not at all true" to "very true" to measure their subject's expectancy to obtain each outcome. A seven-point scale was used to measure "valence" for each outcome. They found that the correlation of the  $\sum VE$  scores with one "overall" index of work effectiveness



(job involvement and performance) was  $r = .40$  at  $p < .01$  level; with supervisor rating of involvement and effort was  $r = .27$  at  $p < .01$ ; with sales was  $r = .31$  at  $p < .01$ ; and with error rate (negatively) was  $r = -.23$  at  $p < .01$ . The results show that the  $\sum VE$  model has an appropriate basis for making predictions about performance effectiveness.

Lawler (1968) tested the relationship between the  $\sum VE$  score and performance. Data were collected from 55 public service managers twice within a one year interval. He found that the  $\sum VE$  scores correlated with the supervisor performance rating at  $r = .44$  with  $p < .05$  level in time 1, and  $r = .52$  with  $p < .01$  level in time 2; with the peer performance rating at  $r = .52$  with  $p < .01$  level in time 1, and  $r = .30$  with no significance at time 2; and with the self-performance rating at  $r = .43$  with no significance in time 1, and  $r = .48$  with  $p < .05$  in time 2. The results showed an inconsistent relationship between the  $\sum VE$  scores and performance criteria under the peer and self-rating categories.

Gavin (1971) studied 367 managerial candidates of an insurance company. Each subject was asked to indicate the expectancy of two factors, good job performance and working hard, leading to 21 second-level outcomes, and the valence for each outcome. Gavin computed a total composite  $\sum VE$  score for each subject. He found that the

$\sum VE$  score significantly correlated with the supervisor rating of performance at  $r = .28$  with  $p < .01$  level.

Goodman, Rose, and Furcon (1970) used three different motivational models to identify the strongest predictor of scientific performance from 66 government research scientists. The three models are direction of motivational orientation--preferred career goals (i.e., advancement of science or status in the organization), source of motivational stimulation--preferred sources of stimulation in work (i.e., internal or external to self), and job dedication--intensity of work motivation (Pelz and Andrews, 1966). They found that the  $\sum VE$  score was a more useful predictor of motivational determinants of scientific performance than the other three motivational models. They reported that the  $\sum VE$  scores correlated significantly with a papers produced index at  $r = .29$  with  $p < .05$  level; with an unpublished report index at  $r = .30$  with  $p < .05$  level; and with a formal talk index at  $r = .33$  with  $p < .01$  level. The other three motivational approaches did not significantly correlate with the performance index scores.

Using Galbraith and Cummings' (1967) model, Lawler and Suttle (1973) tested the relationships of the  $E(\sum VI)$  expectancy measure and three different criteria measures, i.e., self-rating, supervisor-rating, and peer-rating of job performance, for 69 department managers in six retail

stores. They found that the expectancy measure was significantly related to self-rating of job performance at  $r = .39$  with  $p < .01$  level, and to the supervisor-rating of job performance at  $r = .28$  with  $p < .01$  level. They found that the expectancy measure was not significantly related to peer-rating of job performance.

Mitchell and Albright (1972) tested the Work Effort model  $[E(\sum VI)]$  with 51 naval aviation officers. They used both job effort and job performance criteria to verify the job effort scores. They found that the  $E(\sum VI)$  score was significantly related to the supervisor-rated job effort at  $r = .26$  with  $p < .05$  level, and to the self-rated job effort at  $r = .64$  with  $p < .01$  level. They also found that the  $E(\sum VI)$  score was significantly related to the supervisor-rated performance at  $r = .31$  with  $p < .05$  level, but there was no significant relationship between self-rated performance and the  $E(\sum VI)$  score. However, Mitchell and Nebeker's study in 1973 found that the self-rated effort which was measured by the average number of hours per week spent on academic activities was significantly related to the Work Effort model score at  $r = .23$  with  $p < .05$  level.

Arvey and Neel (1974) attempted to construct a better job effort criterion to verify the Work Effort model. They adopted Landy and Guion's (1970) motivational dimensions which contain team attitude, task concen-

tration, independence/self-starter, organization identification, job curiosity, persistence, and professional identification for measuring the job effort. They found that the  $E(\sum VI)$  score was not significantly related to the supervisor-rated job effort.

From these studies it is seen that there are a variety of ways to test the Work Effort model  $[E(VI)]$  and the Force to Perform model (VE). The results are not as consistent as those found when testing the valence of performance model (VI). Many studies did not differentiate between expectancy (probability) and instrumentality (association) of valence of outcomes. However, most of the studies provide some support for the Force to Perform (VE) and Work Effort  $[E(VI)]$  models. These findings show generally better results when using self-ratings rather than supervisor-ratings of job effort and job performance. While these studies were generally supportive of the hypothesized linkages, the findings are not as dependable as those produced by the Valence of Performance model (VI).

#### Self-Esteem and Locus of Control as Moderators of the Expectancy Models

Vroom's (1964) expectancy models of work motivation are cognitive models primarily based on a person's perception of his or her environment. The measurements of

the strength of the link between effort and performance, and between performance and outcomes, rely on one's perception. The accuracy of one's perception of his or her environment in turn is influenced greatly by his or her basic personality. One's basic personality as reflected in a person's self-esteem and locus of control, is a function of a lifetime of learning and experience. This learning and experience serves to shape one's particular perception of his or her work environment.

Korman's study in 1970 claims that work behavior is based on implementation of a self-concept. His definition of the self-concept is the extent to which a person sees himself or herself as a competent, need-satisfying individual. This self-concept is at the core of what is frequently referred to as self-esteem and is important for understanding expectancy and the work effort relationships people have.

Korman (1970) used his consistency hypothesis to test his claims. He hypothesized that incentives would have little effect as motivators of performance if individuals believed that they were incapable of achieving the necessary level of performance. Korman (1970) found that the relationship between expectancy and performance was higher for individuals with high self-esteem than low self-esteem at  $t = 2.00$  with  $p < .025$  level for a one tail test.

Lawler (1971) suggested in his book, Pay and Organizational Effectiveness, that the perceptions of the effort and performance linkage and the performance and outcome linkage are influenced by an individual's self-concept of his or her work behavior. Specifically, he hypothesized that self-esteem was related to the perception of the effort performance linkage, and locus of control was related to one's perception of the performance and outcome linkage. However, he did not test these hypotheses.

Gavin (1973) applied Porter and Lawler's (1968) expectancy model to examine the implications of Korman's consistency hypothesis for predictions of work behavior. Gavin (1973) found that the correlation of the high self-esteem group and the expectancy rating (E) were  $r=.34$  at  $p < .01$  level in the first performance rating and  $r=.30$  at  $p < .01$  level in the second performance rating. Both ratings were made by the employees' supervisors. The correlations for the low self-esteem group and the expectancy rating (E) were  $r= .21$  at  $p<.01$  level in the first performance rating but were not significant in the second performance rating. Gavin's (1973) findings thus do not provide clear support for Korman's consistency hypothesis.

Lied and Pritchard (1976) examined the relationship between self-esteem and the components (VE, VI, and

E(VI)) of the expectancy model linkages. They did not find a single significant relationship. Later in 1978, Inkson (1978) examined Korman's (1970) consistency hypothesis of work motivation without involving expectancy models. He hypothesized that work performance was correlated with work satisfaction for the high self-esteem workers, but not for the low self-esteem workers. Inkson's (1978) study provided only weak support for Korman's hypothesis. He found that the high self-esteem workers who were measured by a Job Descriptive Index questionnaire (Smith, Kendall, & Hulin, 1969) correlated significantly with work satisfaction at  $r=.27$  with  $p < .01$  level and with supervision satisfaction at  $r=.32$  with  $p < .01$  level. None of the other correlations between high self-esteem workers and the satisfaction measures (pay, promotions, and coworkers) reached a significant level. The low-self esteem workers correlated significantly only with supervision satisfaction at  $r=.33$  with  $p < .01$  level, but not with work, pay, promotion, and co-worker satisfaction.

Lawler's (1971) study also suggested that an individual's internal-external locus of control moderates his or her perception of the strength of the link between performance and outcomes. The locus of control refers to the degree that an individual's perception of success and failure is contingent upon one's initiative. Rotter's

(1966) learning theory indicates that a high internal control person perceives effort to be largely instrumental in attaining success. A person with a low internal locus of control perceives success and failure as unrelated to ability and effort. An individual with a low internal locus of control tends to perceive a negative payoff to his or her initiative.

Research findings on the effects of locus of control on work motivation have strong support. Lessing (1969), studying black students, found beliefs in internal control to be related to high performance. Organ and Greene (1974), studying scientists and engineers, found that low internal control-oriented persons relate strongly with role ambiguity and work dissatisfaction.

Broedling (1975) correlated components of expectancy models with internal-external locus of control for 80 naval officers and 127 enlisted naval personnel. He found that the correlations between locus of control and components of expectancy models are consistently significant and ranged from  $r = -.27$  with  $V$ ,  $r = -.39$  with  $\sum VI$ ,  $r = -.28$  with  $E$ , and  $r = -.38$  with  $E(\sum VI)$  at  $p < .01$  level. The negative direction of the correlations indicates that higher internal locus of control-oriented persons tend to score higher on all components of the expectancy model.

Broedling (1975) also correlated locus of control scores and ratings of effort by supervisor, by peers,



and by self, and ratings of performance by supervisor and by peers. The results for the effort ratings are significant only for supervisor ratings with  $r = -.20$  at  $p < .05$ . No significant relationships were found with ratings of effort by peers and by self. The results for the performance ratings are  $r = -.19$  ( $p < .05$ ) and  $r = -.17$  ( $p < .05$ ) for ratings by supervisors and by peer respectively. These results show that internal-oriented persons tend to put more effort in work, and tend to be better performers than external oriented persons.

Lied and Pritchard (1976) examined relationships between locus of control and components of expectancy theory. They also found that internal locus of control correlates with valence of performance ( $\sum VI$ ) with  $r = -.20$  ( $p < .05$ ), with force to perform ( $\sum VE$ ) with  $r = -.40$  ( $p < .01$ ), with valence ( $V$ ) with  $r = -.15$ , and with work effort  $E(\sum VI)$  with  $r = -.42$  ( $p < .01$ ).

The above studies indicate that high self-esteem persons or internal control-oriented persons tend to manifest a better work performance. In general, the findings support the cognitive model of expectancy theory that a person's behavior has a close tie with one's expectancy beliefs in a rational way. When persons are less rational, their level of self-esteem and their locus of control orientation may influence their perceptions. This means that certain types of people might

indeed be able to report valence, expectancy, and instrumentality more accurately than others. The inclusion of self-esteem and the locus of control variables in the study of expectancy models may thus enhance the predictive power of working behaviors.

### Summary

This section has reviewed the basic findings of two major linkages of the expectancy theory paradigm. In addition, the effects of the personality variables of self-esteem and locus of control on two major linkages are reviewed.

The strength of the linkage specifies the force of an individual to exert a specific amount of work effort. The personality variables of self-esteem and locus of control are modifiers of these linkages. The effort-performance expectancy linkage ( $E \longrightarrow P$ ) describes the perceived likelihood that hard work will lead to successful performance and the valence of achieving good performance. The performance-outcome ( $P \longrightarrow O$ ) linkage describes the perceived likelihood that successful performance will result in the securing of desired outcomes or rewards and the valence of these outcomes. Findings on these linkages and the effects of self-esteem and locus of control on the components of expectancy theory are summarized below in Table 1.

Table 1  
Summary of Findings

Study	Model	Results	p
1. The Performance-Outcome Linkage			
A. Predictions of Occupational Preference			
Vroom, 1966	$\Sigma VI$	VI index varies from +1 to -1 On a scale from 1 to 11 the $\Sigma VI$ score was .58 for those occupations with a rating of 11, and .03 for those occupations with a rating of 5 or below	positive support
Wanous, 1972	$\Sigma VI$	VI scores correlate with organizations satisfactions	.001
B. Predictions of Job Satisfaction			
Graen, 1969	$\Sigma VI$	r = .03 for money rewards were designed not to be contingent on perform	ns
Schuster, Clark, & Rogers, 1971	$\Sigma VI$	motivational role of pay	ns
Mitchell & Albright	$\Sigma VI$	r = .57 overall satisfaction	.01
Pulakos & Schmitts, 1983	$\Sigma VI$	external satisfaction 9 months after r = .02 existence	ns
	$\Sigma VI$	r = .04 relatedness	ns
	$\Sigma VI$	r = .00 growth	ns
Pulakos & Schmitts, 1983	$\Sigma VI$	internal satisfaction 9 months after r = .16 existence	.05
	$\Sigma VI$	r = .11 relatedness	.05
	$\Sigma VI$	r = .13 growth	.05
Pulakos & Schmitts, 1983	$\Sigma VI$	external satisfaction 20 months after r = .11 existence	.05
	$\Sigma VI$	r = .20 relatedness	.05
	$\Sigma VI$	r = .17 growth	.05

Table 1--Continued

Study	Model	Results	p
Pulakos & Schmitts, 1983	$\Sigma VI$	internal satisfaction 20 months after existence	.05
	$\Sigma VI$	r = .22 relatedness	.05
	$\Sigma VI$	r = .21 growth	.05
C. Measurement of Valence of Performance			
Dachler & Mobly, 1973	$\Sigma VI$	r = .92 at plant 1	.01
	$\Sigma VI$	r = .66 at plant 2	.01
Mitchell & Nebeker, 1973	$\Sigma VI$	r = .71 attitude toward performance	.01
2. The Effort-Performance Linkage			
Georgopoulos, Mahoney, & Jones, 1973	$\Sigma VE$	% of hi-producers was hi-productivity-help > lo-productivity-hurt hi-need > lo-need free-from-constraining > not-free-from constraining	.05
Lawler & Porter, 1967	$\Sigma VE$	r = .27 supervisor effort	.10
	$\Sigma VE$	r = .30 peer effort	.05
	$\Sigma VE$	r = .44 self effort	.01
Lawler, 1968	$\Sigma VE$	r=.44 time 1 superv. ratings	.05
	$\Sigma VE$	r=.52 time 2 superv. ratings	.01
	$\Sigma VE$	r=.52 time 1 peer ratings	.01
	$\Sigma VE$	r=.30 time 2 peer ratings	ns
	$\Sigma VE$	r=.43 time 1 self ratings	ns
	$\Sigma VE$	r=.48 time 2 self ratings	.01
Gavin, 1971	$\Sigma VE$	r = .28 supervisor performance	.01
Goodman, Rose, & Furcon, 1970	$\Sigma VE$	r = .29 papers produced	.05
	$\Sigma VE$	r = .30 unpublished report	.05
	$\Sigma VE$	r = .33 formal talk	.01
Evans, 1970	$\Sigma VI$	r = .26 high performance	.001
	$\Sigma VI$	r = .40 low performance	.001
	$\Sigma VI$	r = .42 individual care	.05
	$\Sigma VI$	r = .28 adequate care	ns

Table 1--Continued

Study	Model	Results	p
Galbraith & Cummings, 1967	E( $\Sigma$ VI)	t = 2.93 supervisor support	.01
	E( $\Sigma$ VI)	t = 2.32 money	.05
Lawler & Suttle, 1973	E( $\Sigma$ VI)	r = .39 self-rating	.01
	E( $\Sigma$ VI)	r = .28 supervisor rating	.01
	E( $\Sigma$ VI)	r = .16 peer rating	ns
Mitchell & Albright, 1972	E( $\Sigma$ VI)	r = .26 supervisor effort	.05
	E( $\Sigma$ VI)	r = .64 self-effort	.01
	E( $\Sigma$ VI)	r = .26 supervisor-effort	.05
Mitchell & Albright, 1972	E( $\Sigma$ VI)	r = .31 supervisor perform	.05
	E( $\Sigma$ VI)	r = .19 self-performance	ns
Mitchell & Nebeker, 1973	E( $\Sigma$ VI)	r = .23 hours spent	.05
Arvey & Neil, 1974	E( $\Sigma$ VI)	r = .21 supervisor old	ns
	E( $\Sigma$ VI)	r = .03 supervisor young	ns

### 3. Self-Esteem and Locus of Control as Moderators

#### A. Self-Esteem

Korman, 1970	E	t = 2.00 performance(HSE vs LSE)	.025
Gavin, 1973	E	r = .34 1st performance rate(HSE)	.01
	E	r = .30 2nd performance rate(HSE)	.01
	E	r = .30 1st performance rate(LSE)	.01
	E	r = .17 2nd performance rate(LSE)	ns
Lied & Pritchard, 1976	$\Sigma$ VE	r = .05 with self-esteem	ns
	$\Sigma$ VI	r = -.10 with self-esteem	ns
	V	r = -.08 with self-esteem	ns
	E( $\Sigma$ VI)	r = -.02 with self-esteem	ns
Inkson, 1978	Perform	r = .27 work satisfaction vs HSE	.01
	-Scores	r = .32 supervisor satis. vs HSE	.01
		r = .33 supervisor satis. vs LSE	.01

#### B. Internal-External Locus of Control

Broedling, 1975	V	r = -.27 with I-E score	.01
	$\Sigma$ VI	r = -.39 with I-E score	.01
	E	r = -.28 with I-E score	.01

Table 1--Continued

Study	Model	Results	p
	E( $\Sigma$ VI)	r= -.38 with I-E score	.01
		r= -.20 I-E & superv. effort rate	.05
		r= -.15 I-E & peer effort rating	ns
		r= -.14 I-E & self effort rating	ns
		r= -.19 I-E & superv. perform rate	.05
		r= -.17 I-E & peer perform rating	.05
Lied &	$\Sigma$ VI	r= -.20 with I-E score	.05
Pritchard	$\Sigma$ VE	r= -.40 with I-E score	.01
1976	V	r= -.15 with I-E score	ns
	E( $\Sigma$ VI)	r= -.42 with I-E score	.01

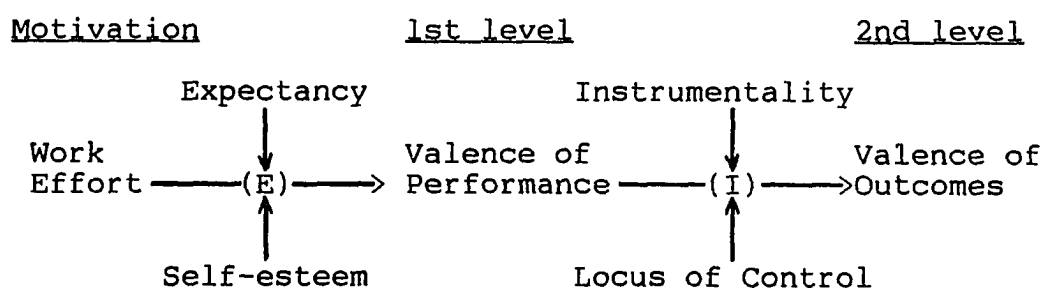
## A Theoretical Framework

This study will focus on the effects of personality variables in measuring the components of expectancy models for predicting job behaviors. The personality variables which will be examined are self-esteem and internal-external locus of control. Vroom's (1964) Force to Perform model (VE) and Valence of Performance model (VI) and Galbraith and Cummings' (1967) Work Effort model [E(VI)] will be the basis for predicting job behavior variables such as job involvement, propensity to stay, job advancement, recognition, and job performance.

Personality here is defined as a pattern of stable predispositions that determine an individual's behavior and that make one individual distinctive in comparison with another. Self-esteem and internal-external locus of control reflect the durable traits and opinions that are derived from an individual's genetic makeup and conditioning by cultural norms and experience.

What then is the relationship between an individual's personality factors and the components of expectancy models? Lawler (1971) suggested that personality factors can cause individuals' perceptions of the performance-outcome instrumentality linkage to diverge from reality. Rotter's (1966) internal-external locus of control schedule measures people's belief in internal versus external control for attaining desired outcomes. It

means that persons with a high internal control orientation perceive that they can control what happens to them and what outcomes they obtain. On the contrary, persons with a low internal control orientation perceive that they cannot control what happens to them and what outcomes they obtain. Studies of Broedling (1975) and Lied and Pritchar (1976) support the contention that high internal-control persons are generally better motivated to perform well because they see a strong connection between their behavior and the goal they seek. These research data indicate that the personality variable of internal-external locus of control has an influence on the perception of the instrumentality of a performance level as leading to the attainment of other outcomes (see Figure 7).



**Figure 7. An Extended Framework for Vroom's (1964) Work Motivation**

Lawler (1971) also hypothesizes that an individual's self-esteem intervenes in the linkage between effort and performance for Vroom's (1964) Force to Perform model.



Self-esteem is defined as an attitude which consists of favorable or unfavorable, and worthy or unworthy feelings towards the self. One's self-esteem is a function of a lifetime of learning and experience. Korman (1970) supports this definition of self-esteem and claims that work behavior is based on implementation of self-esteem. Lawler (1971) hypothesizes that low self-esteem individuals tend to believe that they cannot perform well; therefore, they are generally poor estimators of their own ability to successfully carry out certain tasks. By contrast, high self-esteem individuals tend to have a realistic effort-performance expectancy linkage. Therefore, they respond more predictably to their working conditions. Korman's (1970) findings and Lawler's (1971) assumptions thus suggest that self-esteem has an intervening influence on the effort-performance expectancy linkage (Figure 7).

Galbraith and Cummings (1967) combined Vroom's (1964) two expectancy models. They began by distinguishing between first-level and second-level outcomes. A first-level outcome is a given performance level. A second-level outcome is a reward to which the given performance level is expected to lead. Consequently, the personality variable of self-esteem intervenes in the perception of expectancy (E) at the first level outcome, and the personality variable of inter-external locus

of control intervenes in the perception of instrumentality (I) at the second level outcomes (see Figure 7).

A cognitive model such as expectancy theory is predicated on the belief that a person's behavior is strongly influenced by expectancy beliefs in a rational way. Some individuals are less rational than others. When persons are less rational, their level of self-esteem and their orientation toward locus of control will influence their perception. Certain types of people might, therefore, not be able to report their instrumentalities and expectancies as accurately as others. For this study, all things being equal, self-esteem is considered to be an intervening variable in the linkage of the effort performance expectancy and internal-external locus of control is considered to be an intervening variable in the linkage of the performance outcome instrumentality within the expectancy theory.

### Hypotheses

For this study, the major hypotheses are looking for the relationships between independent variables [ $\sum VE$ ,  $\sum VI$ , and  $E(\sum VI)$ ], and dependent variables (job involvement, propensity to leave, job advancement, recognition, job performance) with or without considering intervening variables (self-esteem and locus of control). The hypoth-

eses are presented as follow.

1. Valence of Performance (VI) has a significantly positive correlation with the dependent variables.

2. Force to Perform (VE) has a significantly positive correlation with the dependent variables.

3. Work Effort [E(VI)] has a significantly positive correlation with the dependent variables.

4. Self-esteem has a significantly positive effect on the relationship between Force to Perform (VE) and the dependent variables.

5. Internal-external locus of control has a significantly positive effect on the relationships between Valence of Performance (VI) and the dependent variables.

6. Self-esteem and internal-external locus of control have significantly positive effects on the relationships between Work Effort [E(VI)] and the dependent variables.

7. The high self-esteem group will have a higher positive correlation than the low self-esteem group for the relationships between Force to Performance (VE) and the dependent variables.

8. The high self-esteem group will have a higher positive correlation than the low self-esteem group for the relationships between Work Effort [E(VI)] and the dependent variables.

9. The high internal locus of control group will

have a higher positive correlation than the low internal locus of control group for the relationships between Valence of Performance (VI) and the dependent variables.

10. The high internal locus of control group will have a higher positive correlation than the low internal locus of control group for the relationships between Work Effort [E(VI)] and the dependent variables.

11. The expectancy model predictors (VI, VE, & E(VI)) have significantly positive correlations with the dependent variables for the management group.

12. The expectancy model predictors (VI, VE, & E(VI)) have significantly positive correlations with the dependent variables for the computer programmer group.

13. The expectancy model predictors (VI, VE, & E(VI)) have significantly positive correlations with the dependent variables for the system and technical programmer analyst group.

14. The expectancy model predictors (VE, VI, & E(VI)) have significantly positive correlations with the dependent variables for the male group.

15. The expectancy model predictors (VE, VI, & E(VI)) have significantly positive correlations with the dependent variables for the female group.

## CHAPTER III

### STUDY DESIGN AND METHODOLOGY

For this study, the data to test the hypotheses were collected by means of a questionnaire survey. This Chapter is concerned with the sample, the operational definitions of the variables in the hypotheses, the survey instrument and data collection procedures, and the data analysis procedures.

#### Sample

The Bureau of Information Systems (BuIS) of the Michigan Department of Social Services (MDSS) was selected as the site for this study. BuIS is a data processing service bureau. The primary missions of the BuIS are to develop and to maintain the welfare service systems and the administrative support systems for the Michigan Department of Social Services. There are four divisions under the BuIS organization: the System Development Division, the Technical Support Division, the Planning and Administrative Division, and the Operations Division. BuIS has 376 employees and an annual budget of more than \$22 million.

The study's population is the 178 data processing

professionals of the System Development Division and the Technical Support Divisions of BuIS. The data processing professionals are classified into data system analysts, technical programmer analysts, computer programmers, and data system managers. There are 35 managers, 105 system analysts and technical programmer analysts, and 38 computer programmers.

Data system analysts are responsible for most of the data processing system designs, including designing new systems or changing existing systems, consulting users with system problems, maintaining systems and solving system production problems. They are classified by civil service as professionals. Technical programmer analysts are responsible for maintaining the vendor-supported operating systems and for developing software to effectively utilize the computer resources. They are also classified by civil service as professionals. Computer programmers are responsible for developing, testing, and debugging computer programs. They are classified by civil service as para-professionals. Most managers are promoted from the data system analyst classification, and are also classified as professionals.

In general, the data processing jobs involve system users' contacts, detailed and creative assignments, and some clerical activities. They are generally described as having considerable variety in their work and respon-

sibility. Although the "pace" of work is determined by the mandated requests of the system users, both system analysts and computer programmers have considerable control over the pace of their activities. Managers are mostly responsible for planning, monitoring, directing and controlling system projects.

### Operational Definitions of Variables

To test the hypotheses presented in Chapter II, this study required the collection of data with a questionnaire survey about five dependent variables (job involvement, job advancement, recognition, job performance, and the propensity to stay), two intervening variables (self-esteem and internal-external locus of control), and three independent variables (valence, instrumentality, and expectancy). The expectancy model predictors ( $\sum VE$ ,  $\sum VI$ , and  $E(\sum VI)$ ) are multiplicatively constructed from these three independent variables. The definitions and operational definitions of these variables are as follow:

#### Measurement of Dependent Variables

A. Job involvement is the value one places on work in general and the motivation to perform on a particular job. It is measured by Lodahl and Kejner's (1965) short version job involvement schedule which consists of the

six items listed below:

1. The major satisfaction in my life comes from my job.
2. The most important things that happen to me involve my work.
3. I am really a perfectionist about my work.
4. I live, eat, and breathe my job.
5. Most things in life are more important than work.
6. I am very much involved personally in my work (p. 29).

A four point response scale is adopted. It is scored 4 for strongly agree; 3 for agree; 2 for disagree; and 1 for strongly disagree. Item 5 is scored in reverse: 4 for strongly disagree; 3 for disagree; 2 for agree; and 1 for strongly agree, because of the negative statement framed in the item. The responses are averaged. Thus, the possible range is 1 to 4. Therefore, the higher the job involvement score is, presumably the higher the respondent's feeling of job involvement. With a sample of 147 responses by the BuIS data processing employee, the reliability alpha coefficient is .6521 for this schedule.

B. Propensity to stay is the value one places on the current job. It is measured by using House and Rizzo's (1972) items. There are two items for measuring propensity to stay.



1. What are your plans to stay with state government  
(Please check only one)?
  - a. ☐ I would like to stay all my working life.
  - b. ☐ I would leave only for an exceptional opportunity.
  - c. ☐ I will leave if something better turns up.
  - d. ☐ I hope for a chance to leave under favorable circumstances.
  - e. ☐ I expect to leave as soon as possible.
  
2. Which of the following circumstances expresses  
your attitude about staying with the state  
government. (Please Check only one)
  - a. ☐ I would not consider leaving under any circumstances.
  - b. ☐ I would leave for promotion and 20% increase in pay.
  - c. ☐ I would leave for same kind of job, 20% increase in pay.
  - d. ☐ I would leave for same kind of job, same pay, more challenge.
  - e. ☐ I would leave for same kind of job, same pay (p. 498).

The first item measures different degrees of job-pay combination attitudes. The second item measures more general statements of desire to stay or leave. Each item is scored 1 to 5 (a for 5, b for 4, c for 3, d for 2, and e for 1). The individual responses are averaged, so the possible range, like the items themselves, is from 1 to 5. A higher score indicates a higher desire to stay.

C. Job advancement is the value measuring the extent of a person's advancement during the last ten years of his or her employment as a data-processing professional in State government. The job advancement value is calculated by the person's current pay grade minus his or

her initial pay grade divided by years of services.

Each pay grade consists of five steps. An employee can be promoted to the next higher pay step of the same pay grade after one year. An employee also can be promoted to the same pay step of the next pay grade after one year. An employee can also be promoted to the next higher pay step or higher pay grade in less than one year if his or her performance is outstanding. From these data-processing career paths, a job advancement index is calculated as follows:

Let: CC = the current job classification level.

CS = the current pay step level within the job classification level.

HC = the hired job classification level.

HS = the hired pay step level within the job classification level.

LE = the length of employment.

ST = a constant 5 for five pay stepswhere:

$$\text{Job Advancement} = (((\text{CC} - \text{HC}) * \text{ST}) + (\text{CS} - \text{HS})) / \text{LE}$$

Therefore, a higher job advancement score represents better performance. The possible value range is 0 to 20.

The data for the job advancement index calculation are obtained from items 1 to 5 of section IV of the questionnaire (see Appendix A, section IV). Item 1 provides the current pay grade classification (CC). Item 3 provides the hired-in pay grade classification (HC). For

items 1 & 3, it is scored 10 for departmental Analyst XII, 9 for XI, 8 for X, 7 for IX. It is scored 8 for data system analyst manager X, 7 for IX, and 6 for VIII. It is scored 5 for data system analyst VII, 4 for VIB, 3 for V. It is scored 4 for computer programmer VI, 3 for V, 2 for IV, and 1 for III. Finally, the technical programmer analyst VII is scored 5, VIB is scored 4, and V is scored 3. The same scoring rule applies to item 2 of the current pay step, and item 4 of the hire-in pay step. Items 2 and 4 are scored 1 for pay step first year, 2 for second year, 3 for third year, 4 for fourth year, and 5 for fifth year. Item 2 provides the CS score. Item 4 provides the HS score. Item 5 provides the length of service score (LE). It is scored 0 for less than 1 year; 1 for 1 to 2 years; 2 for 2 to 3 years; 3 for 3 to 4 years; 4 for 4 to 5 years; 5 for 5 to 6 years; 7 for 7 to 8 years; 8 for 8 to 9 years; 9 for 9 to 10 years; 10 for 10 to 11 years; and finally 11 for more than 11 years.

D. Recognition is the value measuring the extent of a person's outstanding performance during the last four years of his or her employment as a data processing professional in State government. The recognition value is calculated by the number of commendation letters, memos, and citations persons received for their good performance in the past four years plus the number of early pay step increases.

The recognition value is calculated from the number of early pay step increases divided by years of service plus the number of letters of commendation, citations for a job well done and memos of achievement divided by 4 (see Appendix A, Section IV, items 8 & 9). The possible range is 0 to 20. A higher recognition value indicates better performance.

E. Job performance is the value measuring the extent of a person's good overall performance. The performance value is calculated by adding the job advancement value and the recognition value. The higher performance score indicates better performance. The possible value range is 0 to 40.

#### Measurement of Intervening Variable

A. Self-esteem is the value measuring the extent to which persons see themselves as need-satisfying and competent individuals. It is measured by Rosenberg's (1965) short version self-esteem schedule which is listed below:

1. I feel that I'm a person of worth, at least on an equal plane with others.
2. I feel that I have a number of good qualities.
3. All in all, I tend to feel that I am a failure.
4. I am able to do things as well as most other people.

5. I feel I do not have much to be proud of.
6. I take a positive attitude toward myself.
7. On the whole I'm satisfied with myself.
8. I wish I could have more respect for myself.
9. I certainly feel useless at times.
10. At times I think I'm no good at all (p. 305).

This scale is scored from 1 to 5. Items 1, 2, 4, 6, and 7, which are positive in terms of self-esteem, are scored 5 for strongly agree, 4 for agree, 3 for neutral, 2 for disagree, and 1 for strongly disagree. Items 3, 5, 8, 9, and 10, which are negative in terms of self-esteem, are score 1 for strongly agree, 2 for agree, 3 for neutral, 4 for disagree, and 5 for strongly disagree. Therefore, the higher score indicates higher self-esteem. Since the responses to the items are averaged, the possible range is 1 to 5. An alpha coefficient for this schedule is .7222 for this study sample.

B. Internal-external locus of control is the extent to which peoples' perceptions of their success and failure are contingent upon their initiative. Rotter's (1966) short version locus of control schedule is used to measure this variable. The items in the schedule are listed below:

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

2. In the long run, people get the respect they deserve in this world.
3. Without the right breaks, one cannot be a good leader.
4. What happens to me is of my own doing.
5. Becoming a success is a matter of hard work; luck has little or nothing to do with it.
6. When I make plans, I am almost certain that I can make them work.
7. In my case, getting what I want has little or nothing to do with luck.
8. Who gets to be boss often depends on who was lucky enough to be in the right place first.
9. Most people don't realize the extent to which their lives are controlled by accidental happenings.
10. Many times I feel that I have little influence over the things that happen to me.
11. In the long run, the bad things that happen to us are balanced by the good ones (p. 12).

Each item above is scored from 1 to 5. Items 1, 3, 8, 9, 10, and 11, which are external-oriented statements, are scored 1 for strongly agree, 2 for agree, 3 for neutral, 4 for disagree, and 5 for strongly disagree. Items 2, 4, 5, 6, and 7, which are internal-oriented statements, are scored 5 for strongly agree, 4 for agree, 3 for neutral, 2 for disagree, and 1 for strongly disagree. Therefore, a higher score indicates a higher internal (lower external) locus of control. The items are averaged so the possible range is from 1 to 5.

According to a National Longitudinal Survey, this 11 item scale has an internal consistency reliability of .746 on the data collected in 1969 and .749 on the data collected in 1971 (The National Longitudinal Surveys' handbook, 1973). An alpha coefficient of this scale for this study sample is .7028.

#### Measurement of Independent Variables

A. Expected Outcomes are developed to measure valence (V), expectancy (E), and instrumentality (I) components of the expectancy theory model. Adapting Fishbein's (1963) attitude theory of belief about an object and the evaluation associated with that belief, this study developed the common expected outcomes around the concept of working hard. The selection of expected outcomes for the BuIS questionnaire involved a pretest survey and a factor analysis of the findings from the pretest. The details follow.

A list of some 36 common outcomes relating to working hard that have been used frequently in prior studies was assembled (see Appendix B). A pretest questionnaire with items about these 36 outcomes of working hard was administered to five data system managers, thirteen data system analysts, and fourteen computer programmers from the Bureau of Data Processing of the Michigan Department of Labor for the purpose of reducing the list to the most

common outcome items. The reason for going outside of the BuIS for the pretest sample was to avoid sensitizing the ultimate survey population to the research topic. The reason for selecting the data processing employees in the Michigan Department of Labor rather than some other employee group was to obtain perceived common outcomes relating to hard work from employees who hold similar jobs to the survey population.

An ideal list of common outcomes should consist of both the positively and negatively perceived consequences of hard work. Such a list should also include a variety of different and differently valued outcomes. Therefore, 17 items covering the range of high and low scores were selected from the 36 items in the pretest questionnaire. These included eleven items which had mean scores of higher than 3.812 and six items which had mean scores of less than 2.812 under the five point scale scoring system (see Appendix C). A factor analysis was performed on these 17 items. Five factors were obtained. The two items with the highest loadings on each factor were selected for use in this study (see Appendix D). The ten outcomes identified through the factor analysis are utilized in the measurement of both instrumentality and valence (see C and D below). The instrumentality and valence items concerning these outcomes are:



1. You will receive more compliments and praise from your supervisor.
2. You will receive less frequent checkups on your work by your supervisor.
3. You will get more work assigned to you.
4. You will receive a raise more quickly.
5. You will receive more attractive fringe benefits.
6. You will set a standard too high for other persons in the office.
7. You will have congenial work associates.
8. You will receive acceptance by others.
9. You will feel a contribution is being made to the organization.
10. You will be able to work in your special area of interest.

B. Expectancy (E) is the extent of a person's perception that effort will result in good performance. Two questionnaire items were constructed to measure how strongly the subjects believe that a given good performance level would in fact result from working hard on the job. Item 1 measures the effort to achieve high productivity expectancy. Item 2 measures the effort to achieve high job performance expectancy. The measure of expectancies uses a five-point scale ranging from 1 for never, 2 for seldom, 3 for occasionally, 4 for often, to 5 for always (see Appendix A, section II, A. Item 1 and 2). The responses to the items were averaged so the possible range is 1 to 5. Therefore, the higher the expectancy

score, the higher the perceived probability of achieving a good job performance.

C. Instrumentality (I) is the extent of a person's perception of an association between good performance on the job and the attainment of valued outcomes. The ten outcome items identified by the factor analysis described above were used for this measurement. The items measure how strongly the subjects believe that each of the ten outcomes would in fact result from their good job performance. The response categories are a five-point scale ranging from 1 for never, 2 for seldom, 3 for occasionally, 4 for often, to 5 for always (see Appendix A, section II, B). Since responses to the items were averaged, the possible range is 1 to 5. Therefore, a higher score on instrumentality represents a stronger perceived association between performance and outcomes. The reliability test of the ten outcome items measuring instrumentality yielded an alpha score of .7069 on the BuIS sample.

D. Valence is the degree of perceived attractiveness or unattractiveness of the outcomes experienced by a person while on the job. Valence is a scale composed of 12 items: two items measure the valence of the first level performance outcomes, and the 10 items identified by the factor analysis described above measure the valence of the second level outcomes (see Appendix A, section II, C). The response categories for each item

range from 1 for very desirable, 2 for undesirable, 3 for neutral, 4 for desirable, to 5 for very undesirable. Since the responses to the items were averaged, the possible range on this scale is 1 to 5. Therefore, the higher the valence score, the higher the attractiveness of these common outcomes.

E. Expectancy Model Predictors are the values measuring the extent of a person's work effort. Each person's expectancy model predictor score is calculated in accordance with the formulas cited for measuring Force to Perform ( $\sum VE$ ), Valence of Performance ( $\sum VI$ ), and Work Effort [ $E(\sum VI)$ ] using the valence (V), expectancy (E), and instrumentality (I) components.

The Force to Perform ( $\sum VE$ ) model predictor is calculated from the multiplication of the averaged valence score of the first level outcomes and the averaged expectancy score of achieving the first level outcomes. Since the scores for both the V and E components have a possible range of 1 to 5, the possible range for the Force to Perform model predictor is 1 to 25.

The Valence of Performance ( $\sum VI$ ) model predictor is calculated from the multiplication of the averaged valence score of the second level outcomes and the averaged instrumentality score of attaining the second level outcomes. Since the scores for both the V and I components have a possible range of 1 to 5, the possible

range for the Valence of Performance model predictor is 1 to 25.

The Work Effort [ $E(\sum VI)$ ] model predictor is calculated from the multiplication of the averaged expectancy score of the first level outcomes and the Valence of Performance ( $\sum VI$ ) model predictor score. The possible range is 1 to 125.

### Survey Instrument and Data Collection Procedures

The instrument used for collecting data for the above dependent, intervening, and independent variables was a self-administered questionnaire. The questionnaire also had a cover letter explaining the purpose of the survey from the Director of the School of Public Affairs and Administration. Each data processing professional received a copy of the self-administered questionnaire with a stamp-addressed envelope. The completed questionnaire was intended to be mailed directly to the Lansing Study Center of Western Michigan University.

The survey questionnaire consisted of the following four sections (the entire questionnaire is provided in Appendix A).

1. Section I consists of the short version of Lodahl and Kejner's (1965) job involvement scale with seven items. Item 3 is added as a filler to ensure participants' attention to the negatively stated item 6.

Each item is provided with a four-point response scale ranging from strongly agree, agree, disagree, to strongly disagree.

2. There are three parts in section II. Part A consists of two items which are designed to measure the participants' expectancy (E) of achieving good performance if they work hard. A five-point response scale ranging from never, seldom, occasionally, often, to always is used for the measurement of each item.

Part B consists of ten items which are designed to measure the perceived instrumentality (I) between the first-level performance outcomes and the 10 second-level outcomes. Each item is provided with a five-point response scale ranging from never, seldom, occasionally, often, to always.

Part C uses the 12 outcome items which are the same items used in Part A and Part B to measure the valence (V) of each outcome item. Each outcome item consists of a five-point scale ranging from very undesirable, undesirable, neutral, desirable, to very desirable.

3. Section III consists of 21 items. The first 11 items are Rotter's (1966) abbreviated version of the internal-external locus of control schedule. Each item is provided with a five-point response scale ranging from strongly agree, agree, neutral, disagree, to strongly disagree. The remaining ten items (item 11 to item 21)

are Rosenberg's (1965) short version of the self-esteem schedule. Each item is also provided with a five-point response scale ranging from strongly agree, agree, neutral, disagree, to strongly disagree.

4. Section IV consists of 13 items. Basic demographic data is collected in this section which includes: the participants' current job classification and pay step level, hired-in job classification and pay step level, the years of service as data processing professional, age, sex, the number of early pay step increases, the number of recognitions by "job well done" letters, citations, and memos, marital status, educational level, and two propensity to stay items. Each item of the propensity to stay includes five situation choices. Each participant is asked to select only one out of the five choices for each of the propensity to stay items.

#### Data Analysis Procedures

Descriptive statistics are used to describe the profile of the studied population. Pearson product-moment correlations are used for testing the hypotheses 1, 2, 3, 11, 12, 13, 14 and 15 about relationships between expectancy model predictors and the dependent variables (job involvement, the propensity to stay, job advancement, recognition, and job performance). Such correlations were computed for the sample as a whole and

for the subgroups of males and females, and of managers, computer programmers, and data system and technical programmer analysts.

A stepwise regression analysis is used for testing the hypotheses 4, 5 and 6 about the effects of the intervening variables suggested in this study as appropriate for use with the expectancy model predictor variables in predicting dependent variables. The regression formula at the second and third steps is established as follows:

$$P = a + b_1 X_1 + b_2 X_2 + b_3 X_3$$

P = dependent variables: job involvement, propensity to stay, job advancement, recognition, or job performance

X<sub>1</sub> = an expectancy model predictor:  
Force to Perform (VE) or  
Valence of Performance (VI) or  
Work Effort E(VI)

X<sub>2</sub> = self-esteem when X<sub>1</sub> is a VE model predictor or  
E(VI) model predictor;  
locus of control when X<sub>1</sub> is a VI model  
predictor

X<sub>3</sub> = locus of control when X<sub>1</sub> is an E(VI) model  
predictor.

The third step of the regression is used only for the Work Effort [ $E(\sum VI)$ ] model predictor. The b's are estimated using least squares. If b<sub>1</sub>, b<sub>2</sub>, or b<sub>3</sub> is significant, then the relevant variable is significant and exerts an effect independent of the others. The R-square changes are studied with or without intervening

variables in the regression formula.

A different statistical approach is also used for testing hypotheses 7, 8, 9 and 10 about the effects of two intervening variables in predicting the dependent variables. Two intervening variables are each dichotomized at their mean scores into high and low groups. The differences in the correlations between the expectancy model predictors and the dependent variables of the high and low groups for each intervening variable are computed.



## CHAPTER IV

### FINDINGS

#### Response to the Survey

There are 178 data processing professionals working in the Bureau of Information Systems (BuIS). A total of 150 employees responded to the survey questionnaire. Three responses were discarded due to incomplete data, leaving 147 correctly completed responses which were equivalent to 82% of the BuIS data processing professional population.

This sample consists of 103 males and 44 females. They are classified into three groups: management, professional, and para-professional. The management group consists of employees in the pay grades of Data System Analyst VIII to X or Departmental Analysts XIII or IX. There are 29 managers in this group. Four of the 29 managers are female. The professional group consists of employees in the pay grade of Data System Analyst IV to VII or Technical Programmer Analyst IV to VII. There are 84 analysts in this group which consists of 23 females and 61 males. The para-professional group consists of employees in the pay grade of Computer Programmer III to VI. There are 34 computer programmers in the

para-professional group, which has 17 females and 17 males.

In terms of educational background, 25.9% of the employees have high school diplomas; 34% have associate degrees; 35.4% have bachelor's degrees; and 4.8% have a master's degrees. There are 80.3% of the employees who are between the ages of 30 and 40 years old; 10.9% of the employees are less than 30 years old; and 8.8% of the employees are over 40 years old. All but one of the managers are over 35 years old. In terms of marital status, 97 employees are married and 50 employees are divorced or single. There are 101 employees who have served more than eight years as data processing professionals in state government. There are 35 employees who have served less than three years and 11 employees who have served more than four years but less than eight years.

#### Statistical Results for the Critical Variables

This study involves five dependent variables (job involvement, propensity to stay, job advancement, recognition, and job performance), two intervening variables (self-esteem and internal-external locus of control), and three independent variables (Force to Perform model predictor, Valence of Performance model predictor, and Work Effort model predictor). The descriptive statistics

for the critical variables are listed in Table 2.

Table 2

Descriptive Statistics for the Critical  
Variables in the Study

Variables	Effective Scale		Mean	STD DEV	Minimum	Maximum
Dependent Variables						
Job Involvement	1 to 4		2.33	0.38	1.33	3.67
Propensity to Stay	1 to 5		3.66	0.81	1.50	5.00
Job Advancement	0 to 20		2.38	1.65	0.00	10.00
Recognition	0 to 20		0.96	1.21	0.00	9.00
Job Performance	0 to 40		3.33	2.16	0.00	12.00
Intervening Variables						
Locus of Control	1 to 5		2.98	0.40	2.00	4.18
Self-Esteem	1 to 5		4.04	0.50	2.90	5.00
Independent Variables						
Valence (V)	1 to 5		3.76	0.48	1.58	4.58
Instrumentality(I)	1 to 5		2.90	0.46	1.40	4.20
Expectancy (E)	1 to 5		3.83	0.65	1.00	5.00
$\sum VE$	1 to 125		15.33	3.95	3.00	25.00
$\sum VI$	1 to 25		10.82	2.42	2.10	17.90
$E(\sum VI)$	1 to 125		42.00	13.59	8.80	83.00

STD DEV = Standard Deviation

Dependent Variables

The mean score of job involvement for the BuIS sample is 2.325 with a standard deviation of .383. This six item job involvement scale is measured by a four-point response scale. The higher score indicates a higher job involvement. Therefore, the mean score of 2.325 indicates that the BuIS sample has slightly lower job involvement than the midpoint of the job involvement scale. When Lodahl and Kejner (1965) tested 70 engineers

with their 20 item scale, they obtained a mean score of 2.869 with a standard deviation of .392 and a Sperman-Brown reliability coefficient of .80. Lodahl and Kejner (1965) did not report the mean and standard deviation for their six item version. However, they reported that the Sperman-Brown coefficient for their six item version was 0.73. Jones, James, and Bruni (1975) adopted a five-point response scale for the six item version; they obtained a mean of 2.93 with a standard deviation of .592 and an Alpha coefficient of 0.62.

The propensity to stay variable consists of two items (see Section IV, items 12 and 13). The first item is: What are your plans to stay in state government? Its mean score is 3.707 measured on a five-point scale. This mean value indicates that the respondents expect to leave state government only for an exceptional opportunity. The second item is: Which of the following circumstances expresses your attitude about staying with state government? Its mean score is 3.619, as measured also by a five-point scale. This similarly high mean indicates that the respondents would leave state government for a promotion and a 20% increase in pay, but are otherwise inclined to stay. The mean score for these two items combined is 3.663 with a standard deviation of .805. In general, the people in this sample are predisposed to stay with state government.

A recognition score has been developed for the data-processing professionals in BuIS. It is designed to measure a person's good performance by counting the number of early pay step increases divided by the length of service plus the number of commendation letters, memos, and citations due to good performance divided by 4. The mean score of 0.995 with a standard deviation of 1.206 is obtained for this sample. The highest score for this dependent variable is 9. The mean score indicates slightly less than one recognition per year for the BuIS employees.

A job advancement score was also developed for the sample. It is assumed that a high number of pay grade step increases within one's years of services indicates high productivity. The job advancement value for each employee is calculated by subtracting the initial pay grade from the current pay grade and dividing by years of service. The mean score on job advancement for this sample is 2.376 with a standard deviation of 1.652. The highest number of pay step increases in this sample is 10. Comparing to the normal twice a year job advancements (one step increase and one grade increase) under the civil service system, the mean score indicates a slightly higher than normal job advancement for the BuIS employees.

A job performance score is a combination of the job

advancement and recognition scores. The job performance score is designed to indicate an overall job performance level. Its mean score is 3.33 with a standard deviation of .497. The highest score for job performance is 12.

### Intervening Variables

Two intervening variables are measured in this study. One is Rotter's (1966) 11-item short version of the internal-external locus of control scale. Rotter's short version scale was tested by Andrisani and Nestel (1976) in the National Longitudinal Survey (1973). They reported a Kuder-Richardson internal consistency reliability of .746 in 1969 and .749 in 1971. This scale is scored from 1 to 5. The higher score indicates a higher internal locus of control orientation. The reliability test result of alpha is .7218 for the BuIS sample. Their internal locus of control mean score is 2.98 with a standard deviation of .399. Based on the midpoint of the internal locus of control scale, the BuIS employees possess relatively low internal locus of control.

The other intervening variable is self-esteem which is measured by Rosenberg's (1965) short version self-esteem scale. This scale is scored from 1 to 5. The higher score indicates a higher self-esteem orientation. The reliability coefficient Alpha is .7961 for the BuIS sample. Their self-esteem mean score is 4.039 with a

standard deviation of .497. Based on the midpoint of the self-esteem scale, the BuIS employees possess relatively high self-esteem.

### Independent Variables

The expectancy model predictor consists of three components (E, I, and V). The measurements of these components are based on two first-level performance outcome items and ten second-level outcome items.

The mean score for the expectancy (E) of achieving high productivity if one works hard (item 1) is 3.83 with a standard deviation of .686. The mean score for the expectancy (E) of achieving better performance if one works hard (item 2) is 3.83 with a standard deviation of .734. In general, these people score above the midpoint of the five-point expectancy scale. The expectancy mean score for these two performance items combined is 3.83 with a standard deviation of .653.

The mean score of the valence (V) for the high productivity item is 3.918 with a standard deviation of .736. The mean score of the valence for the first level performance outcomes is 4.04 with a standard deviation of .748. The BuIS employees perceive high productivity and better performance as attractive. The mean score for the valence (V) of 10 second level outcome items is 3.755 with a standard deviation of .475. The BuIS employees

thus perceive these ten outcomes as attractive.

The mean score for the variable Instrumentality (I) of ten second-level outcomes is 2.896 with a standard deviation of 0.456. The mean score of the instrumentality is slightly lower than the midpoint of a five-point scale.

Expectancy model predictors were computed multiplicatively from these three components. The mean score of the Force to Perform (VE) model predictor is 15.327 with a standard deviation of 3.952. The mean score of the Valence of Performance (VI) model predictor is 10.823 with a standard deviation of 2.416. The mean score of the Work Effort [E(VI)] model predictor is 41.998 with a standard deviation of 13.592. The mean of the Force to Perform (VE) model predictor is higher than the midpoint of a 25-point scale. However, the mean scores of the Valence of Performance (VI) model predictor is lower than the midpoint of the 25-point scale. Similarly, the mean of the Work Effort [E(VI)] model predictor is lower than the midpoint of a 125-point scale. These people have relatively low expectancy predictor scores.

#### Subgroup Comparisons of Expectancy Model Predictors

Previous studies, such as those of Vroom (1964) and Georgopoulos, Mahoney, and Jones (1957), indicate that the variations in expectancy model predictors are prima-



rily determined by characteristics of one's work roles. Therefore, an analysis of variance was computed to determine whether there were differences in expectancy model predictor scores among management, professional, and para-professional groups. Similar comparisons were sought with respect to the gender of the BuIS employees. The data in Table 3 show the results of analysis of variance for the expectancy model predictors among the three employee groups.

Table 3

**Analysis of Variance for Expectancy Model Predictors  
Predictors Among Management, Professional, and  
Para-Professional Groups**

	S. S. Between	S. S. Within	F Ratio	P
Force to Perform(VE)	33.84	2246.49	1.084	.340
Valence of Performance(VI)	62.57	789.87	5.704*	.004
Work Effort[E(VI)]	1462.94	22509.91	4.129*	.018

\* Significant at the  $p < .05$  level with two tailed tests.

The data in Table 3 show that there are no significant differences in mean of Force to Perform (VE) model predictor among management, professional, and para-professional groups. However, the means of the Valence of Performance (VI) and Work Effort [E(VI)] model predictors are significantly different among these three groups. Specifically, the Scheffé test indicates that there are significant differences in means between professional and

para-professional groups on both Valence of Performance (VI) and Work Effort [E(VI)] model predictors. The mean of 11.89 for the para-professionals on Valence of Performance is significantly higher than the mean of 10.31 for the professionals. Similarly the mean of 47.72 for the para-professionals on Work Effort is significantly higher than the mean of 40.07 for the professionals. There is no difference between the management and professional groups, or the management and para-professional groups on the expectancy models.

Table 4

The Differences between Male and Female Groups  
in the Expectancy Model Predictors

Model	Gender	Number Cases	Mean	STD DEV	D.F.	t	p
$\sum VE$	Female	44	15.32	4.36	145	-0.02	.99
	Male	103	15.33	3.79			
$\sum VI$	Female	44	10.93	2.46	145	0.34	.73
	Male	103	10.78	2.41			
E( $\sum VI$ )	Female	44	42.92	14.81	145	0.54	.59
	Male	84	41.60	13.09			

Significance at the  $p < .05$  level with two tailed tests.

This study also examines whether the variable of gender makes any significant differences in the expectancy model predictors. A t-test is computed to analyze the difference between male and female groups in the expect-

ancy model predictors. For this sample, there are no mean differences between males and females with respect to the expectancy model predictors. The data in Table 4 shows the results of t-tests between male and female groups on expectancy model predictors.

### Tests of Hypotheses

This section presents and discusses the findings for the testing of each hypothesis on the BuIS sample.

#### Hypotheses 1, 2, and 3

Hypotheses 1, 2 and 3 state that the  $\Sigma VI$ ,  $\Sigma VE$ , and  $E(\Sigma VI)$  model predictors are positively associated with job involvement, propensity to stay, job advancement, recognition, and job performance. The results of the tests of hypotheses 1, 2 and 3 are reported in Table 5.

Table 5

The Correlations Between Expectancy Model Predictors  
and Job Involvement, Propensity to Stay, Job  
Advancement, Recognition, and Job Performance

Independent Variable	$\Sigma VI$		$\Sigma VE$		$E(\Sigma VI)$	
Dependent Variable	r	p	r	p	r	p
Job Involvement	.04	.315	.10	.115	.08	.165
Propensity to Stay	.05	.266	.02	.414	.08	.174
Job Advancement	.21*	.004	.24*	.002	.24*	.002
Recognition	.23*	.003	.04	.314	.18*	.015
Job Performance	.29*	.001	.20*	.007	.28*	.001

\* Significant at the  $p < .05$  level with one tailed test.

The Pearson Product Moment Correlation and its significance test was selected as the appropriate statistic to determine whether there are statistically significant correlations between the expectancy model predictors and each of the five dependent variables. The findings show that none of the expectancy model predictors (VI, VE, & E(VI)) was found to have a significant correlation with the job involvement and propensity to stay dependent variables. On the other hand, all three expectancy model predictors were found to be significantly correlated with job advancement and job performance, and two of the three model predictors, Valence of Performance (VI) and Work Effort [E(VI)], were also found to be significantly correlated with recognition. For the  $\sum VI$  model predictor with job advancement, the  $r$  value of correlation is .21, and it is significant; with recognition, the correlation is .23, and it is significant; and with job performance, the correlation is .29, and it is significant. For the  $\sum VE$  model predictor with job advancement, the  $r$  value of correlation is .24 and it is significant and with job performance, the correlation is .20, and it is significant. The Force to Perform (VE) model predictor was found not to be significantly correlated with recognition. For the  $E(\sum VI)$  model predictor with job advancement, the  $r$  value of correlation is .24, and it is sig-

nificant; with recognition, the correlation is .18, and it is significant; and with job performance, the correlation is .28, and it is significant.

The findings in this study with respect to hypotheses 1, 2 and 3 are consistent with the findings of earlier studies which indicated that expectancy model predictors have a significant correlation with job performance (House, Shapiro, & Wahba, 1974). Though the job advancement, recognition, and job performance variables were developed using the career circumstances of BuIS employees, the results provide a potential utility of expectancy model predictors in the public sector. However, job involvement and propensity to stay are not significantly correlated with the  $\sum VI$ , the  $\sum VE$ , and the  $E(\sum VI)$  model predictors. There is a difference between the effectiveness of the expectancy model predictors on behavioral variables (job advancement, recognition and job performance) and attitude variables (job involvement and propensity to stay). This difference suggests a limited application of the expectancy model predictors.

#### Hypothesis 4

Hypothesis 4 states that self-esteem has a significantly positive effect on the relationship between the  $\sum VE$  model predictor and job involvement, propensity to stay, job advancement, recognition, or job performance.

For testing this hypothesis, a regression model is constructed as  $P = a + b_1 X_1 + b_2 X_2$  where  $P$  is the dependent variable;  $X_1$  is the  $\Sigma VE$  model predictor; and  $X_2$  is self-esteem. The data in Table 6 show the results of the stepwise regression analysis for the five dependent variables, the  $\Sigma VE$  model predictor and self-esteem.

Table 6

Regression Analysis of the Effect of the Variations  
of the Dependent Variables by the  $\Sigma VE$  Model  
Predictor and Self-Esteem

Dependent Variables	Control Variables	$R^2$	$R^2$ Change	F Change	F-Sig Change	$R^2$ F	$R^2$ P
Job Involvement	VE	.0099	-	-	-	1.46	.230
	VE+SE	.0103	.0004	.052	.820	.75	.470
Propensity to Stay	VE	.0003	-	-	-	.05	.830
	VE+SE	.0018	.0015	.209	.648	.13	.880
Job Advancement	VE	.0553*	-	-	-	8.48	.004
	VE+SE	.0652*	.0099	1.523	.219	5.02	.008
Recognition	VE	.0016	-	-	-	.24	.630
	VE+SE	.0492*	.0476*	7.211	.008	3.73	.030
Job Performance	VE	.0410*	-	-	-	6.20	.020
	VE+SE	.0802*	.0392*	6.141	.014	6.28	.002

\* Significant at the  $p < .05$  level with one tailed test.

SE is self-esteem.

VE is the Force to Perform model predictor.

The results of the stepwise regression analysis show that the  $\Sigma VE$  model predictor was found to have no statistical significant relationship with the job involvement and propensity to stay dependent variables. When self-

esteem was introduced as the second step in the regression analysis, the change of R-square in explaining the variations of the job involvement and propensity to stay dependent variables was found to be not significant. Therefore, hypothesis 4 is not supported with respect to the dependent variables job involvement and propensity to stay.

The  $\sum$ VE model predictor was found to have a significant relationship with the job advancement dependent variable. This model predictor alone is able to explain 5.53% of the variation of job advancement and it is significant. When self-esteem was introduced as the second step in the stepwise regression analysis, the change of R-square in explaining the variation of the job advancement dependent variable was found to be not significant. Therefore, hypothesis 4 is not supported with respect to job advancement.

The  $\sum$ VE model predictor was found to have no significant relationship with the recognition dependent variable. When self-esteem was introduced as the second step in the regression analysis, the change of R-square in explaining the variation of the recognition dependent variable was found to be 4.7%, and the R-square is significant. Hypothesis 4 did not propose that a direct relationship existed between self-esteem and recognition. Since there was no relationship between the  $\sum$ VE model

predictor and recognition in the first step of the regression analysis, the effect of self-esteem in explaining the variation of recognition in the second step can not be considered as making a contribution to the relationships between the  $\sum VE$  model predictor and recognition. Therefore, hypothesis 4 is not supported with respect to the recognition variable.

The  $\sum VE$  model predictor was found to have a significant relationship with the job performance dependent variable. This model predictor was found to be able to explain 4.1% of the variation of job performance, and the R-square is significant. When self-esteem was introduced as the second step of the regression analysis, the change of R-square in explaining the variation of the job performance variable was found to be 3.9% which is significant. The total R-square in explaining the job performance variable due to the  $\sum VE$  model predictor and self-esteem combined was 8%, and it is significant. For the BuIS sample, self-esteem has a significant effect in explaining the variation of job performance. Therefore, hypothesis 4 is supported with respect to the job performance dependent variable.

Though there are significant result in explaining the variation of job advancement, recognition, and job performance, the R-square changes due to self-esteem are not of a consistent pattern and are generally low where



significant in this sample. The support for hypothesis 4 is at best weak.

### Hypothesis 5

Hypothesis 5 states that locus of control has a significantly positive effect on the relationship between the  $\sum VI$  model predictor and job involvement, propensity to stay, job advancement, recognition, and job performance. For testing this hypothesis, a regression model is constructed as  $P = a + b_1 X_1 + b_2 X_2$  where  $P$  is the dependent variable;  $X_1$  is the  $\sum VI$  model predictor; and  $X_2$  is locus of control. The data in Table 7 show the results of stepwise regression analysis for the five dependent variables, the  $\sum VI$  model predictor and locus of control.

The results of the stepwise regression analysis show that the  $\sum VI$  model predictor was found to have no significant relationship with the job involvement and propensity to stay dependent variables. When self-esteem was introduced as the second step in the regression analysis, the changes of R-square in explaining the job involvement and propensity to stay variables were also found to be not significant. The effect of locus of control on the relationship between the  $\sum VI$  model predictor and job involvement and propensity to stay dependent variables is not significant. Therefore, hypothesis 5 is

not supported with respect to the job involvement and propensity to stay dependent variables.

Table 7

Regression Analysis of the Effect of the Variations  
of the Dependent Variables by the  $\Sigma$ VI Model  
Predictor and Locus of Control

Dependent Variables	Control Variables	R <sup>2</sup>	R <sup>2</sup> Change	F Change	F-Sig Change	R <sup>2</sup> F	R <sup>2</sup> P
Job Involvement	VI	.0016	-	-	-	.23	.630
	VI+IE	.0026	.0010	.149	.700	.19	.830
Propensity to Stay	VI	.0027	-	-	-	.39	.530
	VI+IE	.0027	.0000	.000	.978	.20	.820
Job Advancement	VI	.0461*	-	-	-	7.01	.009
	VI+IE	.0531*	.0070	1.642	.304	4.04	.020
Recognition	VI	.0510*	-	-	-	7.80	.006
	VI+IE	.0791*	.0281*	4.397	.038	6.19	.003
Job Performance	VI	.0845*	-	-	-	13.38	.001
	VI+IE	.1094*	.0249*	4.023	.047	8.84	.001

\* Significant at the  $p < .05$  level with one tailed test.  
IE is internal-external locus of control.  
VI is the Valence of Performance model predictor.

The  $\Sigma$ VI model predictor was found to have a significant relationship with the job advancement dependent variable. This model predictor is able to explain 4.6% of the variation of the job advancement dependent variable, and the R-square is significant. When locus of control was introduced as the second step in the regression analysis, the change of R-square in the second step in explaining the variation of the job advancement depen-

dent variable was not significant. Although the total R-square in explaining the variation of the job advancement dependent variable due to the  $\sum VI$  model predictor and locus of control combined was 5.31%, and it is significant, the lack of significance at step 2 means that hypothesis 5 is not supported with respect to the job advancement dependent variable.

The  $\sum VI$  model predictor was found to have a significant relationship with the recognition dependent variable. This model is able to explain 5.1% of the variation of the recognition variable, and the R-square is significant. When locus of control was introduced as the second step of the regression analysis, the change of R-square in explaining the variation of the recognition dependent variable was 2.8%, and the R-square is significant. The total R-square in explaining the variation of the recognition variable due to the  $\sum VI$  model predictor and locus of control combined was found to be 7.9% and it is significant. Therefore, hypothesis 5 is supported with respect to the recognition dependent variable.

The  $\sum VI$  model predictor was found to have a significant relationship with the job performance dependent variable. This model is able to explain 8.4% of the variation of the job performance dependent variable, and the R-square is significant. When locus of control was introduced as the second step of the regression analysis,

the change of R-square in explaining the variation of the job performance dependent variable was 2.4%, and it is significant. The total R-square in explaining the variation of the job performance dependent variable by the  $\sum VI$  model predictor and locus of control combined was found to be 10.9%, and it is significant. Therefore, hypothesis 5 is supported with respect to the job performance dependent variable. For the BuIS sample, locus of control has a significant contributory effect in explaining the variation of recognition and job performance dependent variables, but not the job involvement, propensity to stay, and job advancement dependent variables.

#### Hypothesis 6

Hypothesis 6 states that self-esteem and internal-external locus of control have significantly positive effects on the relationships between Work Effort [ $E(VI)$ ] model and job involvement, propensity to stay, job advancement, recognition, or job performance. For testing this hypothesis, a regression model is constructed as  $P = a + b_1 X_1 + b_2 X_2 + b_3 X_3$  where  $P$  is one of five dependent variable;  $X_1$  is the  $E(\sum VI)$  model predictor;  $X_2$  is self-esteem; and  $X_3$  is internal-external locus of control. The data in Table 8 show the results of stepwise regression analysis for the five dependent variables, the  $E(\sum VI)$  model predictor, self-esteem, and

locus of control.

Table 8

Regression Analysis of the Effect of the Variations  
of the Dependent Variables by the E( $\Sigma$ VI) Model  
Predictor, Self-Esteem and Locus of Control

Dependent Variables	Control Variables	R <sup>2</sup>	R <sup>2</sup> Change	F Change	F-Sig Change	R <sup>2</sup> F	R <sup>2</sup> P
Job Involvement	E(VI)	.0066	-	-	-	.96	.330
	E(VI)+SE	.0068	.0002	.040	.842	.50	.610
	E(VI)+SE +IE	.0101	.0033	.468	.495	.49	.690
Propensity to Stay	E(VI)	.0061	-	-	-	.88	.350
	E(VI)+SE	.0065	.0004	.059	.808	.47	.630
	E(VI)+SE +IE	.0070	.0005	.075	.785	.34	.800
Job Advancement	E(VI)	.0559*	-	-	-	8.58	.004
	E(VI)+SE	.0626*	.0067	1.033	.311	4.81	.010
	E(VI)+SE +IE	.0636*	.0011	.162	.688	3.24	.020
Recognition	E(VI)	.0320*	-	-	-	4.80	.030
	E(VI)+SE	.0642*	.0322	4.959	.028	4.94	.008
	E(VI)+SE +IE	.0759*	.0117	1.803	.181	3.91	.010
Job Performance	E(VI)	.0789*	-	-	-	12.42	.001
	E(VI)+SE	.1055*	.0266	4.281	.040	8.49	.001
	E(VI)+SE +IE	.1128*	.0073	1.172	.281	6.06	.001

\* Significant at the  $p < .05$  level with one tailed test.

SE is self-esteem.

IE is internal-external locus of control.

E(VI) is the Work Effort model predictor.

The results of the stepwise regression analysis show that the E( $\Sigma$ VI) model predictor was found to have no significant relationship with the job involvement and propensity to stay dependent variables. When self-esteem was introduced as the second step in the regression analysis and locus of control was introduced as the third

step in the regression analysis, the changes of R-square in explaining the job involvement and propensity to stay dependent variables were found to be not significant. Therefore, hypothesis 6 is not supported with respect to the job involvement and propensity to stay variables.

The  $E(\sum VI)$  model predictor was found to have a significant relationship with the job advancement dependent variable. This model predictor is able to explain 5.59% of the variation of the job advancement dependent variable, and it is significant. When self-esteem was introduced as the second step in the regression analysis, the change of R-square in explaining the variation of the job advancement dependent variable was found to be not significant. When locus of control was introduced as the third step in the regression analysis, the change of R-square in explaining the variation of the job advancement dependent variable was also found to be not significant. Although the total R-square in explaining the variation of the job advancement due to the  $E(\sum VI)$  model predictor, self-esteem, and locus of control combined was found to be 6.36% and it is significant, hypothesis 6 is not supported with respect to the job advancement dependent variable.

The  $E(\sum VI)$  model predictor was found to have a significant relationship with the recognition dependent variable. This model predictor is able to explain 3.2%

of the variation of recognition, and the R-square is significant. When self-esteem was introduced as the second step in the regression analysis, the change of R-square in explaining the variation of the recognition variable was 3.22%, and it is significant. When locus of control was introduced as the third step in the regression analysis, the change of R-square in explaining the variation of the recognition dependent variable was found to be not significant. Although the final R-square in explaining the recognition dependent variable due to the  $E(\sum VI)$  model predictor, self-esteem, and locus of control combined was 7.59% and it is significant, hypothesis 6 is not supported with respect to the recognition dependent variable. This is because locus of control does not contribute significantly to explaining the variation of the recognition dependent variable.

The  $E(\sum VI)$  model predictor was found to have a significant relationship with the job performance dependent variable. This model predictor was found to be able to explain 7.9% of the variation of the job performance dependent variable, and the R-square is significant. When self-esteem was introduced as the second step in the regression analysis, the change of R-square in explaining the variation of the job performance dependent variable was 2.66% and it is significant. When locus of control was introduced as the third step in the regression anal-

ysis, the change of R-square in explaining the variation of the job performance dependent variable was found to be not significant. Although the total R-square in explaining the variation of job performance due to the  $E(\sum VI)$  model predictor, self-esteem, and locus of control combined was found to be 11.28%, and it is significant, hypothesis 6 is not supported with respect to the job performance variable. This is because locus of control does not contribute a significant additional percentage of explanation of the variation of the job performance dependent variable.

The following four hypotheses also examine the effects of self-esteem and locus of control on the relationships between the expectancy model predictors and the dependent variables. Hypotheses 7 and 8 examine the effect of self-esteem on the relationships between the  $\sum VE$  model predictors and the dependent variables, and between the  $E(\sum VI)$  model predictor and the dependent variables when the self-esteem variable is statistically controlled. Hypotheses 9 and 10 examine the effect of locus of control on the relationships between the  $\sum VI$  model predictors and the dependent variables, and between the  $E(\sum VI)$  model predictor and the dependent variables when the locus of control variable is statistically controlled. This approach is a cruder method of seeking the effects of the intervening variables in predicting



the dependent variables in that it reduces an interval level variable to the dichotomous nominal level. This approach seeks differences in the correlations of the model predictors with the dependent variables between the high and the low self-esteem or the high and the low internal locus of control groups.

### Hypotheses 7 and 8

Hypotheses 7 and 8 examine the relationships between the expectancy model predictors (VE and E(VI)) and the dependent variables when self-esteem is controlled through subdividing the sample and computing separate Pearson product-moment correlation coefficients. The employees in the sample were divided into high and low self-esteem groups. The high self-esteem group members have self-esteem scores equal to or greater than the mean score of 4.038. The low self-esteem group members have self-esteem scores less than the mean score of 4.038. Seventy-one (71) employees were assigned to the high self-esteem group and 76 employees were assigned to the low self-esteem group. Comparisons of the differences in the correlations between the  $\sum$ VE model predictors and the dependent variables of the high and the low self-esteem groups are examined here.

Hypothesis 7 states that the  $\sum$ VE model predictor of the high self-esteem group has a significantly higher

positive correlation with job involvement, propensity to stay, job advancement, recognition, and job performance than the  $\Sigma$ VE model predictor of the low self-esteem group. The Pearson product-moment correlations and the results of the z test of differences between the correlations are reported in Table 9.

Table 9

The z values for the Tests of the Differences in Correlations between the  $\Sigma$ VE Model Predictor and Dependent Variables of the High and the Low Self-Esteem Groups

Independent Variable Intervening Variable Dependent Variables	The $\Sigma$ VE Model Predictor		z-value
	Hi-SE Group	Lo-SE Group	
	r-score	r-score	
Job Involvement	.14	.05	.551
Propensity to Stay	.22	-.13	2.137*
Job Advancement	.29	.14	.950
Recognition	.14	-.13	1.624
Job Performance	.30	.04	1.594

\* Significant at the  $p < .05$  level with one tailed test.  
Hi-SE means high self-esteem.  
Lo-SE means low self-esteem.

The data in Table 9 show that only the z value for the test of significant of the difference in correlations between the  $\Sigma$ VE model predictor and the variable propensity to stay is significant for the high and the low self-esteem groups. The Pearson product-moment correlation of .22 for the high self-esteem group is significantly higher than the equivalent value of -.13 for the low self-esteem group. The z tests of the differences in

correlation between the  $\sum VI$  model predictor and job involvement, job advancement, recognition, and job performance of the high and the low self-esteem groups are not significant. Therefore, hypothesis 7 is supported only with respect to the variable propensity to stay.

Table 10

The z values for the Tests of the Differences in Correlations Between the E( $\sum VI$ ) Model Predictor and Dependent Variables of the High and the Low Self-Esteem Groups

Independent Variable Intervening Variable Dependent Variables	The E( $\sum VI$ ) Model Predictor		
	Hi-SE Group	Lo-SE Group	
	r-score	r-score	z-value
Job Involvement	.16	-.01	.171
Propensity to Stay	.17	.02	.904
Job Advancement	.28	.16	.730
Recognition	.25	.05	1.236
Job Performance	.35	.15	1.272

\* Significant at the  $p < .05$  level with one tailed test.

Hi-SE means high self-esteem.

Lo-SE means low self-esteem.

Hypothesis 8 states that the E( $\sum VI$ ) model predictor of the high self-esteem group has a significantly higher positive correlation with job involvement, propensity to stay, job advancement, recognition, and job performance than the E( $\sum VI$ ) model predictor of the low self-esteem group. The data in Table 10 show that none of the z values for the tests of the differences in correlations between the E( $\sum VI$ ) model predictor and the dependent

variables of the high and the low self-esteem groups is significant. Hypothesis 8 is not supported at all.

#### Hypotheses 9 and 10

Hypotheses 9 and 10 examine the relationships between the expectancy model predictors (VI and E(VI)) and the dependent variables when internal-external locus of control is controlled through subdivision of the sample. The sample was divided into a high internal locus of control group and a low internal locus of control group. There are 75 high internal locus of control group members who have internal locus of control scores which are equal to or greater than the mean score of 2.98. There are 72 low internal locus of control group members who have internal locus of control scores less than the mean score of 2.98. The data in Table 11 include the Pearson product-moment correlations between the  $\sum VI$  model predictor and job involvement, propensity to stay, job advancement, recognition, and job performance when controlling for the internal-external locus of control variable and the z-tests of difference between the correlation coefficients.

Hypothesis 9 states that the  $\sum VI$  model predictor has significantly higher positive correlations for the high internal locus of control group than the low internal locus of control group with job involvement, propensity to stay, job advancement, recognition, and job

performance.

Table 11

The  $z$  values for the Tests of the Differences in Correlations Between the  $\Sigma VI$  Model Predictor and Dependent Variables of the High and the Low Internal Locus of Control Groups

Independent Variable Intervening Variable Dependent Variables	The $\Sigma VI$ Model Predictor		$z$ -value
	Hi-IE Group r-score	Lo-IE Group r-score	
Job Involvement	-.08	.14	-1.286
Propensity to Stay	.30	-.17	2.906*
Job Advancement	.10	.32	-1.397
Recognition	.15	.33	-1.081
Job Performance	.16	.41	-1.635

\* Significant at the  $p < .05$  level with one tailed test.

Hi-IE means high internal locus of control.

Lo-IE means low internal locus of control.

The data in Table 11 show, however, that only the  $z$  value for the tests of the differences in correlations between the  $\Sigma VI$  model predictor and propensity to stay for the high and the low internal locus of control groups is significant. The Pearson product-moment correlation of .30 for the high internal locus of control group is significantly higher than the equivalent value of -.17 for the low internal locus of control group. The  $z$  values for the tests of the significance of the differences in correlations between the  $\Sigma VI$  model predictor and job involvement, job advancement, recognition, job performances are not significant. Hypothesis 9 is supported only with respect to the propensity to stay

variable.

Table 12

The  $z$  values for the Tests of the Differences in Correlations Between the E( $\Sigma$ VI) Model Predictor and the Dependent Variables for the High and the Low Internal Locus of Control Groups

Independent Variable Intervening Variable Dependent Variable	The E( $\Sigma$ VI) Model Predictor		
	Hi-IE Group r-score	Lo-IE Group r-score	$z$ value
Job Involvement	-.13	.25	-2.311
Propensity to Stay	.35	-.16	3.341*
Job Advancement	.11	.34	-1.414
Recognition	.06	.31	-1.501
Job Performance	.12	.41	-1.894

\* Significant at the  $p < .05$  level with one tailed test.  
Hi-IE means high internal locus of control.  
Lo-IE means low internal locus of control.

Hypothesis 10 states that the E( $\Sigma$ VI) model predictor has a significantly higher positive correlation for the high internal locus of control group with job involvement, propensity to stay, job advancement, recognition, and job performance than for the low internal locus of control group. The data in Table 12 show that only the  $z$  value for the test of significant of the difference in the correlations between the E( $\Sigma$ VI) model predictor and the variable propensity to stay for the high and the low internal locus of control groups is significant. The Pearson product-moment correlation of .35 for the high internal locus of control group is significantly higher than the equivalent value of -.16 for the low internal

locus of control group. The z tests of differences in correlations between the  $E(\sum VI)$  model predictor and job involvement, job advancement, recognition, and job performance of the high and the low internal locus of control groups are not significant because the differences between the correlations are in the wrong direction, meaning no difference. Therefore, hypothesis 10 is supported only with respect to the variable propensity to stay.

The following hypotheses, 11 through 13, examine the effect of work role on the relationships between the expectancy model predictors and the dependent variables.

#### Hypothesis 11

Hypothesis 11 states that Valence of Performance (VI), Force to Perform (VE), and Work Effort [ $E(VI)$ ] model predictors have significantly positive correlations with the job involvement, propensity to stay, job advancement, recognition, and job performance dependent variables for the management group. The data in Table 13 show the correlations and the results of their significance tests between the expectancy model predictors and these dependent variables for the management group.

There are 29 persons in the management group. The data in Table 13 shows that the expectancy model predic-

tors have significantly positive correlations with the job involvement dependent variable. With job involvement, the  $r$  value of correlation for the  $\sum VI$  model is .40, and it is significant; for the  $\sum VE$  model predictor, the correlation is .50, and it is significant and for the  $E(\sum VI)$  model predictor, the correlation is .45, and it is significant. For the BuIS management group, there is a significant correlation between job involvement and the expectancy model predictors (VI, VE, E(VI)). It seems that work role perception have a strong influence in predicting the job involvement dependent variable for the management group.

Table 13

The Correlations Between the Dependent Variables  
and the Expectancy Model Predictors for  
the Management Group

Independent Variables	$\sum VI$		$\sum VE$		$E(\sum VI)$	
Dependent Variables	$r$	$p$	$r$	$p$	$r$	$p$
Job Involvement	.40*	.016	.50*	.003	.45*	.007
Propensity to Stay	-.10	.309	.06	.373	.04	.413
Job Advancement	-.10	.307	-.32	.047	-.25	.100
Recognition	.28	.072	.29	.066	.39 <sup>^</sup>	.019
Job Performance	.17	.193	.02	.461	.16	.210
Mean	11.052		15.207		40.881	
Standard Deviation	2.015		3.374		12.517	

\* Significant at the  $p < .05$  level with one tailed test.

The data in Table 13 also show that only the Work Effort model [E(VI)] correlates significantly with the recognition dependent variable. The Pearson product-moment correlation between the  $E(\sum VI)$  model predictor



and the recognition dependent variable is .29, and it is significant. Neither of the other model predictors are significantly correlated with the recognition dependent variable for the management group. The data in Table 13 also show that none of the three expectancy model predictors correlates significantly with job advancement, propensity to stay, or job performance. Hypothesis 11 is supported only for the job involvement variable and with respect to one relationship with recognition by the  $E(\sum VI)$  model predictor.

### Hypothesis 12

Hypothesis 12 states that Valence of Performance (VI), Force to Perform (VE), and Work Effort [ $E(VI)$ ] model predictors have significantly positive correlations with job involvement, propensity to stay, job advancement, recognition, or job performance for the computer programmer group. The data in Table 14 are the correlations between expectancy model predictors and the dependent variables and the results of the significance tests about the correlations for the computer programmer group.

There are 34 persons in the computer programmer group. The data in Table 14 indicate that the expectancy model predictors do not correlate significantly with the job involvement, propensity to stay, and recognition

dependent variables. However, all three expectancy model predictors correlate significantly with the job advancement and job performance dependent variable. With job advancement, the Pearson product-moment correlation value is .38 for the  $\sum VI$  model predictor, and it is significant; for the  $\sum VE$  model predictor, the correlation is .48, and it is significant; and for the  $E(\sum VI)$  model predictor, it is .41 and it is significant. With job performance, the Pearson product-moment correlation value is .45 for the  $\sum VI$  model predictor, and it is significant; for the  $\sum VE$  model predictor, the correlation is .49, and it is significant; and for the  $E(\sum VI)$  model predictor, the correlation is .46, and it is significant.

Table 14

The Correlations Between the Dependent Variables  
and the Expectancy Model Predictors for  
the Computer Programmer Group

Independent Variables	$\sum VI$		$\sum VE$		$E(\sum VI)$	
Dependent Variables	r	p	r	p	r	p
Job Involvement	.14	.225	.11	.263	.08	.325
Propensity to Stay	-.03	.437	-.24	.084	-.16	.177
Job Advancement	.38*	.014	.48*	.002	.41*	.008
Recognition	.27	.060	.21	.122	.25	.079
Job Performance	.45*	.004	.49*	.002	.46*	.003
Mean	11.894		16.191		47.721	
Standard Deviation	2.644		4.324		16.281	

\* Significant at the  $p < .05$  level with one tailed test.

The computer programmers as a group tend to be in the early stages of their careers and are likely to have

different expectations for job advancement, recognition, and job performance than the management group. Most of the computer programmers are younger than 35 years of age and have less than four years of service in the BuIS organization. For this group it is not surprising that there are positive correlations between hard work and job advancement and between hard work and job performance. Hypothesis 12 is supported for only these two dependent variables.

### Hypothesis 13

Hypothesis 13 states that the expectancy model predictors (VI, VE, & E(VI)) have a significantly positive correlation with the dependent variables for technical programmer and data system analyst group. The data in Table 15 shows the correlations and the results of their significance tests between expectancy theory model predictors and these dependent variables for the technical programmer and data system analyst group.

The technical programmer and data system analysts are classified as having a professional status under the current Civil Service rules. There are 84 persons in this group. Most of them have been working in the data processing area for more than five years. The data in Table 15 shows that only the Work Effort [E(VI)] model predictor correlates significantly with the propensity to

stay dependent variable with  $r = .19$ , and it is significant. None of the three expectancy model predictors correlates significantly with the dependent variables for this group. Hypothesis 13 is supported only with respect to one relationship with the propensity to stay dependent variable by the  $E(\sum VI)$  model predictor.

Table 15

The Correlations Between the Dependent Variables and the Expectancy Model Predictors for the Technical Programmer and Data System Analyst Group

Independent Variables	$\sum VI$		$\sum VE$		$E(\sum VI)$	
Dependent Variables	r	p	r	p	r	p
Job Involvement	-.07	.254	.02	.436	.01	.465
Propensity to Stay	.11	.162	.09	.211	.19*	.041
Job Advancement	-.02	.418	.09	.199	.02	.424
Recognition	.18	.054	-.17	.059	.03	.382
Job Performance	.08	.231	-.03	.399	.03	.381
Mean	10.311		15.018		40.067	
Standard Deviation	2.317		3.974		12.211	

\* Significant at the  $p < .05$  level with one tailed test.

The following two hypotheses, 14 and 15, examine the effect of gender on the relationships between the expectancy model predictors and the dependent variables.

#### Hypothesis 14

Hypothesis 14 states that expectancy model predictors (VI, VE, &  $E(VI)$ ) have significantly positive correlations with the dependent variables for the male group.

The data in the Table 16 show that the correlations and the results of their significant tests between the expectancy model predictors and the dependent variables for the male group.

There are 103 male employees who responded to the survey. The data in Table 16 show that none of the three expectancy models has a significant correlation with the job involvement or recognition or propensity to stay dependent variable. However, the Force to Perform ( $\Sigma$ VE) and Work Effort [ $E(\Sigma$ VI)] model predictors have significant correlations with the job advancement variable. For the job advancement variable with the  $\Sigma$ VE model predictor, the Pearson product-moment correlation value is .20, and it is significant; and with the  $E(\Sigma$ VI) model predictor, it is .17, and it is significant.

Table 16

The Correlations Between the Dependent Variables  
and the Expectancy Model Predictors for  
the Male Group

Independent Variables	$\Sigma$ VI		$\Sigma$ VE		$E(\Sigma$ VI)	
Dependent Variables	r	p	r	p	r	p
Job Involvement	-.02	.426	.13	.095	.06	.263
Propensity to Stay	.02	.415	-.01	.469	.04	.331
Job Advancement	.15	.060	.20*	.024	.17*	.047
Recognition	.15	.070	-.06	.260	.08	.203
Job Performance	.20*	.022	.10	.150	.17*	.042
Mean	10.779		15.330		41.602	
Standard Deviation	2.408		3.787		13.093	

\* Significant at the  $p < .05$  level with one tailed test.

The data in Table 16 also show that the Valence of performance (VI) model predictor and Work Effort [E(VI)] model predictor have significant correlations with job performance. For the job performance dependent variable with the  $\sum VI$  model predictor, the Pearson product-moment correlation value is .20, and it is significant; and with the  $E(\sum VI)$  model predictor, the correlation is .17, and it is significant. Hypothesis 14 is supported only in respect to relationships with the job advancement dependent variable by the  $\sum VE$  and the  $E(\sum VI)$  model predictors, and with the job performance dependent variable by the  $\sum VI$  and the  $E(\sum VI)$  model predictors.

#### Hypothesis 15

Hypotheses 15 states that expectancy model predictors (VI, VE, E(VI)) have significantly positive correlations with the dependent variables for the female group. The data in Table 17 show the correlations and the results of the significance tests between the expectancy model predictors and the job involvement, propensity to stay, job advancement, recognition, and job performance dependent variables.

There are 44 female employees who responded to the questionnaire. The data in Table 17 show that none of the three expectancy model predictors correlates significantly with the job involvement or propensity to stay

dependent variables. However, all three expectancy model predictors correlate significantly with job advancement, recognition, and job performance.

For the job advancement variable with the  $\sum VI$  model predictor, the Pearson product-moment correlation value is .33, and it is significant; with the  $\sum VE$  model predictor, the correlation is .31, and it is significant; and with the  $E(\sum VI)$  model predictor, the correlation is .36, and it is significant. For the recognition variable with the  $\sum VI$  model predictor, the Pearson product-moment correlation value is .52, and it is significant; with the  $\sum VE$  model predictor, the correlation is .37, and it is significant; and with the  $E(\sum VI)$  model predictor, the correlation is .50, and it is significant. Finally, for the job performance variable with the  $\sum VI$  model predictor, the Pearson product-moment correlation value is .51, and it is significant; with the  $\sum VE$  model predictor, the correlation is .42, and it is significant; and with the  $E(\sum VI)$  model predictor, the correlation is .52, and it is significant. The expectancy model predictors show a higher and more consistent positive relationship with the dependent variables for the female than for the male group. The support for hypothesis 15 is stronger than for hypothesis 14.

Table 17

The Correlations Between the Dependent Variables  
and the Expectancy Model for the  
Female Employee Group

Independent Variables	$\Sigma VI$		$\Sigma VE$		$E(\Sigma VI)$	
Dependent Variables	r	p	r	p	r	p
Job Involvement	.17	.130	.04	.398	.12	.218
Propensity to Stay	.12	.210	.07	.319	.15	.163
Job Advancement	.34*	.013	.31*	.019	.36*	.009
Recognition	.52*	.001	.37*	.014	.50*	.001
Job Performance	.51*	.001	.42*	.002	.52*	.001
Mean	10.927		15.318		42.924	
Standard Deviation	2.461		4.318		14.811	

\* Significant at the  $p < .05$  level with one tailed test.

The summary and discussion of the findings are presented in the Conclusion Chapter next.



## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

This study has tested the applicability of expectancy theory on 147 data processing professionals in the Bureau of Information Systems, Michigan Department of Social Services. Three independent variables (the  $\sum VE$ ,  $\sum VI$ , and  $E(\sum VI)$  model predictors), five dependent variables (job involvement, propensity to stay, job advancement, recognition and job performance), and two intervening variables (self-esteem and locus of control) were used. For this research, ten common outcomes for hard work of BuIS employees were identified. These ten common outcomes were used to measure the V, E, and I components of expectancy theory. This study has examined the previous findings of the expectancy theory model predictors. In addition, this study has introduced the exploration of the effects of self-esteem and locus of control on the relationships between the expectancy theory model predictors and these dependent variables.

#### Summary of Results

The results have provided mixed support for expectancy theory. Significant correlations are found between

the expectancy model predictors (VI, VE, and E(VI)) and the job behavior variables, namely job advancement, job performance and recognition except for the  $\sum VE$  model predictor (see Table 5). For the job advancement variable, significant  $r$  correlations are .21 with the  $\sum VI$  model predictor, .24 with the  $\sum VE$  model predictor and .24 with the E( $\sum VI$ ) model predictor. For the job performance variable, significant  $r$  correlations are .29 with the  $\sum VI$  model predictor, .20 with the  $\sum VE$  model predictor, and .28 with the E( $\sum VI$ ) model predictor. For the recognition variable, significant  $r$  correlations are .23 with the  $\sum VI$  model predictor and .18 with the E( $\sum VI$ ) model predictor. Between the expectancy model predictors and the attitude variables, job involvement and propensity to stay, the correlations are not significant.

By using stepwise regression analysis, this study has found that self-esteem when combined with the  $\sum VE$  model predictor has significant effects in explaining the variation of the job performance variables (see Table 6). The change of R-square in explaining the variation of the job performance variable is 3.92%. Self-esteem has no effect on the relationships between the  $\sum VE$  model predictor and the job involvement, propensity to stay, job advancement and recognition variables.

The effects of locus of control when combined with the  $\sum VI$  model predictor also were found to be significant

in explaining the recognition and job performance variables (see Table 7). The change of R-square in explaining the variation of the recognition variable is 2.81% and in explaining the variation of the job performance variable is 2.49%. The locus of control has no effect on the relationship between the  $\sum VI$  model predictor and the job involvement, propensity to stay, and job advancement variables. The effects of both self-esteem and locus of control on the relationships between the  $E(\sum VI)$  model predictor and the dependent variables were not found to be significant (see Table 8).

An alternative approach was used to study the effect of self-esteem and locus of control on the relationships between the expectancy model predictors and the dependent variables. The differences in correlations in predicting the dependent variables between high and low self-esteem were compared. Among the five dependent variables, only the propensity to stay variable was found to have a significant difference in correlation with the  $\sum VE$  model predictor between the high and the low self-esteem groups (see Table 9). The difference between the  $r$  correlations is .35 with a  $z$  value of 2.137.

The differences in correlations in predicting the dependent variables between the high and the low internal locus of control groups were compared. Similarly, only the propensity to stay variable was found to have a sig-

nificant difference in correlation with the  $\sum VI$  and the  $E(\sum VI)$  model predictors between the high and the low internal locus of control groups (see Table 11 & 12). The differences between the  $r$  correlations are .48 with a  $z$  value of 2.906 for the  $\sum VI$  model predictor and .51 with a  $z$  value of 3.341 for the  $E(\sum VI)$  model predictor.

The effects of job classification on the relationships between the expectancy model predictors and the dependent variables were studied (see Appendix E). For the management group, significant correlations were found between the expectancy model predictors and the job involvement variable, and between the  $E(\sum VI)$  model predictor and the recognition variable (see Table 13). The significant  $r$  correlations with the job involvement variable are .40 for the  $\sum VI$  model predictor, .50 for the  $\sum VE$  model predictor, and .45 for the  $E(\sum VI)$  model predictor. The significant  $r$  correlation with recognition is .38 for the  $E(\sum VI)$  model predictor.

For the computer programmer group, significant correlations were found between the expectancy model predictors and the job advancement and job performance variables (see Table 14). Significant  $r$  correlations with job advancement are .38 for the  $\sum VI$  model predictor, .48 for the  $\sum VE$  model predictor and .41 for the  $E(\sum VI)$  model predictor. Significant  $r$  correlations with job performance are .45 for the  $\sum VI$  model predictor, .49 for the

$\sum VE$  model predictor and .46 for the  $E(\sum VE)$  model predictor.

For the technical programmer and data system analyst group, there is only one significant  $r$  correlation between the  $E(\sum VI)$  model predictor and the propensity to stay variable (see Table 15). The significant  $r$  correlation is .19.

Finally, the effects of gender on the relationships between the expectancy model predictors and the dependent variables were studied. For the male group, there are significant correlations between the job advancement variable and the  $\sum VE$  and the  $E(\sum VI)$  model predictors (see Table 16). Significant  $r$  correlations with job advancement are .20 for the  $\sum VE$  model predictor, and .17 for the  $E(\sum VI)$  model predictor. In the case of the male group, there are also significant correlations between the job performance and the  $\sum VI$  and the  $E(\sum VI)$  model predictors. Significant  $r$  correlations with the job performance variable are .20 for the  $\sum VI$  model predictor, and .17 for the  $E(\sum VI)$  model predictor. No significant correlation was found between the expectancy model predictors and the job involvement, propensity to stay, and recognition variables.

For the female group, there are significant correlations between the expectancy model predictors and the job behavior variables (see Table 17). Significant  $r$  corre-

lations with the job advancement variable are .34 for the  $\sum VI$  model predictor, .31 for the  $\sum VE$  model predictor, and .36 for the  $E(\sum VI)$  model predictor. Significant  $r$  correlations with the recognition variable are .52 for the  $\sum VI$  model predictor, .37 for the  $\sum VE$  model predictor, and .50 for the  $E(\sum VI)$  model predictor. Significant  $r$  correlations with the job performance variable are .51 for the  $\sum VI$  model predictor, .42 for the  $\sum VE$  model predictor, and .52 for the  $E(\sum VI)$  model predictor. No significant correlation between attitude variables and the expectancy model predictors was found for the male and the female groups.

## Discussion

### Job Involvement

This variable has been used to measure employees' general attitudes about their job and the motivation to perform specific tasks (Lodahl & Kejner, 1965). It was hypothesized that employees who score high on the scales of the expectancy model predictors are most likely to have higher job involvement. The results of this research show that job involvement for the BuIS employees was not correlated with the expectancy model predictors. Self-esteem and locus of control could contribute nothing to the relationships between the expectancy model predictors and job involvement because there was no relation-

ship.

However, significant correlations were found between the expectancy model predictors and job involvement for the management group. The management group is likely to perceive a correlation between work effort and job involvement, but the technical programmer and data system analyst and the computer programmer groups do not. Lodahl and Kajner's (1965) study indicated that job-involved employees tend to identify with their superiors and organizational missions. Therefore, the members of the management group have a high congruent role perception with their supervisors and organizational missions. On the other hand, Lodahl and Kajner (1965) also indicated that non-job involved employees tend to detach from organizational missions and coworkers. Bush and Schkidl's (1985) study indicated that computer programmers, and technical programmer and data system analysts tend to rely on their inner world of concepts, ideas, and theories. Therefore, computer programmers and technical programmer and data system analysts of the BuIS sample may be concerned more with the technical aspects of the computer itself and identify less with the organizational missions. This difference in work attitude between the management group and working groups may create conflicts in setting organizational goals and priorities.

### Propensity to Stay

This variable has been used to measure the employee-'s general attitude toward his or her job (House & Rizzo, 1972). It was hypothesized that employees who score high on the scales of the expectancy model predictors are most likely to have a higher propensity to stay. The results of this research show that propensity to stay for the BuIS employees was not correlated with the expectancy model predictors. Self-esteem and locus of control could contribute nothing to the relationships between the expectancy model predictors and the propensity to stay variable because there was no relationship.

However, the difference in the correlations for the  $\sum VE$  model predictor with propensity to stay between the high and the low self-esteem groups was found to be significant. The differences in the correlations for the  $\sum VI$  and the  $E(\sum VI)$  model predictors with propensity to stay between the high and the low internal locus of control groups were also found to be significant.

These results are consistent with previous studies of the effects of self-esteem and locus of control in job perception (Rotter 1966; Broedling 1975; Lied and Pritchard 1976). The members of the high self-esteem group were more likely to stay, because they were likely to believe that they would have a greater ability to



excel in the BuIS organization than the low self-esteem group. Similarly, the members of the high internal locus of control group were more likely to stay, because they were likely to believe that they could control their working environments to a greater extent than the low internal locus of control group.

### Job Advancement

The job advancement variable has been designed to measure job effort and good performance. Job advancement was specifically represented through the career ladder which employees in the BuIS sample could climb under the Michigan Civil Service system. It was hypothesized that employees who score high on the scales of the expectancy model predictor are most likely to have greater job advancement. The results of this research show that job advancement for the BuIS employees was significantly correlated with all of the three expectancy model predictors. Self-esteem and locus of control were found to have no effect on the relationships between the job advancement variable and the expectancy model predictors.

It was found that the expectancy model predictors of the management group were not correlated with job advancement. However, for the computer programmer group, there was a significant correlation between job advancement and all of the three expectancy model predictors

( $\sum VE$ ,  $\sum VI$ , and  $E(\sum VI)$ ). For this group, there was a significant correlation between hard work and job advancement, presumably because they are younger and occupy lower pay grades. They expected to be promoted if they worked hard. However, for the technical programmer and data system analyst group, there was no significant relationship between job advancement and the expectancy model predictors. At this job level there is no room for them to move up unless they join a management group and opportunities to do so are very limited.

The correlations between the job advancement variable and the expectancy model predictors were analyzed by gender. For the male group, there was a significant correlation between job advancement and the  $\sum VI$  model predictor and between job advancement and the  $E(\sum VI)$  model predictor. For the female group, there were significant correlations between job advancement and all of the three expectancy model predictors.

Overall, job advancement was a positive reflection of job effort and good performance. The  $\sum VI$  model predictor shows a better correlation with job advancement than the other two expectancy model predictors. It is suspected that the members of the technical programmer and data system analyst group and the management group tend to relate job advancement to other factors such as seniority, office politics, and Civil Service rules rath-

er than with good job performance alone. On the other hand, the female group and the computer programmer group tend to relate job advancement to work effort.

### Recognition

The recognition variable has been designed to measure job effort and good performance by counting the number of memos, commendation letters, awards, and citations received in the last four years. It was hypothesized that employees who score high on the scales of the expectancy model predictors are most likely to achieve greater recognition. The results of this research show that the recognition variable for the BuIS employees was significantly correlated with the  $\sum VI$  and the  $E(\sum VI)$  model predictors, but not significantly correlated with the  $\sum VE$  model predictor. Self-esteem could contribute nothing to the relationships between the  $\sum VE$  model predictor and the recognition variable because there was no relationship. Locus of control when used with the  $\sum VI$  model predictor was found to have a significant positive effect in explaining the variation in recognition. Both self-esteem and locus of control when used with the  $E(\sum VI)$  model predictor were found not to be significant in explaining the variation in recognition.

The recognition variable was found to have a signi-

ficant correlation with the  $E(\sum VI)$  model predictor for the management group. The recognition variable was also found to have significant correlations with all of the expectancy model predictors for the female group. The results show that the recognition variable tends to correlate better with the  $E(\sum VI)$  model predictor. This means that recognition has been perceived as a second level outcome which would be attained as a result of a good performance.

### Job performance

The job performance variable has been designed to measure overall job effort by combining the job advancement and the recognition variables. This variable was designed to represent a level of job performance, and was equivalent to the "job performance" criterion used in many previous studies (Vroom, 1964; Porter & Lawler, 1968; Graen, 1969; Campbell et al., 1970; Mitchell, 1974). It was hypothesized that people with higher expectancy model predictors (who score high on the scales of the expectancy model predictors) are most likely to have higher job performance. The results of this research show that job performance for the BuIS employees was significantly correlated with the expectancy model predictors. Self-esteem when used with the  $\sum VE$  model predictors was found to have significant effects in ex-

plaining the variation in the job performance variable. Locus of control when used with the  $\sum VI$  model predictors was also found to have significant effects in explaining the variation in the job performance variable. However, both self-esteem and locus of control when used with the  $E(\sum VI)$  model predictor were not significant in explaining the variation in the job performance variable.

The correlations between the expectancy model predictors and job performance were significant only for the computer programmer group. For the male group, all of the expectancy model predictors except the  $\sum VE$  model predictor were significantly correlated with job performance. For the female group, all of the expectancy theory model predictors were significantly correlated with job performance. These results have provided mixed support for expectancy theory. The management and the technical programmer and data system analyst groups did not relate job performance to work effort. On the other hand, for the computer programmer and the female groups the job performance variable tends to be related to work effort.

### Conclusions and Recommendations

The results have provided mixed support for the hypotheses. Job involvement and propensity to stay were not significantly correlated with the expectancy model

predictors. This means that in this job setting one's work effort has nothing to do with one's job involvement and propensity to stay. This result seems to be consistent with Vroom's (1964) expectancy theory that claimed one's work effort was solely influenced by one's perception of the probability of attaining the valued outcomes from good performance. Further support for Vroom's (1964) expectancy theory was demonstrated in the case of job advancement, recognition, and job performance which were significantly correlated with the expectancy model predictors except for the absence of a correlation between the  $\sum VE$  model predictor and recognition. These dependent variables concerning job behavior were designed to reflect the desired outcomes of the employees' work effort. Though the range of the correlation values was moderate (from .18 to .30), the results were consistent with most of the previous studies (Lawler & Porter, 1967; Evans, 1970; Arvey & Neel, 1974; Broedling, 1975). These findings demonstrated that expectancy models could be tested with the dependent variables which were constructed to meet the unique conditions of the organization in question.

The test results of the effects of self-esteem and locus of control on the relationships between the expectancy model predictors and the dependent variables were moderate. The effects of self-esteem when used with the

$\sum$ VE model predictor were significant only in explaining the variation in the job performance variable. The effects of locus of control when used with the  $\sum$ VI model predictor were significant only in explaining the variation in the recognition and job performance variables. The effects of both self-esteem and locus of control when used with the  $E(\sum$ VI) model predictor were not significant. These results indicated that the effects of self-esteem and locus of control on the relationships between the expectancy model predictors and the dependent variables were probably limited to the job behavior variables. It is suspected that the effects of self-esteem and locus of control in predicting these job behavior variables may have been negated by the management restrictions and the seniority system that play a major role in Michigan's Civil Service reward system.

Since there was no relationship between the expectancy model predictors and the job attitude variables (job involvement and propensity to stay), the effects of self-esteem and locus of control could contribute nothing. Although the propensity to stay variable was found to have significant differences in correlations between the high and the low self-esteem groups, and between the high and the low internal locus of control groups, the results do not describe the effects of self-esteem and locus of control on the relationships between the expectancy

model predictors and the propensity to stay variable.

The previous findings (Hackman & Porter, 1968; Gavin, 1971; Lawler, 1973) indicated that work roles have a great influence on the correlations between expectancy model predictors and the dependent variables. The results of this research support their findings.

For the BuIS management group, job involvement was found to have a significant correlation with all three of the expectancy model predictors. This finding makes the management group different in terms of work motivation from the computer programmer and the technical programmer and data system analyst groups. The members of the management group are more likely to relate their work efforts to their organizational missions. Their role perceptions are congruent with their management and organizational missions. For the BuIS computer programmer group, significant correlations were found between job advancement and the expectancy model predictors and between job performance and the expectancy model predictors. The members of the computer programmer group are likely to perceive a correlation between their work and job advancement and job performance, but not with job involvement. For the BuIS technical programmer and data system analyst group, a significant correlation was found between propensity to stay and the  $E(\sum VI)$  model predictor. The members of this group demonstrate the



propensity to stay with the BuIS organization, but they do not relate their work efforts to job advancement, recognition, job performance, or job involvement. The results of this research show a variety of correlation patterns between the expectancy model predictors and the dependent variables due to the different work roles of each group within the BuIS organization.

When the correlations between the expectancy model predictors and the dependent variables are analyzed by gender, different correlation patterns were found. For the male group, significant correlations were found between work effort and job advancement and job performance, but not recognition. The BuIS male group is not likely to perceive a correlation between their work effort and job attitude variables. On the other hand, in the case of the female group, significant correlations were found between job behavior variables and all three of the expectancy model predictors. The female group is likely to perceive a correlation between its work effort and job advancement, recognition, and job performance. The BuIS female group seems to have higher expectations of the organization than the BuIS male group. This result shows that there are different correlation patterns between males and females both for the expectancy model predictors and the job behavior dependent variables.

### The Future Study of Expectancy Theory

This study has experimented with a new approach to studying the promise of expectancy model predictors in predicting work effort. The research has examined some previous findings and has extended the framework to incorporate self-esteem and locus of control in the equations of the expectancy model predictors. Though the study results are not statistically impressive, there are many reasons for optimism about the study's results.

First, this approach was an attempt to go beyond bivariate testing of the expectancy model predictors by including self-esteem and locus of control variables. The effects of the additional variables in developing the equation for the expectancy model predictors are positive.

Second, in this study, an attempt was made to develop work performance criteria which are not based on subjective appraisals of work quality such as superior ratings of thoroughness, neatness and accuracy. Though the study results are not markedly better than the previous studies, behaviorally based variables such as job advancement, recognition and job performance would appear to be an improvement. The work performance criteria were based here on employees' recall ability, but in future studies might better be measured by actual employee

records where anonymity is not critical. In this study participants were kept anonymous; the data on job advancement and recognition could, therefore, not be validated individually.

Third, a set of outcomes which are commonly expected by employees to follow from their hard work needs to be constructed. How could a researcher identify these commonly expected outcomes perceived by the employees to be contingent upon their hard work? This study adopted a factor analysis method and selected the ten most desired outcomes from the 36 outcomes most frequently used by previous researchers (see Appendix B). A factor analysis was used to select items from all factors, both in the case of positive and negative loadings. However, this study was not able to validate that the need for these outcomes was sufficiently high, and was salient enough to employees to guarantee that the expectancy theory would work. In future studies, an acceptable procedure to determine the most desired outcomes by the population in question is very important. In addition, it would also be necessary to identify proper outcome items, pinpoint an appropriate number of outcome items, and decide on the appropriate degree of specificity of outcome items to be used.

Fourth, the measurements of dependent variables and of each component of the expectancy theory need to be

improved. In addition, the equation of the expectancy model predictors should include more variables. For example, in the regression equation of this study, the interaction term of an expectancy model such as the  $\sum VE$  model predictor and self-esteem could be included in the regression equation in future studies. This interaction term may have a significant effect in predicting dependent variables. For example, take the equation  $P = a + b_1 X_1 + b_2 X_2 + b_3 X_1 X_2$ . In this equation  $X_1 X_2$  is an interaction term combining an expectancy model and a personality factor.

The expectancy models should have great utility in a real work situation. An organization can identify its motivational problems by examining the components (E, V, and I) of the expectancy model associated with an employee's perceived outcome from hard work. The problem could be detected from unusually low scores on any of the components. Once the problem components are identified, an organization can change or add new outcomes which will be valued by the employees and which will be perceived by them as resulting from working hard.

An organization also can improve the expectancies of established outcomes so that the perception of the link between hard work and the established outcomes is strengthened. An organization could change its reward system or organizational structure to improve the first

level and the second level linkages of the expectancy theory model. An organization could change the valence of established outcomes through training programs.

In order to make the expectancy model work, the organizational circumstances must satisfy certain boundary conditions such as providing valued rewards based on employee performance and preventing the emergence of barriers to achieving the goals. In the process of identifying the valued common outcomes, for example, it is possible to diagnose a performance situation in motivational terms for the BuIS employees in different job classifications. The expected common outcomes can also be used to detect any discrepancy between organizational goals and personal goals.

The expectancy models, on the one hand, are flexible enough to process a large number of dependent and independent variables simultaneously with the aid of modern computer technology. On the other hand, the expectancy models can be tailored to examine specific dependent or independent variables to fit particular organizational research needs. However, before a more complex expectancy model can be developed, it is necessary to work on refining the best means to measure each basic component (E, V, I) of the expectancy models and the dependent variables. The premature introduction of greater complexity will only serve to hamper the promising develop-

ment of the expectancy models.

APPENDIX A

STATE EMPLOYEE SURVEY

## SECTION I.

How much do you agree or disagree with the following statements? Using the following response categories circle the number you feel most adequately expresses how you feel.

- 1 = strongly agree
- 2 = agree
- 3 = disagree
- 4 = strongly disagree

1. The major satisfaction in my life comes from my job.  

1
2
3
4
2. The most important things that happen to me involve my work.  

1
2
3
4
3. To me, my work is only a small part of who I am  

1
2
3
4
4. I am really a perfectionist about my work.  

1
2
3
4
5. I live, eat, and breathe my job.  

1
2
3
4
6. Most things in life are more important than work.  

1
2
3
4
7. I am very much involved personally in my work.  

1
2
3
4

## SECTION II.

Please use the following response categories for the statements in Part A and B. Circle the appropriate number.

- 1 = never
- 2 = seldom
- 3 = occasionally
- 4 = often
- 5 = always



A. If you work hard on your job, what do you believe is the probability that you will achieve the following results?

1. You will achieve higher productivity.  
1      2      3      4      5

2. You will achieve a better job performance.  
1      2      3      4      5

B. On your job, if you achieve a better job performance and/or achieve higher productivity how often will each of the following occur?

1. You will receive more compliments and praise from your supervisor.  
1      2      3      4      5

2. You will receive less frequent checkups on your work by your supervisor.  
1      2      3      4      5

3. You will get more work assigned to you.  
1      2      3      4      5

4. You will receive a raise more quickly.  
1      2      3      4      5

5. You will receive more attractive fringe benefits.  
1      2      3      4      5

## SECTION II. B. (continued)

6. You will set a standard too high for other persons in the office.  
1      2      3      4      5

7. You will have congenial work associates.  
1      2      3      4      5

8. You will receive acceptance by others.  
1      2      3      4      5

9. You will feel a contribution is being made to the organization.  
1      2      3      4      5

10. You will be able to work in your special area of interest.  
1      2      3      4      5

C. On your job, if you achieve a better performance and/or achieve higher productivity how desirable to you is each of the following? Using the following response categories, circle the number you feel most adequately answers each statement.

1 = very undesirable  
 2 = undesirable  
 3 = neutral  
 4 = desirable  
 5 = very desirable

1. You are to achieve higher productivity.  
                                   1        2        3        4        5
2. You are to achieve better job performance.  
                                   1        2        3        4        5
3. You are to receive more compliments and praise from  
 your supervisor. 1        2        3        4        5
4. Your supervisor is to check up on your work less  
 frequently.        1        2        3        4        5
5. You are to get more work assigned to you.  
                                   1        2        3        4        5

SECTION II. C. (continued)

6. You are to receive a raise more quickly.  
                                   1        2        3        4        5
7. You are to receive more attractive fringe benefits.  
                                   1        2        3        4        5
8. You are to set standard too high for other persons in  
 the office.        1        2        3        4        5
9. You are to have congenial work associates.  
                                   1        2        3        4        5
10. You are to receive acceptance by others.  
                                   1        2        3        4        5
11. You are to feel a contribution is being made to the  
 organization.        1        2        3        4        5
12. You are to be able to work in your special area of  
 interest.        1        2        3        4        5

## SECTION III.

Using the following response categories, circle the number you feel most adequately answer each statement.

- 1 = strongly disagree
- 2 = disagree
- 3 = neutral
- 4 = agree
- 5 = strongly agree

1. Many of the unhappy things in people's lives are partly due to bad luck. 1 2 3 4 5
2. In the long run, people get the respect they deserve in this world. 1 2 3 4 5
3. Without the right breaks, one cannot be a good leader. 1 2 3 4 5

## SECTION III. (continued)

4. What happens to me is of my own doing. 1 2 3 4 5
5. Becoming a success is a matter of hard work; luck has little or nothing to do with it. 1 2 3 4 5
6. When I make plans, I am almost certain that I can make them work. 1 2 3 4 5
7. In my case, getting what I want has little or nothing to do with luck. 1 2 3 4 5
8. Who gets to be boss often depends on who was lucky enough to be in the right place first. 1 2 3 4 5
9. Most people don't realize the extent to which their lives are controlled by accidental happenings. 1 2 3 4 5
10. Many times I feel that I have little influence over the things that happen to me. 1 2 3 4 5
11. In the long run, the bad things that happen to us are balanced by the good ones. 1 2 3 4 5

12. I feel that I'm a person of worth, at least on an  
equal plane with others. 1 2 3 4 5
13. I feel that I have a number of good qualities.  
1 2 3 4 5
14. All in all, I tend to feel that I am a failure.  
1 2 3 4 5
15. I am able to do things as well as most other people.  
1 2 3 4 5
16. I feel I do not have much to be proud of.  
1 2 3 4 5
17. I take a positive attitude toward myself.  
1 2 3 4 5

## SECTION III. (continued)

18. On the whole I'm satisfied with myself.  
1 2 3 4 5
19. I wish I could have more respect for myself.  
1 2 3 4 5
20. I certainly feel useless at times.  
1 2 3 4 5
21. At times I think I'm no good at all.  
1 2 3 4 5

## SECTION IV.

1. What is your current Civil Service job  
classification?
- a. Departmental Analyst IX, X, XI, XII, or XIII  
(circle one)
  - b. Data System Analyst Manager VIII, IX, or X  
(circle one)
  - c. Data System Analyst V, VIB, or VII (circle one)
  - d. Computer Programmer III, IV, V, or VI  
(circle one)
  - e. Technical Programmer V, VIB, or VII (circle one)
  - f. Others (please specify) \_\_\_\_\_ .

2. What is your pay step within your current job classification?

- a. First year
- b. Second year
- c. Third year
- d. Fourth year
- e. Fifth year

SECTION IV. (continued)

3. What was your Civil Service job classification level when you were hired as a data processing professional?

- a. Departmental Analyst IX, X, XI, XII, or XIII  
(circle one)
- b. Data System Analyst Manager VIII, IX, or X  
(circle one)
- c. Data System Analyst V, VIB, or VII (circle one)
- d. Computer Programmer III, IV, V, or VI  
(circle one)
- e. Technical Programmer V, VIB, or VII (circle one)
- f. Others (please specify) \_\_\_\_\_ .

4. What was your pay step under the job classification above?

- a. First year
- b. Second year
- c. Third year
- d. Fourth year
- e. Fifth year

5. How long have you worked for the Michigan State Government as a data processing professional?

- |                     |                       |
|---------------------|-----------------------|
| a. Less than 1 year | g. 6 to 7 years       |
| b. 1 to 2 years     | h. 7 to 8 years       |
| c. 2 to 3 years     | i. 8 to 9 years       |
| d. 3 to 4 years     | j. 10 to 11 years     |
| e. 4 to 5 years     | k. More than 11 years |
| f. 5 to 6 years     |                       |

6. Your gender is (please circle one):

- a. Male    b. Female

7. Your age is (please circle one):

- |             |             |             |            |
|-------------|-------------|-------------|------------|
| a. under 19 | d. 30 to 34 | g. 45 to 49 | j. over 60 |
| b. 20 to 24 | e. 35 to 39 | h. 50 to 54 |            |
| c. 25 to 29 | f. 40 to 44 | i. 55 to 59 |            |

8. Did you ever receive a pay step increase in less than one year as a data processing professional?

a. No.      b. Yes. How many times \_\_\_\_\_ .

SECTION IV. (continued)

9. Have you received any rewards, recommendations, and/or citation for your good performance as a State data processing professional within the last four years?

a. None

b. Yes,

Job well done letter from users. How many\_\_\_\_\_

Job well done memo from supervisors. How many\_\_\_\_\_

Job well done recommendation from colleague. How many\_\_\_\_\_

Outstanding service citation from management. How many\_\_\_\_\_

Others(please specify) \_\_\_\_\_ How many\_\_\_\_\_

10. Your marital status is (please circle one):

a. Married

d. Never Married

b. Widowed

e. Other (specify)\_\_\_\_\_

c. Divorced

11. Your highest degree of education completed (please circle one):

a. High school diploma

b. Associate degree

c. Bachelor's degree

d. Master's degree

e. Ph. D. or Professional degree

(specify) \_\_\_\_\_

12. What are your plans to stay with state government (Please check only one)?

a. \_\_\_ I would like to stay all my working life.

b. \_\_\_ I would leave only for an exceptional opportunity.

c. \_\_\_ I will leave if something better turns up.

d. \_\_\_ I hope for a chance to leave under favorable circumstances.

e. \_\_\_ I expect to leave as soon as possible.

## SECTION IV. (continued)

13. Which of the following circumstances expresses your attitude about staying with the state government.  
(Please Check only one)
- a. ☐ I would not consider leaving under any circumstances.
  - b. ☐ I would leave for promotion and 20% increase in pay.
  - c. ☐ I would leave for same kind of job, 20% increase in pay.
  - d. ☐ I would leave for same kind of job, same pay, more challenge.
  - e. ☐ I would leave for same kind of job, same pay.

THANK YOU FOR PARTICIPATION IN THIS SURVEY

Center for Public Administration Programs  
Western Michigan University  
October, 1987

## APPENDIX B

### The Proposed Common Outcome Items



The proposed common outcomes are adopted from Hackman and Porter's(1968) study with modifications and additions to fit this research environment. The list consists of 36 items. This proposed common outcome list was tested on 32 similar classified employees in the Data Center of the Michigan Labor Department and the employees in the Bureau of Information Systems of the Michigan Department of Social Services. Seventeen items were selected based on the highest and the lowest Likert scores in order to provide a complete range of choice alternatives.

#### THE COMMON OUTCOME SURVEY

The purpose of this questionnaire is to ask what you believe is the outcomes of working hard. Ask yourself: how much do I agree or disagree with what the statement says? Using the following definitions, please circle the number you feel most adequately answers each question.

- 5 = Strongly agree
- 4 = Agree
- 3 = Neither agree nor disagree
- 2 = Disagree
- 1 = Strongly disagree

#### Belief about the outcomes of working hard

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1. Time seems to go faster.   | 1 | 2 | 3 | 4 | 5 |
| 2. One is likely to be of more help to his/her system users.                                  | 1 | 2 | 3 | 4 | 5 |
| 3. One is more likely to feel tired at the end of the day.                                    | 1 | 2 | 3 | 4 | 5 |
| 4. One is more likely to feel a sense of completion and accomplishment at the end of the day. | 1 | 2 | 3 | 4 | 5 |

## Beliefs about the consequences of working hard(continued)

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 5. One is more likely to receive thanks and gratitude from his or her system users.    | 1 | 2 | 3 | 4 | 5 |
| 6. One is not as likely to need the help of other persons to catch up on his/her work. | 1 | 2 | 3 | 4 | 5 |
| 7. One's supervisor will expect the same performance from him/her all the time.        | 1 | 2 | 3 | 4 | 5 |
| 8. One is more likely to gain admiration and respect from one's fellow workers.        | 1 | 2 | 3 | 4 | 5 |
| 9. One is likely to receive more compliments and praise from one's supervisor.         | 1 | 2 | 3 | 4 | 5 |
| 10. One's supervisor is likely to check up on one's work less frequently.              | 1 | 2 | 3 | 4 | 5 |
| 11. One is likely to receive a promotion more quickly.                                 | 1 | 2 | 3 | 4 | 5 |
| 12. One is likely to get more work assigned to him/her.                                | 1 | 2 | 3 | 4 | 5 |
| 13. One is likely to receive a raise more quickly.                                     | 1 | 2 | 3 | 4 | 5 |
| 14. One will set a standard too high for other persons in the office.                  | 1 | 2 | 3 | 4 | 5 |
| 15. One's system users are more likely to get annoyed.                                 | 1 | 2 | 3 | 4 | 5 |
| 16. One is likely to feel that a better service is provided for taxpayers.             | 1 | 2 | 3 | 4 | 5 |
| 17. One is likely to feel that a better service is provided for welfare recipients.    | 1 | 2 | 3 | 4 | 5 |
| 18. One is likely to receive higher responsibility.                                    | 1 | 2 | 3 | 4 | 5 |

## Beliefs about the consequences of working hard(continued)

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 19. One is likely to receive more attractive fringe benefits.                              | 1 | 2 | 3 | 4 | 5 |
| 20. One is likely to receive more attractive work hours.                                   | 1 | 2 | 3 | 4 | 5 |
| 21. One is likely to receive more job security.  | 1 | 2 | 3 | 4 | 5 |
| 22. One is likely to be able to work in one's special fields of interest.                  | 1 | 2 | 3 | 4 | 5 |
| 23. One is more likely to have valuable work experiences.                                  | 1 | 2 | 3 | 4 | 5 |
| 24. One is more likely to have congenial work associates.                                  | 1 | 2 | 3 | 4 | 5 |
| 25. One is more likely to receive challenging work assignments.                            | 1 | 2 | 3 | 4 | 5 |
| 26. One is likely to receive more trust from supervisors and associates.                   | 1 | 2 | 3 | 4 | 5 |
| 27. One is more likely to receive acceptance by others.                                    | 1 | 2 | 3 | 4 | 5 |
| 28. One is more likely to gain new skills and knowledge.                                   | 1 | 2 | 3 | 4 | 5 |
| 29. One is more likely to have opportunities to think and act on one's own.                | 1 | 2 | 3 | 4 | 5 |
| 30. One is more likely to have feeling of prestige.  | 1 | 2 | 3 | 4 | 5 |
| 31. One is more likely to have an opportunity to put one's training and knowledge to work. | 1 | 2 | 3 | 4 | 5 |
| 32. One is more likely to have an opportunity to work with people who know their job.      | 1 | 2 | 3 | 4 | 5 |
| 33. One is more likely to be able to keep his/her job.                                     | 1 | 2 | 3 | 4 | 5 |

## Beliefs about the consequences of working hard(continued)

34. One is more likely to feel a contribution is  
being made to the organization. 1 2 3 4 5
35. One is more likely to feel that he/she is  
creating one's own career opportunities.  
1 2 3 4 5
36. One is more likely to feel a good  
relationship with God. 1 2 3 4 5

## APPENDIX C

### The Results of the Proposed Common Outcome Survey

Variable	Mean	Std. Dev.	Variance	N
Item 1*	4.594	.665	.443	32
Item 2*	4.187	.859	.738	32
Item 3	3.062	1.045	1.093	32
Item 4*	4.344	.827	.684	32
Item 5	3.375	1.040	1.081	32
Item 6	3.594	.946	.894	32
Item 7	3.656	1.004	1.007	32
Item 8	3.344	.863	.749	32
Item 9	3.375	.833	.694	32
Item 10*	3.406	1.012	1.023	32
Item 11*	2.812	.965	.931	32
Item 12*	4.125	.609	.371	32
Item 13*	2.781	.870	.757	32
Item 14*	2.531	.761	.580	32
Item 15*	2.062	.801	.641	32
Item 16	3.625	.942	.887	32
Item 17	3.000	1.078	1.161	32
Item 18*	3.812	.780	.609	32
Item 19*	2.219	.706	.499	32
Item 20*	2.406	.837	.701	32
Item 21	3.031	1.121	1.257	32
Item 22	3.375	.976	.952	32
Item 23	3.719	.851	.725	32
Item 24	3.312	.738	.544	32
Item 25*	3.906	.777	.604	32
Item 26*	4.000	.672	.452	32
Item 27	3.344	.902	.814	32
Item 28*	4.156	.767	.588	32
Item 29*	3.812	.859	.738	32
Item 30	3.562	.914	.835	32
Item 31*	3.969	.782	.612	32
Item 32	3.281	.851	.725	32
Item 33	3.187	1.061	1.125	32
Item 34*	3.969	.745	.547	32
Item 35	3.781	.941	.866	32
Item 36	3.187	1.378	1.899	32

\* Selected items for further processes (see Appendix D)

## APPENDIX D

### Factorial Analysis of the Selected Items

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Item 1	.78968*				
Item 12	.76473*				
Item 28	.68403		.46643		
Item 2	.64960	.46084			
Item 26	.62423	.51720			
Item 25	.58398	.37767	.31137		
Item 18		.85159*			
Item 34		.84957*			
Item 4	.47334	.71572			
Item 29	.34239	.66538	.39639		
Item 13			.91709*		
Item 11			.89366*		
Item 31	.43357		.68113		-.36413
Item 20				.92609*	
Item 19				.92464*	
Item 14					.82774*
Item 15					.82362*

\* The final selected items for the survey(see Appendix A)



## APPENDIX E

### The Correlation Between Expectancy Model Predictors and the Dependent Variables by Job Classification and Gender Groups

Independent Variables		$\Sigma VI$		$\Sigma VE$		$E(\Sigma VI)$	
Dependent Variables	r	p	r	p	r	p	
<b>A. Management Group</b>							
Job Involvement	.3880*	.016	.5044*	.003	.4520*	.007	
Propensity to Stay	-.0964	.309	.0626	.373	.0425	.413	
Job Advancement	-.0975	.307	-.3163	.047	-.2453	.100	
Recognition	.2784	.072	.2868	.066	.3882*	.019	
Job Performance	.1670	.193	.0190	.461	.1553	.210	
<b>B. Computer Programmer Group</b>							
Job Involvement	.1353	.225	.1130	.263	.0804	.325	
Propensity to Stay	-.0284	.437	-.2427	.084	-.1641	.177	
Job Advancement	.3770*	.014	.4784*	.002	.4135*	.008	
Recognition	.2719	.060	.2052	.122	.2476	.079	
Job Performance	.4470*	.004	.4881*	.002	.4621*	.003	
<b>C. Technical Programmer and Data System Analyst Group</b>							
Job Involvement	-.0730	.254	.0178	.436	.0095	.465	
Propensity to Stay	.1089	.162	.0888	.211	.1912*	.041	
Job Advancement	-.0230	.418	.0934	.199	.0212	.424	
Recognition	.1766	.054	-.1721	.059	.0331	.382	
Job Performance	.0814	.231	-.0282	.399	.0336	.381	
<b>D. Male Group</b>							
Job Involvement	-.0186	.426	.1300	.095	.0632	.263	
Propensity to Stay	.0213	.415	-.0078	.469	.0436	.331	
Job Advancement	.1540	.060	.1956*	.024	.1666*	.047	
Recognition	.1460	.070	-.0641	.260	.0828	.203	
Job Performance	.2001*	.022	.1030	.150	.1709*	.042	
<b>E. Female Group</b>							
Job Involvement	.1735	.130	.0403	.398	.1207	.218	
Propensity to Stay	.1247	.210	.0732	.319	.1515	.163	
Job Advancement	.3356*	.013	.3131*	.019	.3566*	.009	
Recognition	.5230*	.000	.3671*	.014	.5048*	.000	
Job Performance	.5067*	.000	.4217*	.002	.5158*	.000	

\* significance at the  $p < .05$  level with one tailed test.

## BIBLIOGRAPHY

- Alderfer, C P.(1972). Existence, relatedness, and growth: Human Needs in organizational settings. New York: Free Press.
- Andrew, I. R.(1967). Wage inequity and job performance: An experimental study, Journal of Applied Psychology, 51, 39-45.
- Andrisani, P. J., & Nestel, G.(1976). Internal-external control as contributor to and outcome of work experience. Journal of Applied Psychology, 61, 156-165.
- Argyris, C.(1957). Personality and organization. New York: Harper and Row.
- Argyris, C.(1973). Personality and organization theory revisited. Administrative Science Quarterly, 18, 141-167.
- Aronson, E. & Carlsmith, J. M.(1961). Performance expectancy as a determinant of actual performance, Journal of Abnormal and Social Psychology, 65, 178-182.
- Arvey, R. D. & Neel, C. W.(1974). Testing expectancy theory predictions using behaviorally based measures of multivational effort for engineers. Journal of Vocational Behavior, 4, 299-310.
- Atkinson, J. W.(1957). Motivational determinants of risk-taking behavior. Psychological Review, 64, 359-372.
- Atkinson, J. W.(1958). Towards experimental analysis of human motivation in terms of motives, expectancies, and incentives. In J. W. Atkinson (Ed.), Motivation fantasy action, and society, 288-305, Princeton, NJ: Van Nostrand.
- Bailey, R. C.(1971). Self-concept differences in low and high achieving students, Journal of Clinical Psychology, 27, 188-191.

- Behling, O. & Starke, F. A. (1973). The postulates of expectancy theory. Academy of Management Journal, 16, (3), 373-388.
- Birch, D., & Veroff, J. (1968). Motivation: A study of action, Belmont, CA.: Brooks/Cole.
- Bolles, R.C. (1967). Theory of motivation, New York: Harper and Row.
- Broedling, L. A. (1975). Relationships of internal-external control to work motivation and performance in an expectancy model, Journal of Applied Psychology, 60, 65-70.
- Brousseau, K. R. (1978). Personality and job experience. Organizational Behavior and Human Performance, 22, 235-252.
- Buchanan, B., II. (1974). Government managers, business executives, and organizational commitment, Public Administration Review, 35, 339-347.
- Bush, C. M. & Schkadt, L. L. (1985). In search of the perfect programmer. Datamation, 31, (6), 128-132.
- Campbell, D. T. & Pritchard, R. D. (1976). Motivation theory in industrial and organization psychology. In Handbook of Industrial and Organization Psychology, 63-130, Dunnette, M. D. (Ed.), Chicago: Rand McNally.
- Campbell, D. T. and Stanley, J. C. (1963). Experimental and quasiexperimental designs for research on teaching. In Handbook of Research on Teaching, 180-200, Gage, N. L. (Ed.), Chicago: Rand McNally.
- Campbell, J. P., Dunnette, M. D., Lawler, E. E., III, & Weick, K. E., Jr. (1970), Managerial behavior, performance, and effectiveness. New York: McGraw-Hill, 1970.
- Cofer, C. N. & Appley, M. H. (1964). Motivation: theory and research, New York: Wiley.
- Connolly, T. (1976). Some conceptual and methodological issues in expectancy models of work performance motivation, Academy of Management Review, 1, 37-47.

- Crandall, V. J., Katkousky, W., & Preston (1962). Motivational and ability determinants of young children's intellectual and achievement behaviors, Child Development, 33, 643-661.
- Cronbach, L. J. & Meehl, P. E.(1955). Construct validity in psychological tests, Psychological Bulletin, 52, (4), 281-302.
- Dachler, H. P., & Mobley, W. H.(1973). Construct validation of an instrumentality-expectancy-task-goal model of work motivation: Some theoretical boundary conditions. Journal of Applied Psychology Monograph, 58, 397-418.
- Denmark, F. & Guttentag, M.(1967). Dissonance in the self-concepts and educational concepts of college and non-college oriented woman, Journal of Counseling Psychology, 14, 113-115.
- Edwards, W.(1954). The theory of decision making. Psychological Bulletin, 51, 380-240.
- Evans, M. G.(1970). The effects of supervisory behavior on the path goal relationship. Organizational Behavior and Human Performance, 5, 277-298.
- Fishbein, M.(1954). An investigation of the relationships between beliefs about an object and the attitude toward that object. Human Relations, 16, 233-240.
- Fishbein, M.(1963). An investigation of the relationships between beliefs about an object and the attitude toward that object. Human Relation, 16, 233-240.
- Galbraith, J., & Cummings, L. L.(1967). An empirical investigation of the motivational determinants of task performance: Interactive effects between instrumentality-valence and motivation-ability. Organizational Behavior and Human Performance, 2, 237-257.
- Gavin, J. F.(1971). Ability, effort, and role perception as antecedents of job performance. (Experimental Publications System Ms. No. 190A). Washington, DC: American Psychological Association.

- Gavin, J. F.(1973). Self-esteem as a moderator of the relationship between expectancies and job performance. Journal of Applied Psychology, 58, 83-88.
- Ghiselli, E. E.(1971). Explorations in managerial talent. Pacific Palisades, CA: Goodyear.
- Georgopoulos, B. S., Mahoney, G. M., & Jones, N. W.(1957). A path-goal approach to productivity. Journal of Applied Psychology, 41, 345-353.
- Goodman, P. S., Rose, J. H., & Furcon, J. E.(1970). Comparison of motivational antecedents of the work performance of scientists and engineers. Journal of Applied Psychology, 54, 491-495.
- Graen, G.(1969). Instrumentality theory of work motivation: Some experimental results and suggested modifications. Journal of Applied Psychology Monograph, 53, 1-25.
- Hackman, J. R., and Porter, L. W.(1968). Expectancy theory predictions of work effectiveness. Organizational Behavior and Human Performance, 3, 417-426.
- Heider, F.(1958). The psychology of interpersonal Relations, New York: Wiley.
- Heneman, H. G. III, & Schwab, D.P.(1972). An evaluation of research on expectancy theory predictions of employee performance. Psychological Bulletin, 78, 1-9.
- Holmstrom, V. L., & Beach, L. R.(1973). Subjective expected utility and career preferences. Organizational Behavior and Human Performance, 10, 201-207.
- House, R. J. & Rizzo, J. R.(1972). Role conflict and ambiguity as critical variables in a model of organizational behavior. Organizational Behavior and Human Performance, 7, 467-505.
- House, R. J., Shapiro, H. J., & Wahba, M. A.(1974). Expectancy theory as a predictor of work behavior and attitude: A re-evaluation of experimental evidence, Decision Science, 5, 481-506.

- House, R. J., & Wahba, M. A. (1972). Expectancy theory in industrial and organizational psychology: An integrative model and a review of literature. Proceedings of the 80th Annual Convention of the American Psychological Association, 7, 465-466.
- Inkson, J. H. (1978). Self-esteem as a moderator of the relationship between job performance and job satisfaction. Journal of Applied Psychology, 63, (2), 243-247.
- Irvin, F. S. (1967). Sentence-completion responses and scholastic success or failure. Journal of Counseling Psychology, 14, 269-271.
- Joe, V. C. (1971). Review of the internal-external control construct as a personality variable. Psychological Report, 28, 619-640.
- Jones, A. P., James, L. R., and Bruni, J. R. (1975). Perceived leadership behavior and employee confidence in the leader as moderated by job involvement. Journal of Applied Psychology, 60, (1), 146-149.
- Jorgenson, D. O., Dunnette, M. D., & Pritchard, R. D. (1973). Effects of the manipulation of a performance-reward contingency on behavior in a simulated work setting. Journal of Applied Psychology, 57, 271-280.
- Kaplan, K. J. & Fishbein, M. (1969). The source of beliefs, their saliency and prediction of attitude. The Journal of Social Psychology, 78, 63-74.
- Kopelman, R. E. & Thompson, P. H. (1976). Boundary conditions for expectancy theory predictions of work motivation and job performance. Academy of Management Journal, 19, 237-257.
- Korman, A. K. (1967). Self-esteem as a moderator of the relationship between self-perceived abilities and vocational choice. Journal of Applied Psychology, 51, (1), 65-67.
- Korman, A. K. (1967). Self-esteem as a moderator in vocational choice: Replications and extensions, Journal of Applied Psychology, 53, (3), 188-192.

- Korman, A. K.(1970). Toward an hypothesis of work behavior, Journal of Applied Psychology, 54, 31-41.
- Korman, A. K.(1971). Industrial and organizational psychology. Englewood, Cliffs, NJ: Prentices-Hall.
- Landy, F, J. & Guion, R. M.(1970). Development of scales for the measurement of work motivation, Organizational Behavior and Human Performance, 5, 93-103.
- Lawler, E. E., III.(1968) A correlation-causal analysis of the relationship between expectancy attitudes and job performance. Journal of Applied Psychology, 52, 462-468.
- Lawler, E. E., III.(1970) Job attitudes and employee motivation: theory, research and practice. Personne Psychology, 23, 223-237.
- Lawler, E. E., III.(1971). Pay and organizational effectiveness: A psychological view. New York: McGraw Hill.
- Lawler, E. E., III.(1973). Motivation in work organization, Belmont, CA.: Wadsworth.
- Lawler, E. E., III, & Porter, L. W.(1967). Antecedent attitudes of effective managerial performance. Organizational Behavior and Human Performance, 2, 122-142.
- Lawler, E. E., III, & Suttle, J. L.(1973). Expectancy theory and job behavior. Organizational Behavior and Human Performance, 9, 482-503.
- Lee, R.(1979). Public personnel systems, Baltimore, MD: University Park Press.
- Lefcourt, H. M.(1966). Internal versus external control of reinforcemen: A review. Psychological Bulletin, 65, 206-220.
- Lessing, E. S.(1969). Racial differences in indices of ego functioning relevant to academic achievement. The Journal of Genetic Psychology, 115, 163-167.
- Lewin, K.(1935). A dynamic theory of personality. New York: Island Press.



- Lewin, K.(1938). The conceptual representation and the measurement of psychological forces. Durham, NC: Duke University Press.
- Lewin, K. (1951). Field theory in social science. New York: Harper and Row.
- Lied, T. R. & Pritchard, R. D.(1976). Relationships between personality variables and components of the expectancy-valence model, Journal of Applied Psychology, 61, 463-467.
- Lodahl, T. M. & Kejner, M. (1965). The definition and measurement of job involvement, Journal of Applied Psychology, 49, (1), 24-33.
- Mitchell, T. R.(1972). Instrumentality theories: Conceptual and methodological problems. JSAS Catalog of Selected Documents in Psychology, 2, 37-38.
- Mitchell, T. R.(1974). Expectancy models of job satisfaction, occupational preference and effort: A theoretical, methodological, and empirical appraisal. Psychological Bulletin, 81, 1053-1077.
- Mitchell, T. R.(1979). Organizational behavior, Annual Review of Psychology, 30, 243-282.
- Mitchell, T. R. & Albright, D.(1972). Expectancy theory predictions of job satisfaction, job effort, job performance, and retention of naval aviation officers, Organizational Behavior and Human Performance, 8, 1-20.
- Mitchell, T. R., & Biglan, A.(1971). Instrumentality theories: Current uses in psychology. Psychological Bulletin, 76, 432-454.
- Mitchell, T. R., and Nebeker, D. M.(1973). Expectancy theory predictions of academic behavior. Journal of Social Psychology, 89, 34-45.
- Organ, D. W. and Greene, C. N.(1974). Role ambiguity, locus of control, and work satisfaction, Journal of Applied Psychology, 59, 101-102.

- Pelz, D. C. & Andrews, F. M.(1966). Scientists in organizations, New York: Wiley.
- Phares, E. J.(1976). Locus of control in personality, Morristown, NJ: General Learning Press.
- Porter, L. W.(1964). Organizational patterns of managerial job attitudes. New York: American Foundation for Management Research.
- Porter, L. W., & Lawler, E. E.,III.(1968). Managerial attitudes and Performance. Homewood, IL: Dorsey Press.
- Pritchard, R. D., & DeLeo, P. J.(1973). Experimental test of the valence-instrumentality relationship on job performance. Journal of Applied Psychology, 57, 264-270.
- Pulakos, E. D. & Schmitt, N.(1983). A longitudinal study of a valence model approach for the prediction of job satisfaction of new employees. Journal of Applied Psychology, 68, 307-312
- Reitz, H. J.(1971). Managerial attitudes and perceived contingencies between performance and organizational responses. Proceedings of the 31st Annual Meeting of the Academy of Management, 227-238.
- Rosenberg, M. J.(1956). Cognitive structure and attitudinal affect. Journal of Abnormal and Social Psychology, 53, 367-372.
- Rosenberg, M. J.(1965). Society and adolescent self-image. Princeton, NJ: Princeton University Press.
- Rotter, J. B.(1954). Social learning and clinical psychology. New York: Prentice-Hall.
- Rotter, J. B.(1955). The role of psychological situation in determining the direction of human behavior. In M. R. Jones (Ed.), Nebraska Symposium on Motivation. Lincoln, NE: University of Nebraska Press.
- Rotter, J. B.(1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80,(1 whole no. 609).

- Schmidt, F.(1973). Implications of a measurement problem for expectancy theory research, Organizational Behavior and Human Performance, 10, 243-252.
- Schuster, J. R., Clark, B., & Rogers, M.(1971). Testing portions of the Porter and Lawler model regarding the motivational role of pay. Journal of Applied Psychology, 55, 187-195.
- Sheard, J. L.(1970). Intrasubject prediction of preferences for organizational types. Journal of Applied Psychology, 54, 248-252.
- Smith, P. C., Kendall, L. M., & Hulin, C. L. (1969). The measurement of satisfaction in work and retirement, Chicago; Rand McNally.
- Sobel, R. S.(1971). Tests of pre-performance and post-performance models of satisfaction with outcomes. Journal of Personality and Social Psychology, 19, 213-221.
- Stahl, O. G.(1976). Public personnel administration, New York: Harper and Row.
- The National Longitudinal Surveys' Handbook. (1973). Columbus, Ohio State University, Center for Human Resource Research.
- Tolman, E. C.(1932). Purposive behavior in animals and men. New York: Century.
- Tolman, E. C.(1959). Principles of purposive behavior. In S. Koch(Ed.), Psychology: A study of a science. 1, 92-157, New York: McGraw-Hill.
- Troland, L. T.(1928). The fundamentals of human motivation, New York: Hafner Publishing Co.
- Turney, J. R. (1974). Activity outcome expectancies and intrinsic activity values as predictors of several motivation indexes for technical-professionals. Organizational Behavior and Human Performance, 11, 65-82.
- Vroom, V. H.(1964). Work and motivation, New York: Wiley.
- Vroom, V. H.(1966). Organizational choice: A study of pre- and post-decision processes. Organizational Behavior and Human Performance, 1, 212-225.

- Wanous, J. P.(1972). Occupational preferences:  
Perceptions of valence and instrumentality and  
objective data. Journal of Applied Psychology, 56,  
152-155.
- Weiss, Dawis, R.V., England, G.W. & Lofquist, L.H.(1967).  
Manual for the Minnesota satisfaction questionnaire.  
Minnesota Studies in Vocational Rehabilitation,  
University of Minnesota.
- Woodworth, R. S.(1918). Dynamic psychology. New York,  
Columbia University Press.